

**An Ethnographic Study of Kenyan Adolescents' Understanding of Cancer, Cancer
Risk, and Cancer Prevention**

by

David S. Busolo

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Abstract

Cancer incidence and mortality continues to rise worldwide including in the country of Kenya. Burdened with infectious diseases, poverty, and lack of proper cancer preventive plans, the future of cancer care in Kenya is unknown. This is further exacerbated by the fact that Kenyan adolescents engage in smoking, unhealthy eating, physical inactivity, and alcohol intake that can increase their lifetime cancer risk. Despite this awareness, little is known about Kenyan adolescents' understanding of cancer, cancer risk, and cancer prevention. Such awareness is needed to inform germane cancer prevention and health promotion initiatives. Accordingly, an ethnographic qualitative study was carried out to explore Kenyan adolescents' understanding of cancer, cancer risk, and cancer prevention.

This study took place at Nairobi Primary and OlKeri Mixed Secondary Schools in Kenya. Fifty-three Kenyan adolescents between ages 12 and 19 that were attending the participating schools took part. Participants were grouped as early (ages 12-14), middle (ages 15-17), and late adolescence (ages 18-19). Qualitative data was collected through individual open-ended interviews and focus group discussions. Data analysis occurred concurrently with data collection. Thematic and content analysis approaches were utilized. Ethical considerations were observed throughout the study.

Study results generated three main findings about Kenyan adolescents' conceptualization of cancer, cancer risk, and cancer prevention. In their conceptualization of cancer, adolescents described cancer in ways that are grouped into two themes: *there is no other disease like it* and *lay understanding through metaphors*. In their conceptualization of cancer risk, adolescents described cancer in ways that are grouped as *cancer risk as lifestyle factors* and the *process of risk perception*. Finally, in conceptualization of cancer prevention, adolescents described cancer prevention in ways that are grouped into the following themes: *avoiding cancer risk factors*, *avoiding peers who partake in risk factors*, and *being healthy*.

This study is the first of its kind to be conducted in Kenya. The study findings significantly add to the body of knowledge about understanding adolescents' conceptualization of cancer, cancer risk, and cancer prevention. Additionally, the study results will create a platform for future cancer prevention research and health promotion programs in Kenya and other parts of Africa.

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Dedication

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Chapter 1: Introduction and Rationale

Cancer, also referred to as a malignant tumor or neoplasm, is a group of diseases that cause a rapid creation of abnormal cells that often grow beyond their usual boundaries and invade other body organs (World Health Organization, 2017a). Cancer is one of the leading causes of morbidity and mortality globally, with an incidence of approximately 14 million cases and a mortality of approximately 8.2 million in 2012 (Ferlay et al., 2015; GLOBOCAN, 2012). In 2012, 57% (8 million) of new cancer cases and 65% (5.3 million) of cancer deaths occurred in less developed regions such as Africa (Ferlay et al., 2015; GLOBOCAN, 2012). Cancer incidence and mortality are expected to increase with over 7 million deaths likely to occur in countries that cannot afford health care (Bray, 2014; Vastag, 2006). In Kenya, neoplasms are the third leading cause of death with an estimated annual incidence of 40,000 cases and an annual mortality of over 22,000 (GLOBOCAN, 2012; Korir, Okerosi, Ronoh, Mutuma, & Parkin, 2015; Ministry of Public Health and Sanitation and Ministry of Medical Services, 2011). In addition to increasing incidence and mortality, cancer survival rates are low in Kenya because of inadequate and inefficient health care resources (Butt, Guthua, Awange, Dimba, & Macigo, 2012; Ministry of Public Health and Sanitation and Ministry of Medical Services, 2011). Therefore, there is a need to develop effective cancer preventive approaches. Cancer preventive approaches in Kenya could follow a health promotion strategy that is focused on limiting exposure to cancer risk factors.

Common cancer risk factors in Kenya and the rest of the world include smoking (Gandini et al., 2008); unhealthy eating, physical inactivity, body composition (World Cancer Research Fund/American Institute for Cancer Research, 2007); physical inactivity (World Cancer Research Fund/American Institute for Cancer Research, 2007); genetic make-up (Lindor, McMaster, Lindor, Greene, & National Cancer Institute, 2008); body composition (World Cancer Research Fund/American Institute for Cancer Research, 2007); radiation, including ultraviolet (UV) rays exposure (Gandini et al., 2005; International Agency for Research on Cancer, 2012); alcohol use

(Fedirko et al., 2011; McDonald, Goyal, & Terry, 2013; Tramacere et al., 2012; Turati et al., 2014); and infectious diseases (National Cancer Institute (NCI), 2017a; Yamada et al., 2008). Most of these factors can be prevented using germane health promotion programs and interventions. Despite this awareness, cancer and cancer prevention in Kenya continues to receive limited public health attention. Therefore, there is an immediate need to develop effective cancer preventive approaches based on health promotion.

One can develop cancer at any age in their life. Many cancers, including breast and lung cancer, often develop after several years of exposure to cancer risk factors. Among the groups that are likely to develop cancer in their later years are Kenyan adolescents with current risk behaviours. Kenyan adolescents with risk-taking behaviours engage in physical inactivity, unhealthy eating (Muthuri, 2014; Muthuri, Wachira, Onywera, & Tremblay, 2014), tobacco and alcohol use (Ndetei, Khasakhala, Mutiso, Ongecha-Owuor, & Kokonya, 2009), and risky sexual relations (Kabiru, Beguy, Undie, Zulu, & Ezeh, 2010; Kabiru & Orpinas, 2009a, 2009b).

Adolescents often participate in these behaviours because of illiteracy, misconceptions, or peer influence (Hoque, 2013; Kobus, 2003; Were, Nyaberi, & Buziba, 2011; Woodgate, Safipour, & Taylor, 2014). At other times, adolescents take part in risk behaviours because of limited family and community support towards health promotion or because of limited awareness of the risk for cancer (Hoque, 2013; Moreland, Raup-Krieger, Hecht, & Miller-Day, 2013; Tavrow, Karei, Obbuyi, & Omollo, 2012; J. P. Taylor, Evers, & McKenna, 2005; Were, Nyaberi, & Buziba, 2011). Moreover, adolescents engage in risk behaviour because it is part of their normal developmental processes (Albert & Steinberg, 2011), because they find the behaviours to be rewarding, or because they downplay the consequences (Woodgate, Safipour, & Tailor, 2014).

Germane health promotion programs are likely to influence how adolescents perceive cancer, cancer risk factors, and cancer prevention. Also, adolescents' participation in health promotion

behaviour may reduce their lifetime risk for cancer. However, research examining adolescents' perspectives of cancer with a specific focus on cancer risk is in its infancy. While Woodgate et al. (2014) has examined adolescents' perspectives of cancer and cancer risk, her work was conducted within the Canadian context. Work on adolescents' perspectives of cancer, cancer risk, and cancer prevention that involves African adolescents is critically lacking. To address this gap, it was imperative to conduct this study. The purpose of this research study was to arrive at a detailed picture of Kenyan adolescents' understanding of cancer, cancer risk, and cancer prevention. Accordingly, the following research objectives were pursued:

- 1) To gain an understanding of Kenyan adolescents' perspectives of cancer;
- 2) To gain an understanding of Kenyan adolescents' perspectives of cancer risk;
- 3) To gain an understanding of Kenyan adolescents' perspectives of cancer prevention; and
- 4) To explore what adolescents feel and think other individuals (adolescents, parents, teachers, and government) could do to reduce their risk for cancer.

The following research questions were asked:

- 1) When you hear the word cancer, what comes to your mind?
- 2) When you hear the word cancer risk, what comes to your mind?
- 3) When you hear the word cancer prevention, what comes to your mind?
- 4) What do you think others (adolescents, parents, teachers, and governments) could do to reduce your chances of reducing cancer?

To afford adolescents the opportunity to share their understanding of cancer, cancer risk, and cancer prevention in their own culture and social relations, the qualitative research design of focused ethnography was used.

Assumptions

The following assumptions about Kenyan adolescents' understanding of cancer, cancer risk, and cancer prevention guided the study.

1. Kenyan adolescents make their conceptualizations of cancer, cancer risk, and cancer prevention based on their social world and social relations (Berg & Lune, 2012).
2. Adolescents' decisions around taking part in cancer risk behaviour are influenced by how they make sense of cancer risk (Keeler & Kaiser, 2010; Slovic, 2010).
3. Kenyan adolescents receive limited information about cancer, cancer risk, and cancer prevention (Busolo & Woodgate, 2014).
4. Parents, teachers, and the government plays limited roles in cancer, cancer risk, and cancer prevention efforts in Kenya (Ministry of Public Health and Sanitation and Ministry of Medical Services, 2011).

Definition of Terms

The following terms and their definitions relate to adolescents' conceptualizations of cancer, cancer risk, and cancer prevention. They are referred to frequently throughout this thesis document and are thus presented here so that the reader can become familiar with them. Importantly, the definitions noted here do not include the operational definitions of concepts that emerged following data analysis. Those definitions are included in chapters five and six of this dissertation wherein study findings are discussed.

Cancer: A group of diseases that causes a rapid, uncontrollable division and creation of abnormal cells that often grow beyond their usual boundaries and invade other body organs (World Health Organization, 2017a). Cancer cells can spread to other body organs and tissues through blood and lymph. There are different types of cancers that include carcinoma, sarcoma, leukemia, lymphoma, and multiple myeloma (National Cancer Institute (NCI), 2017b).

Risk: The magnitude of the possibility of loss or gain, specifically the possibility of loss or decrease of personal health status that either immediately or eventually results in disease or death (Keeler & Kaiser, 2010; Stalker, 2003).

Cancer risk: The likelihood that a person will develop cancer (Canadian Cancer Society, 2017b).

Cancer prevention: Cancer prevention involves avoiding cancer risk factors (e.g., smoking) and increasing cancer protective factors (e.g., physical activity) (National Cancer Institute, 2017). Cancer prevention can also be divided into primary, secondary, and tertiary prevention. Primary prevention involves avoiding exposure to cancer risk factors or behaviour modifications and usually involves large populations. Secondary prevention usually focuses on specific existing cancers, and more specific risk factors in more specifically defined populations. Tertiary prevention aims to control the symptoms and morbidity of established cancers or cancer treatments (Blackburn, 2010; Dunn & Greenwald, 2010).

Personal Interest in the Study

I was born and raised up in Kenya where I carried out my undergraduate studies in Nursing. Throughout my childhood, I attended primary, secondary, and undergraduate schools in Western, Nairobi, and Rift Valley provinces. The education program was similar to that used by study participants. While undertaking my nursing training, pediatrics rotation, I cared for a seven-year-old girl that was diagnosed with leukemia. We had a patient-nurse relationship and I used to talk with her mother about her condition and care. The girl's mother was ever present by her bedside, caring for her. Out of interest and compassion for the child and her mother, I researched information about leukemia, and followed doctors and nurses during ward rounds to listen, take notes, and inquire about her prognosis and treatment. I read further about the condition and treatment, and discussed this with the girl and her mother. When the pediatrics rotation was over, I left the unit but continued to think about

the little girl and her mother. Several months later, I went back to the same hospital for my internship. One afternoon, when I was walking home, I met the little girl's mother. I was happy to meet her and wanted to know how they were doing. The mother was equally happy to meet me but did not seem so happy to talk about her daughter. Her daughter had passed on a few months after I left the pediatrics unit. The mother was sad, heartbroken, and felt like she had failed. I was lost for words but shared words of comfort. The mother felt that health care providers did not do enough to keep her daughter alive. She felt helpless and was heartbroken. I wondered what could have improved the situation and what could be done to improve the cancer situation in the country. Beyond the death of the little girl, I have lost several close friends, relatives, and teachers to cancer and it has been my passion to find ways to improve Kenyans' understanding of cancer, cancer risk, and cancer prevention.

Following my undergraduate degree, I went on to pursue a master's degree in public health where I focused on health promotion and education as well as maternal and child health. While undertaking my master's studies, I was involved in research projects where my passion for chronic disease and cancer prevention research was strengthened. I worked with communities and learned how to engage parents, youth, and other community members in preventative efforts. At the culmination of my studies, I seriously considered going back to Kenya to work with youth and families in cancer prevention. However, I felt that I needed further education. Accordingly, I pursued doctoral studies that allowed me to pursue a research topic that has been in my mind all along. I came across Dr. Woodgate and her research expertise on Canadian youth understanding of cancer and cancer risk, which was a perfect fit with my aspirations.

Significance of the Study

This study was significant for a number of reasons. First, this study was the first of its kind to be conducted in Kenya. Studies on cancer, cancer risk, and cancer prevention have mainly focused on adult women and used quantitative methods. This research utilized qualitative research methods that

are critically lacking in the examination of cancer, cancer risk, and cancer prevention among adolescents in Kenya and other parts of Africa. Qualitative research methods gave voice to adolescents who may participate in risk-taking behaviour and led to the generation of results based on their social understanding.

Second, this study will form grounding for future research. In the wake of increasing cancer incidence and mortality coupled with limited research on Kenyan adolescents' conceptualization of cancer, cancer risk, and cancer prevention, the findings of this study are critically needed. Study findings reveal how Kenyan adolescents perceive cancer, cancer risk, and cancer prevention. Other research studies examining cancer, cancer risk, and cancer prevention among adolescents in Kenya and other parts of Africa may build on the findings of this study.

Third, the study has generated findings from Kenyan adolescents' understanding which can be useful for germane cancer prevention and health promotion programs. The findings present adolescents' perspectives based on their social worlds, culture, and relations. At a time when cancer prevention programs are hampered by insufficiency of funds, limited health care resources, low levels of awareness, and increasing engagement in risk behaviour, findings like those generated in this study are extremely warranted. In the future, research that examines appropriateness of cancer, cancer risk, and cancer prevention programs could build on how adolescents conceptualize these phenomena as presented by the findings of this study.

Finally, the study findings add to the increasing body of knowledge on how adolescents know/fail to know about cancer and how they perceive cancer and cancer prevention. Future work will include the development and testing of meaningful educational and community intervention programs for health promotion and cancer prevention. While these plans for future work exist, the findings of this study offer opportunities for the examination of current cancer, cancer risk, and cancer prevention

education. Health educators can borrow from the findings of this study to improve their health promotion messages.

This dissertation is made up of seven chapters. Chapter one (the current chapter) provides an introduction to the topic and rationale for the study. Chapter two focuses on the review of literature while chapter three describes the theoretical underpinnings. Chapter four describes the methodological considerations that guided this study. Chapter five presents study findings while chapter six focuses on discussion. Subsequently, chapter seven focuses on recommendations, plans for education, research and policy, and culminates with conclusions.

Chapter 2: Review of the Literature

In the following review, literature is presented sequentially around the following topical areas:

- i. The cancer situation in Kenya and reasons behind this emerging crisis.
- ii. Adolescent health, adolescents' decision making, perceptions of health, and risk (including cancer and cancer risk).
- iii. Health promotion and cancer prevention strategies involving adolescents.
- iv. Cancer prevention initiatives globally, in Africa, and in Kenya.
- v. The need to conduct research on Kenyan adolescents' understanding of cancer, cancer risk, and cancer prevention.

Cancer Situation in Kenya

Cancer is a growing crisis in Kenya where the leading cancers are breast, esophagus, and cervical in women and esophagus, prostate, and Kaposi sarcoma in males (Ministry of Public Health and Sanitation and Ministry of Medical Services, 2011). The majority of Kenyans (over 60%) that develop cancer are younger than 70 years of age and most of them die in their most productive years (Ministry of Public Health and Sanitation and Ministry of Medical Services, 2011). Cancer mortality in Kenya is partly attributed to delays in seeking treatment, low levels of awareness/knowledge, inaccessibility and unaffordability of care, stigma, and poor family or community support (Butt et al., 2012; Ministry of Public Health and Sanitation and Ministry of Medical Services, 2011; Sener & Grey, 2005; Were et al., 2011). In situations where cancer cases have been reported, many individuals present with advanced cancers that are difficult to treat (Butt et al., 2012; Duron et al., 2013; Muthoni & Miller, 2010; 2011; Sener & Grey, 2005; Were et al., 2011).

Kenya, like other developing countries, has an underdeveloped health care system and lacks adequately trained health care personnel, screening, diagnosis, and treatment facilities (Denny, Quinn, & Sankaranarayanan, 2006; Kivuti-Bitok, Pokhariyal, Abdul, & McDonnell, 2013). Additionally, the

health care system is crippled with insufficient funds, a lack of resources, and competing health care priorities (Butt et al., 2012; Denny et al., 2006; Kivuti-Bitok et al., 2013; Ministry of Public Health and Sanitation and Ministry of Medical Services, 2011; Sener & Grey, 2005). Kenya lacks concrete policies, plans, and a comprehensive cancer management program (Kinyanjui, 2006; Muthoni & Miller, 2010; Parliament of Kenya, 2011). As a result of this deficiency, many cancer cases in the country are unreported and disease trends are not accurately monitored (Korir et al., 2015; Wakabi, 2008). Furthermore, many Africans, including Kenyan adolescents, have adopted unhealthy eating habits, sedentary lifestyles, high-risk sexual behaviours, and smoking; they may also suffer from infectious diseases including Human Immunodeficiency Virus/Acquired Immuno-Deficiency Syndrome (HIV/AIDS) that increase their chances of developing cancer in later years (de-Graft Aikins et al., 2010; Maina, Nato, Okoth, Kiptui, & Ogwell, 2013; Ministry of Public Health and Sanitation and Ministry of Medical Services, 2011; Nieminen et al., 2013; Puffer et al., 2011; Tenge, Kuremu, Buziba, Patel, & Were, 2009; Vastag, 2006).

When the aforementioned factors (inadequate health infrastructure, and competing priorities) are combined with changing health behaviours, Kenyan adolescents are at even higher risk of cancer in later years. However, little is known about Kenyan adolescents' understanding of cancer, cancer risk, and cancer prevention. Additionally, the deficiency of cancer preventive resources in Kenya raises questions about the kind of cancer prevention information accessible to adolescents, how they get this information, and how their knowledge or lack of it affects their cancer prevention or health promotion behaviour. This information is important in designing appropriate and cost-effective adolescent health promotion and cancer prevention programs.

Adolescents' Health

Health refers to a state whereby an individual or group of people have an absence of disease or impairment, can cope with life demands, and sustain a balance within themselves and with their

physical and social environment (Sartorius, 2006; World Health Organization, 1948). For individuals to become healthy, they must identify and realize aspirations, satisfy needs, and be able to cope with the environment (Public Health Agency of Canada, 2008). Adolescence is a transition stage between childhood and adulthood where the future major causes of disease and death are closely related to the behavioural choices that individuals make at this stage of life (Devi, Surender, & Rayner, 2010; Larson, Story, & Nelson, 2009; Looney & Raynor, 2011; Rodham, Brewer, Mistral, & Stallard, 2006). As part of normal development, adolescents are faced with situations and sometimes make decisions to experiment with behaviours involving diet, exercise, driving, drug and alcohol use, and sexual activity (Eaton et al., 2012; National Research Council (US) & Institute of Medicine (US) Committee on Adolescent Health Care Services and Models of Care for Treatment, 2009). Experimenting with these behaviours can affect their health and likelihood of suffering from illnesses like cancer in the future. In this section, adolescent health is explored. First, focus is placed on adolescent health globally. Then adolescent health in Africa, and finally in Kenya, are explored.

Globally, adolescents face a myriad of health problems. Some of these health problems result from preventable behaviours such as drug and alcohol use. The health problems include injuries, mental health conditions, lower respiratory infections, tuberculosis, alcohol misuse, suicide, and HIV (GBD 2013 Mortality and Causes of Death Collaborators, 2015; Gore et al., 2011; Patton et al., 2012; World Health Organization, 2015b). According to a 2004 global burden of disease study, females between ages 10 and 24 years mainly died from maternal conditions while males mainly died from traffic injuries (Patton et al., 2009). HIV/AIDS and tuberculosis contributed to 11% of deaths in adolescents and young adults (ages 10-24 years), while suicide was the main cause for 6% of all deaths (Patton et al., 2009). Additionally, violence led to 12% of the deaths among males (Patton et al., 2009).

In 2004, in a global population of around 1.8 billion people aged 10 to 24 years old, close to

2.4 million people died from all-cause mortality reasons (Patton et al., 2009). The health and well-being of adolescents and young adults (ages 10-24 years) in developed regions was generally better than their counterparts in developing regions such as Sub-Saharan Africa (Patton et al., 2009). In 2004, Africa had the second highest mortality rates (28%) among adolescents and young adults (ages 10-24 years), while high-income countries had the lowest (3%) (Patton et al., 2009).

Similarly, the leading causes of mortality among adolescents differ from one region to another. For instance, in 2010, adolescents in developed countries mainly died from motor vehicle crashes, unintentional injuries, homicide, and suicide while those in Sub-Saharan African countries mainly died from HIV infections, interpersonal violence, and early childbirth (Patton et al., 2012). Within Sub-Saharan Africa, adolescent girls (15-19 years old) in Chad had the highest maternal mortality rates while those in South Africa had the lowest (Hill et al., 2007).

When comparisons in adolescent health trends over time are made between developed countries such as the United States and developing countries in Sub-Saharan Africa, adolescent mortality rates are decreasing in United States but increasing in Sub-Saharan African countries (Park et al., 2014; Patton et al., 2012). In the African Region, adolescent mortality increased from 34% to 43% of global mortality in 10-19 year olds between 2000 and 2012 (Viner et al., 2011). The top five causes and trends in mortality in high-income countries and the African region have been different. In high-income countries, in 2000, adolescents mainly died from road injuries (7.52 deaths per 100,000 10 to 19 year olds), self-harm (2.41 per 100,000 10 to 19 year olds), interpersonal violence (1.64 deaths per 100,000 10 to 19 year olds), congenital anomalies (1.09 deaths per 100,000 10 to 19 year olds), and drowning (1.07 deaths per 100,000 10 to 19 year olds) (Viner et al., 2011; World Health Organization, 2017b). Two years later, (2012), the top five causes of adolescent mortality were road injury (6.49 deaths per 100,000 10 to 19 year olds), self-harm (4.74 deaths per 100,000 10 to 19 year olds), interpersonal violence (2.24 deaths per 100,000 10 to 19 year olds), drowning (1.39 deaths per

100,000 10 to 19 year olds), and congenital anomalies (0.87 deaths per 100,000 10 to 19 year olds) (Viner et al., 2011). In contrast, in 2000, the top five causes of adolescents' mortality in Africa were diarrheal diseases (25.99 deaths per 100,000 10 to 19 year olds), lower respiratory infections (24.86 deaths per 100,000 10 to 19 year olds), meningitis (21.27 deaths per 100,000 10 to 19 year olds), HIV/AIDS (17.64 deaths per 100,000 10 to 19 year olds) and protein-energy malnutrition (15.83 deaths per 100,000 10 to 19 year olds). In 2012, HIV/AIDS (43.79 deaths per 100,000 10 to 19 year olds) was the leading cause of adolescents' mortality followed by lower respiratory infections (17.63 deaths per 100,000 10 to 19 year olds), meningitis (17.51 deaths per 100,000 10 to 19 year olds), diarrheal diseases (17.34 deaths per 100,000 10 to 19 year olds), and road injury (16.27 deaths per 100,000 10 to 19 year olds) (Kassebaum et al., 2017; World Health Organization, 2017b). In addition to mortality from communicable diseases, the risks for non-communicable diseases including cancer later in life are increasingly visible among Sub-Saharan African adolescents (Patton et al., 2012). More adolescents are becoming overweight, physically inactive, and are increasingly using tobacco (Muthuri, Francis, et al., 2014; Patton et al., 2012).

The situation in Kenya is similar to that of other Sub-Saharan African countries. In Kenya, more adolescents, particularly those in urban areas, are becoming physically inactive and obese/overweight (Adamo et al., 2011; Croteau, Schofield, Towle, & Suresh, 2011; Ojiambo et al., 2012; Onywera et al., 2012), engage in risky sexual relations (Juma, Askew, Alaii, Bartholomew, & van den Borne, 2014; Kabiru & Orpinas, 2009a), and abuse drugs (Chebukaka, 2014; Ndeti et al., 2009). As a result of these behaviours, present Kenyan adolescents are increasingly becoming unhealthy and increasing their likelihood of getting cancer in the future.

In a study by Muthuri, Wachira, Onywera, et al. (2014), it was reported that only 12.6% of Kenyan children between ages 9 and 11 met the global physical activity index of equal to or greater than sixty minutes per day of moderate-to-vigorous physical activity. Factors associated with physical

activity were gender, means of transport, the child's Body Mass Index (BMI), parents' education levels, socioeconomic status, and the type of school attended (private versus public). More children using active transport (22.4%) met the recommended moderate to vigorous physical activity recommendations compared to children using motorized transport (5.5%). In addition, 15.3% of children who are underweight or of healthy weight met recommended physical activity guidelines compared to 2.6% of children that were overweight or obese. Multivariable analysis revealed that boys were more than twice [Odds Ratio (OR) = 2.63; Confidence Intervals (CI) 1.49 – 4.64 p=0.0009] as likely to meet the recommended physical activity guidelines compared to girls. Additionally, children whose parents were more educated and more affluent were more likely to take part in sedentary behaviour compared to children whose parents were less educated or less affluent. The decreased odds of children whose mothers had a diploma, higher diploma, or degree (compared to primary school or lower education level) in meeting recommended physical activity guidelines was 0.25; CI (0.12 – 0.54) p= 0.0008. Surprisingly, children attending private schools were alarmingly 96.4% less likely to meet recommended physical activity guidelines compared to children attending public schools.

Similar findings about physical inactivity among Kenyan adolescents that reside in urban areas have been reported by Ojiambo et al. (2012) and Croteau et al. (2011). In a study involving a sample of 247 adolescents between 12 and 16 years old, Ojiambo et al. (2012) found teenagers residing in the city of Eldoret and its environs to be more likely to engage in moderate to vigorous physical activity than adolescents from rural areas [OR = 7.5, 95% Confidence Interval (CI) 2.9-22.5].

A study by Muthuri, Wachira, Onywera, et al. (2014) also revealed that childhood overweight/obesity in Nairobi, Kenya was 20.8%. Factors that contributed to overweight/obesity among these Kenyan adolescents included higher socioeconomic status, paternal and maternal BMI, mode of transport, educational attainment of their parents, and attending a private school (Muthuri,

Wachira, Onywera, et al., 2014). Being overweight/obese was more likely for children that used motorized transport (25.8%) than for those that used active transport. The odds of being overweight/obese were 4.2 times higher for adolescents that attended a private school than those that attended a public school. Similarly, Kamau, Wanderi, Njororai, and Wamukoya (2011) found that out of 1,479 adolescents between ages 10 and 15 years that attended private schools, 103 (6.9%) were overweight while 245 (16.7%) were obese. For adolescents attending public schools (N=3,846), 220 (5.7%) were overweight while 62 (1.6%) were obese (Kamau et al., 2011). In another study that examined the effect of urbanization on physical activity, sedentary time, and adiposity among Kenyan adolescents, place of residence was a significant determinant of adolescents' BMI. Adolescents that resided in rural areas were more likely to have a lower BMI compared to adolescents that resided in urban areas (Ojiambo et al., 2012).

These studies present useful information on adolescents' health and health behaviours in Kenya. Importantly, they report that adolescents' health, particularly for those that reside in urban areas and come from more affluent families, is increasingly becoming analogous to adolescents' health in more developed countries where there are high rates of physical inactivity and overweight/obesity. Despite presenting these useful findings, there are limitations. For instance, the studies do not present reasons why the adolescents do not take part in physical activity or maintain a healthy weight. Little or no information about adolescents' perspectives of physical activity and healthy body weight is presented. In the future, it will be important for studies to examine what Kenyan adolescents understand about their health, health behaviour (e.g., physical inactivity), and its impact on their future health and risk for illnesses (including cancer). Studies should also examine how adolescents make decisions to engage in behaviour such as physical inactivity and how others (e.g., parents and teachers) influence their decisions regarding health and health risk behaviour. Such information could be useful in informing germane cancer prevention and health promotion programs.

With regard to Kenyan adolescents' engagement in non-protective sexual relations, Kabiru and Orpinas (2009a) found less than one third of the adolescents, or 20.6% (n=192), used condoms consistently. These were sexually active adolescents who had multiple partners. About a third of the adolescents, 32.1% (n=299), were periodic condom users while 47.3% (n=440) of the sexually active adolescents were non users. Adolescents who did not use condoms or were only periodic users were more likely to have initiated sexual relations at a younger age than consistent users. Factors that contributed to early sexual debut were slum dwelling, peer relations and lack of peer role models, not being in school, and perceived high parental monitoring (Kabiru et al., 2010). Sexual activity was also associated with religiosity, perceived parental attitudes towards sexual activity, living arrangements, school characteristics (Kabiru & Orpinas, 2009a), and cultural practices (such as sleeping, funeral, and marriage arrangements where boys could sleep with girls) (Juma et al., 2014).

Ndetei et al. (2009) and Chebukaka (2014), in their study on adolescents' drug use in secondary schools, found that adolescents (ages 13 to 24 years old) commonly consumed alcohol or khat (*mira*), and smoked cigarettes and marijuana. In the study by Ndetei et al. (2009) that involved adolescents between ages 13 and 24 years old in 17 schools in Nairobi, adolescents started consuming alcohol as early as 11 years old. However, the percentage of adolescents starting to drink alcohol decreased with advancement in age. With regard to smoking, 5.3% of the adolescents were active smokers (had smoked in the preceding 30 days) while 27.1% were lifetime smokers (had smoked for more than the preceding 12 months) (Ndetei et al., 2009). In contrast, a study of 181 students (between ages 17 and 20 years old) from 45 schools in western Kenya (more rural compared to Nairobi) found that 55.9% of the high school students used drugs: 43.4 % of the students consumed alcohol, 22.1% smoked cigarettes, 5.6% used khat (*mira*), while 11% used marijuana (Chebukaka, 2014). Furthermore, 15% of the students that took part in the survey used more than one type of drug and 5% used four different types of drugs. Students in the study by Chebukaka (2014) used drugs

because of peer influence, the desire to experiment, depression, to gain courage, because of family histories on drug use, and due to the ease of accessing drugs.

Given that alcohol and smoking can negatively affect one's health and increase their risk for illnesses, Kenyan adolescents' health is not better than adolescents' health in more developed countries (Patton et al., 2009). Because of these risk behaviours, Kenyan adolescents are most likely to develop health conditions including cancer in their later years unless illness prevention and health promotion measures are taken. To ensure that these measures are effective, it is important to first understand what Kenyan adolescents know and think about their current risk behaviour and how this behaviour could affect their future health including increasing their risk for cancer. This information was not included in the prior studies by Ndetei et al. (2009) and Chebukaka (2014). Although Ndetei et al. (2009) and Chebukaka (2014) explore adolescents' risk behaviour using quantitative means, they are limited because they do not provide information about how adolescents perceive these risk behaviours. Also, these studies do not provide information about what informs and motivates adolescents' to engage in these risk behaviours. Moreover, information about how adolescents make the decisions to engage in behaviours such as alcohol use were not explored. The following paragraphs present the literature on adolescents' perception of health, risk, cancer, and cancer risk.

Adolescents' perception of health. Studies on health and health-related issues in adolescents have mainly focused on behaviour regarding what adolescents do and what they do not do and less with adolescents' perception of health (Woodgate & Leach, 2010). In the few studies where youth have described their perception of health, they have expounded on how health is commonly perceived in terms that involve more than physical health. For instance, in a study by Woodgate and Leach (2010), Canadian youth perceived and described health as having more than one type (e.g., mental health and physical health) with the different types of health contributing to one another. In the studies by Woodgate and Leach (2010) and White, Sterniczuk, Ramsay, and Warner (2007), youth also mentioned

that social factors such as families and lifestyle factors contributed to one's health. Children and youth often linked self-reported health and general health perceptions to healthy eating, active living, and avoiding harmful substances such as drugs (Stevens, 2006; White et al., 2007; Woodgate & Leach, 2010). Furthermore, in an ethnographic study by Stevens (2006) that involved young pregnant women who were parenting, young women were cognizant of the harmful effect that unhealthy practices could have on their future health. For instance, some avoided stressful experiences because they perceived that stress could lead to heart conditions later in their lives.

Youth in the study by Woodgate and Leach (2010) described health based on how health and healthy information was relayed to them in their social relations. Participating youth received health information mainly from the media and in school. Relayed health information emphasized lifestyle factors which made the Canadian youth aware of the importance of adopting healthy practices (Woodgate & Leach, 2010). However, some youth practiced unhealthy behaviour in their quest to find balance in lifestyle practices and achieving good health. For instance, some could eat high fat and high calorie foods then take part in a team sport to burn the calories. Such practices highlight some of the complex decisions that youth have to make when it comes to practicing healthy behaviour (Woodgate & Leach, 2010).

From the findings of aforementioned studies, it is possible that how youth perceive and describe health in Canada (Woodgate & Leach, 2010) and the United States (Stevens, 2006) contributes to their health behaviour and eventually to improving youth health in these countries. However, further work is needed to understand how other youth populations, such as African youth, conceptualize health and make decisions regarding health.

Adolescents' perception of risk. Risk taking is engaging in an impulsive manner in behaviours that are highly desirable or exciting but come with the potential for injury or loss (Stalker, 2003). Adolescents are at a stage in life where they are likely to engage in behaviours that involve risks, such

as drinking alcohol, taking illegal drugs, smoking, having unprotected sex, engaging in criminal activity, or careless driving (Arnett, 2000; Wolff, 2012). Adolescents engage in risk taking behaviour because of complex factors that may include the need to gain self-control, self-esteem, and manage stress (Albert & Steinberg, 2011; Steinberg, 2004) or because of psychosocial factors (Steinberg, 2004). According to Byrnes (2003), adolescents may engage in risk taking despite possible negative consequence to further personal gain.

In addition to the above-mentioned arguments, other researchers believe adolescents take part in risk behaviour because of intrapersonal, interpersonal, cultural, and environmental factors (Keeler & Kaiser, 2010). With regard to intrapersonal factors, adolescents may engage in risk taking because of genetics, physical self (Jessor, 1991), pubertal development (Harrell, Bangdiwala, Deng, Webb, & Bradley, 1998), mental capabilities, gender (Rew, Taylor-Seehafer, Thomas, & Yockey, 2001), personal traits, and affect (Cooper, Wood, Orcutt, & Albino, 2003; Tusaie, Puskar, & Sereika, 2007). According to Steinberg (2004), adolescence is a period where one faces increased vulnerability to engage in risk taking behaviour because of a biologically driven disjunction between novelty and sensation seeking (both of which increase dramatically during adolescence) and the development of self-regulatory competence which matures in early adulthood. Therefore, adolescents' risk taking is perhaps a normal, biologically driven and an inevitable process in their life (Steinberg, 2004). As such, risk taking may be a part of healthy adolescent development and a necessary step in life (Rodham et al., 2006). In spite of being well-informed about health risks, sometimes youth struggle with the ability to resist engaging in those risky behaviours (Rodham et al., 2006).

With regard to interpersonal factors, adolescents may engage in risk behaviour because of relationships with persons of influence (Blum, McNeely, & Nonnemaker, 2002; Keeler & Kaiser, 2010). Interpersonal relationships through bonds with parents, peers, or teachers may involve monitoring, communication, or some level of involvement. For instance, adolescents may engage in

smoking because of social networking with their peers. Adolescents may find it important to smoke to maintain friendships or group membership (Jessor, 1991; Seo & Huang, 2012; Woodgate & Busolo, 2015).

Studies also suggest that cultural and environmental factors play a role. Adolescents may interpret and engage in risk and cancer risk behaviour depending on where they reside (urban versus rural) (Coomber et al., 2011; Gale, Lenardson, Lambert, & Hartley, 2012; Gfroerer, Larson, & Colliver, 2007; Wall & Olofsson, 2008; Warren, Smalley, & Barefoot, 2017). These studies posit that adolescents who reside in rural places are more likely to engage in risk and cancer risk behaviour than adolescents who reside in urban places (Gfroerer et al., 2007; Lambert, Gale, & Hartley, 2008). Adolescents, especially those who reside in rural areas, may engage in higher risk behaviour because it is part of their culture (Moreland, Raup-Krieger, Hecht, & Miller-Day, 2013). While these suggestions are possible, studies on Kenyan adolescents' risk-taking behaviour appear to suggest otherwise. Kenyan adolescents who reside in urban places are more likely to be overweight, obese, or physically inactive (Adamo et al., 2011; Croteau et al., 2011; Muthuri, Wachira, Onywera, et al., 2014; Ojiambo et al., 2012).

In a study by Moreland, Raup-Krieger, Hecht, & Miller-Day, (2013), rural Appalachian adolescents' risk perception and behaviour was examined. The study found that adolescents did not perceive behaviour as essentially risky but relied on past experiences to determine the level of risk. Adolescents perceived behaviour as risky when they or someone they knew had experiences that led to some level of harm or loss. As such, adolescents may take a precautionary approach to risk behaviour but may also underestimate the level of control over the risk behaviour. Woodgate et al. (2014) suggests that adolescents may downplay the impact of the cancer risk behaviour. Adolescents may feel taking part in cancer risk behaviour would not increase their chances of getting the disease in the future. Adolescents may fail to practice cancer preventive behaviour because they find the cancer risk

behaviour to be more rewarding (Woodgate et al., 2014). Adolescents may feel taking part in cancer risk behaviour would not increase their chances of getting the disease in future or may find the cancer risk behaviour to be more rewarding.

Adolescents' perception of cancer and cancer risk. Research on adolescents' conceptualization of cancer and cancer risk is only developing. In two studies, adolescents have related cancer with death and detrimental consequences (Mosavel, Simon, & Ahmed, 2010; Woodgate & Busolo, 2017). In the study by Mosavel et al. (2010), 157 randomly selected mothers and their daughters (dyads) were interviewed. Study findings revealed that some of the South African participants thought of death, fear, worry, and emotional distress when they heard the word 'cancer'. Some of the mothers and daughters were worried about the detrimental effects of cancer. Participants were worried about symptoms such as hair loss, pain, and wounds. In spite of the worrying symptoms, Mosavel et al. (2010) mention that some mothers and daughters were optimistic that cancer could be treated if detected early, as long as the patients adhered to treatment. Although some participants had different thoughts of cancer, some daughters had never heard of the disease and nothing came to their minds when investigators asked them what they thought of cancer.

Adolescents have also related cancer risk with lifestyle factors such as smoking, alcohol consumption, and illicit drug use (Mosavel et al., 2010; Woodgate et al., 2014). In the study by Mosavel et al. (2010), some daughters were aware of lifestyle risk factors of smoking and drinking alcohol. In spite of this awareness, 60% of the adolescent girls had never spoken with their mothers about cancer. Despite the useful findings, what informed participants' perception of cancer, participants' experiences with the disease, or knowledge of someone with cancer was not examined. Such information could shed light on what informs South African girls and their mothers' understanding of cancer and cancer risk and add to the growing body of knowledge on adolescents' conceptualization of these phenomena.

In the study by Woodgate and colleagues that explored Canadian youth' understanding of cancer and cancer risk, findings revealed that the majority of Canadian youth were cognizant of lifestyle cancer risk factors like smoking, UV rays exposure, drug use, and unhealthy eating (Woodgate & Busolo, 2015, 2017; Woodgate & Kreklewetz, 2012; Woodgate et al., 2014). Participants believed the length of exposure to the above-mentioned factors contributed to their cumulative likelihood of developing the disease in the future (Woodgate & Busolo, 2015; Woodgate & Kreklewetz, 2012; Woodgate et al., 2014). However, some youth were unaware of Human Papillomavirus (HPV) and were confused about UV rays exposure as cancer risk factors. As a result of unawareness, some youth continued to engage in risk-taking behaviours (Woodgate et al., 2014).

Woodgate and colleagues reported two key findings from their research. First, adolescents appeared to use cognitive processes that are similar to those of adults in their conceptualization of cancer risk and risk behaviour (Woodgate & Kreklewetz, 2012; Woodgate et al., 2014). For instance, some were aware of cancer risk behaviour but continued to take part in the behaviour. Second, adolescents advocated for reduction in cancer risk behaviour particularly for their parents and peers. Some voiced concerns and wished that their parents would stop smoking (Woodgate & Kreklewetz, 2012). Others set limits on their friendship with peers who smoked and distanced themselves from smoking (Woodgate & Busolo, 2015).

Adolescents' decision-making. Adolescents' health is partially influenced by the decisions they make regarding their health and health risk behaviour. Adolescents make decisions to engage in risk behaviour because of myriad complex biological, social, emotional, and cognitive factors (Albert & Steinberg, 2011; Keeler & Kaiser, 2010; Slovic, 2010). Research examining models of factors predicting adolescents' decisions making point to the interplay of "risk and benefit perceptions as well as the role of experience" in modifying adolescents' decisions (Albert & Steinberg, 2011, p. 212). The decision to engage in risk depends on the balance between perceived negative consequences versus

perceived positive consequences (Gullone & Moore, 2000) or perceived benefits (Goldberg, Halpern-Felsher, & Millstein, 2002; Halpern-Felsher et al., 2001; Keeler & Kaiser, 2010; Millstein & Halpern-Felsher, 2002a; Millstein & Halpern-Felsher, 2002b). The system of decision making is thought to develop linearly throughout adolescence. As adolescents grow older, their decision making processes and consequences continue to evolve with older adolescents being more likely to make better decisions regarding health and health risk behaviour (Albert & Steinberg, 2011).

Health Promotion and Illness Prevention Strategies

Adolescents' engagement in health promotion and cancer preventive activities can be challenging. Adolescents can be challenged by lack of support, feeling inhibited, and a lack of encouragement to engage in preventive or health promotion behaviour (Hart & Demarco, 2008; Woodgate & Sigurdson, 2015). At other times, they can engage in behaviours such as physical activity because they visualize the benefit of engaging in them (Loman, 2008). In situations that call for support, adolescents' can benefit from education, empowerment, guidance on decision making, and role modelling (Oscarsson, Hannerfors, & Tydén, 2012; Woodgate & Sigurdson, 2015). For instance, adolescents can gain cancer preventive and health promotion information from parents with knowledge and a positive attitude towards cancer prevention (Oscarsson et al., 2012). This is because adolescents are more likely to follow guidance from people who have a direct influence on them, including parents and health care providers (Oscarsson et al., 2012).

As mentioned above, adolescents experience complicated issues that affect their health risk or health protective behaviour. Importantly, adolescent health promotion and disease preventive programs aim to use relevant and effective approaches to promote health. Health promotion and cancer prevention programs that target adolescents through schools, the family, the community, and the internet are discussed here.

School-based programs. School-based programs are the most common approach to promoting

adolescent health. In a meta-analysis by Sobol-Goldberg, Rabinowitz, and Gross (2013) that involved 32 studies (n= 52,109), school-based programs were slightly effective in reducing the BMI in school children (effect size = 0.076). School-based programs that lasted for more than a year were more promising (Gonzalez-Suarez, Worley, Grimmer-Somers, & Dones, 2009; Katz, O'Connell, Njike, Yeh, & Nawaz, 2008; Sobol-Goldberg et al., 2013). These programs were more likely to be effective if they aimed at providing information to children about nutrition and active living, changing attitudes, behaviour monitoring, environmental changes, involving parents, increasing physical activity, and improving diets (Sobol-Goldberg et al., 2013; Thomas, McLellan, & Perera, 2013; Vasques et al., 2014).

In another meta-analysis about anti-tobacco policy, reviewed studies consistently revealed that comprehensive smoking prohibitions, clear rules regarding anti-smoking, strict policy implementation, education, and preventive efforts were related to a reduction in smoking prevalence (Galanti, Coppo, Jonsson, Bremberg, & Faggiano, 2014). Other promising school health programs include those promoting physical activity (Lonsdale et al., 2013), prevention of illicit drug use (Faggiano, Minozzi, Versino, & Buscemi, 2014), sexual education (Smith et al., 2008), promotion of mental health (Barry, Clarke, Jenkins, & Patel, 2013), personal safety, injury prevention and healthy growth (Wolfe et al., 2009), preventing violent behaviour (Flay, Graumlich, Segawa, Burns, & Holliday, 2004), and promoting adolescents' health promotion capacity (Woodgate & Sigurdson, 2015). When comparing school-based programs and other programs, school-based programs appear to be more effective because they integrate health promotion initiatives into mandatory educational curricula and there is social support from peers and teachers (Jackson, Geddes, Haw, & Frank, 2012).

Family and parent-based interventions. Family-based interventions play a crucial role in adolescents' health promotion. In a systematic review, interventions that comprised parenting skills, group training, homework assignments that required parental involvement, mailed booklets, home

visits, and a combination of these approaches were effective in reducing multiple, health risk behaviours among adolescents (Hale, Fitzgerald-Yau, & Viner, 2014a). Reviewed studies that reported family-based interventions were mainly based on theoretical frameworks and models such as family interaction theory and social or behavioural learning models. These studies often aimed at improving student-to-parent communication, reinforcing refusal skills, teaching better parenting skills, and developing problem solving interventions. Importantly, the interventions demonstrated that health risk behaviour prevention was maintained at between 3 months to 2 years of follow-up (Bauman et al., 2002; Hale et al., 2014a; Schinke, Fang, & Cole, 2009).

Elsewhere, parents played a significant role in influencing health promotion and cancer prevention programs for their children and adolescents. In a meta-analysis by Niemeier, Hektner, and Enger (2012), parents were involved in nutrition education, physical activity education and sessions, behaviour education, and behaviour therapy. However, Downing, Jones, Bates, Sumnall, and Bellis (2011) found parental-based interventions to be inconsistent in reducing sexual risk behaviour among young people. Also, parent-based interventions were more effective than family-based interventions at promoting parent-to-child communication (Downing et al., 2011).

Community-based interventions. In the systematic review by Hale et al. (2014a), community-based interventions that included skills building programs, a youth program with parental involvement, a multicomponent program, and a counseling program that utilized a supportive listening approach were effective. These community-based interventions were effective in preventing and decreasing alcohol, tobacco, and drug use among youth.

Internet-based interventions. On a randomized controlled trial that utilized an internet-based intervention to prevent drug abuse among adolescent girls, girls who were exposed to the intervention had lower rates of alcohol and tobacco use than girls in the control group. (Schwinn, Schinke, & Di Noia, 2010). In a narrative review by Hamel, Robbins, and Wilbur (2011), individually tailored

internet and computer-based interventions that were theory driven and offered in a school setting were more likely to promote physical activity compared to other programs. Hence, Hamel et al. (2011) recommended Hence, recommendation was made for the integration of computer and internet-based interventions into schools' educational curriculums to promote physical activity.

Use of social media interventions on cancer prevention among adolescents is an emerging area. On a study that examined the feasibility and efficacy of a 12-week Facebook-based physical intervention among young adult cancer survivors, Facebook messages, Facebook group discussions, links, and reminders were used with other interventions to improve physical activities (Valle, Tate, Mayer, Allicock, & Cai, 2013). As a result, the intervention group reported a higher increase on moderate-to-vigorous physical activity minutes than their peers in a control group (67min/week ($p=0.009$) vs. 46min/week ($p=0.045$)). However, there was no significant difference between the groups. The Facebook-based intervention group reported significant weight loss over time (-2.1 kg, $p=0.004$) (Valle et al., 2013).

Other promising social media interventions include the use of smoking prevention YouTube videos to reach out to youth (Bottorff et al., 2014). In a study that examined youth responses to YouTube videos on smoking prevention, Bottorff et al., (2014) found positive responses from both male and female youth on the tailored videos. Youth were willing to share the videos on social media as a way of raising awareness about tobacco exposure. Such social media approaches offer great potential for future health promotion and cancer prevention messaging.

Multi-component programs. Health promotion and cancer prevention strategies that appear to be most effective among adolescents include programs that use multiple components, are offered in multiple settings (e.g., school and community) (Goesling, Colman, Trenholm, Terzian, & Moore, 2014; Hale et al., 2014a), and target multiple health risk behaviours (Downing et al., 2011). Jackson et al. (2012) found school-based programs that utilized multiple intervention components to be more

effective at promoting adolescent health compared to programs that use one component (e.g., educational curriculums). Flay et al. (2004) also found that a multi-component approach was effective at reducing violent behaviour, school delinquency, high risk sexual activity, drug use, and provoking behaviour among African American youth.

Similarly, findings from a systematic review by Bleich, Segal, Wu, Wilson, and Wang (2013) report that a combination of interventions implemented in multiple settings were more effective in preventing weight gain among school children than single component interventions that were conducted in the community. Interventions that were offered in the community and included a school component were effective in preventing weight gain irrespective of the study's approach (randomized controlled trial, quasi-experimental evaluation, longitudinal community-based participatory, or a non-randomized controlled trial approach). In the reviewed studies, health promotion and cancer prevention approaches included community awareness campaigns, counselling, dance classes, guided resistance training, physical education at schools, modification in food environments at schools, gardening at school yards, and community capacity building (Bleich et al., 2013).

Other health promotion initiatives that have been used to promote cancer preventive behaviour in other parts of the world include the reduction of structural barriers to accessing cancer preventive initiatives, the use of reminders, and assessment of recipients of the preventive efforts with feedback (Hannon et al., 2013). Partnerships between organizations offering cancer preventive programs have also been used in places such as the United States to ensure better efficacy of cancer preventive initiatives (Hannon et al., 2013). Other strategies for cancer prevention include use of festivals and cultural events to promote cancer preventive practices (Escoffery et al., 2014), use of invitational letters and reminders to encourage women to undergo cervical screening (Albrow et al., 2014), and the use of smartphone applications (Bender, Yue, To, Deacken, & Jadad, 2013).

Cancer Prevention

Cancer prevention can include a variety of health promotion approaches such as education, early screening and treatment, healthy eating, physical activity, vaccination, and avoidance of smoking and alcohol consumption (Kwan, Tam, Lee, Chan, & Ngan, 2011; Ngoma, 2006; Sener & Grey, 2005; Weiderpass, 2010; World Health Organization & Food and Agriculture Organization of the United Nation (WHO/FAO), 2003). Other approaches include positive perception of support from parents and peers, reduced exposure to cancer causing chemicals or pollutants, and a reduction in the spread of infections (Kwan, Tam, Lee, Chan, & Ngan, 2011; Ngoma, 2006; Sener & Grey, 2005; Weiderpass, 2010; World Health Organization & Food and Agriculture Organization of the United Nation (WHO/FAO), 2003). These strategies are more effective when offered to adolescents in a school setting or a combination of school and community settings (Goesling et al., 2014; Hale, Fitzgerald-Yau, & Viner, 2014b; Sobol-Goldberg et al., 2013).

Cancer prevention strategies worldwide. Cancer prevention has received considerable attention globally. Global cancer prevention has usually taken a health promotion approach that includes lifestyle modification. Focus is placed on modifications in nutrition, physical activities, and body composition as ways of reducing the lifetime risk for developing cancer (Kushi et al., 2012; World Cancer Research Fund/American Institute for Cancer Research, 2007). Other strategies include limits on alcohol consumption, avoidance of exposure to tobacco products (Kushi et al., 2012), health education, screening followed by early treatment, vaccination, and avoidance of other cancer risk factors (Centers for Disease Control and Prevention, 2015; Department of Health, Public Health England, & NHS England, 2014; Fu, Bonhomme, Cooper, Joseph, & Zimet, 2014; National Cancer Institute, 2014).

In the following paragraphs, a number of cancer preventive initiatives that take a health promotion approach are presented. Initially, interventions that have been used globally are described followed by

those that are common in Africa and Kenya. Subsequently, approaches that have specifically targeted adolescents are discussed.

Healthy weight maintenance. The lifetime risk for developing cancer can be reduced by maintaining a lean body weight without being underweight (Kushi et al., 2012). Overweight and obesity are associated with an increased risk for developing cancer, particularly of the breast in postmenopausal women (World Cancer Research Fund/American Institute for Cancer Research, 2010), colon and rectum (Norat, Chan, Lau, Aune, & Vieira, 2010), endometrium, kidney, esophagus, and pancreas (Aune et al., 2012; World Cancer Research Fund/American Institute for Cancer Research, 2007). Overweight is also potentially associated with an increased risk for cancer of the gallbladder (World Cancer Research Fund/American Institute for Cancer Research, 2007), non-Hodgkin's lymphoma, and multiple myeloma (Kulie et al., 2011; Reeves et al., 2007).

To reduce the lifetime risk of cancer, it is recommended that one maintains a healthy weight by balancing energy intake with expenditure (Kushi et al., 2012). Energy balance can be achieved by decreasing caloric intake and increasing physical activity. Therefore, to prevent cancer later in life, present Kenyan adolescents may find it useful to maintain a healthy body weight.

Physical activity. Physical activity can reduce the lifetime risk for prostate, breast, colon, endometrium, and possibly pancreatic cancers (Giovannucci, Liu, Leitzmann, Stampfer, & Willett, 2005; Patel et al., 2005; World Cancer Research Fund/American Institute for Cancer Research, 2007). Regular physical activity reduces the risk for various cancers by maintaining a healthy body weight through balancing caloric intake and expenditure, regulating sex hormones, insulin, and prostaglandins, and improving the immune system (McTiernan et al., 2004). The Canadian Society for Exercise Physiology (CSEP) (2016), recommends at least 60 minutes of moderate to vigorous physical activity every day. A variety of aerobic activities and vigorous physical, muscle, and bone strengthening exercises need to be part of at least a 3-day-per-week program. Additionally, several

hours of lightly structured and unstructured physical activities need to form part of a daily routine. Although no known limit is placed on the moderate or intensive physical activity, approaching or exceeding 300 minutes of moderate physical activity or 150 minutes of vigorous physical activity is likely to improve one's protection against cancer (US Department of Health and Human Services, 2008). Kenyan adolescents could benefit from knowledge of the cancer preventive effects of physical activity.

Diet. Cancer can be prevented by consuming foods that promote a healthy body weight. One needs to limit foods that are high in calories and low in nutritional value to help maintain a healthy body weight. Accordingly, Kushi et al., (2012) makes several recommendations that include consuming more plant foods and whole grains instead of refined grains are recommended (Kushi et al., 2012). To reduce the risk for cancer, Kushi and colleagues go further to recommend that one limits the intake of processed meats and red meat and replaces them with fish, poultry, or plant protein like beans. Additionally, one should limit the intake of sweetened beverages such as soft drinks (Kushi et al., 2012). To reduce the risk for developing cancer in one's lifetime, it is recommended that one eats low calorie foods such as vegetables and whole fruits, or small portions of high calorie foods, and limit the intake of energy dense foods such as french fries (Kushi et al., 2012).

Alcohol consumption is an established risk factor for cancer of the larynx, esophagus, mouth, liver, colon/rectum, and female breast (Baan et al., 2007; World Cancer Research Fund/American Institute for Cancer Research, 2007). When combined with smoking, alcohol consumption increases the risk for cancers of the mouth, larynx, and esophagus considerably, compared to either smoking or alcohol consumption independently (Boffetta & Hashibe, 2006). Those who drink alcohol are encouraged to limit their intake to not more than two drinks per day for men and not more than one drink per day for women (de Menezes, Bergmann, & Thuler, 2013; US Department of Health and

Human Services US Department of Agriculture, 2005). By limiting alcohol intake and exposure to tobacco smoke, the risk for developing cancer can be significantly decreased (de Menezes et al., 2013; Gandini et al., 2008).

Vaccinations and infection prevention. Vaccinations are commonly used in the prevention of cervical and liver cancer. Virtually all cases of cervical cancer are attributed to infection with the Human papillomavirus (HPV). HPV types 16 and 18 are responsible for over 70% of all cases of cervical cancer. Thus, HPV vaccinations can significantly reduce the lifetime risk for cervical cancer. Since 2006, two HPV vaccines are available and licensed in over 100 countries (Markowitz et al., 2012). Despite this, populations with the highest incidence and mortality from cervical cancer continue to receive limited HPV vaccinations (Markowitz et al., 2012). Canada, United States, United Kingdom (UK), and Australia were among the first countries to introduce HPV vaccinations with young adolescent girls and boys being the main target groups (Markowitz et al., 2012).

In Canada, Prince Edward Island was the first province to introduce HPV vaccinations to grade 6 boys in a school based program (McClure, MacSwain, Morrison, & Sanford, 2015). The introduction of the vaccine to boys came after about 6 years of introducing HPV vaccine to girls. Vaccine uptake was generally high, with boys reporting a proportion of 79% while girls had a proportion of 85% (Department of Health et al., 2014; McClure et al., 2015). In contrast, most adolescents girls in African countries have yet to receive a single dose of the vaccine (GAVI, 2013, 2014). Vaccine coverage in African countries has been slow with only a few countries carrying out pilot programs (Binagwaho et al., 2012; Finocchiaro-Kessler et al., 2016; Ladner et al., 2012; LaMontagne et al., 2011; Moodley, Tathiah, Mubaiwa, & Denny, 2013; Watson-Jones et al., 2012). One of the main reasons behind the delay in HPV introduction in African countries is the cost of the vaccine which is very high compared to the countries' gross domestic product (Markowitz et al., 2012). To overcome the challenge of meeting the cost, availability, and accessibility, donations have

been sought while organizations like the Global Access to Vaccines Initiative (GAVI) have stepped in to subsidize the cost for low and middle income countries (Markowitz et al., 2012).

According to the World Health Organization (2014b), a vaccine was developed in 1982 to prevent hepatitis B. Since its development and use, the vaccine has demonstrated a 95% chance of preventing hepatitis B and its long-term consequences. Since 1982, over one billion doses of the vaccine have been used worldwide. These vaccines have resulted in tremendous reductions in the risk for liver cancer. For instance, in some countries the risk for liver cancer decreased from 8-15% to less than 1% because of hepatitis B vaccinations. As of 2012, 183 World Health Organization member states vaccinated infants with the hepatitis B vaccine.

Smoking prevention. Tobacco smoking has been linked with increased risk for lung, larynx, esophagus, throat, kidney, mouth, bladder, pancreas, cervix, and stomach cancers (World Health Organization, 2015a). To prevent these cancers, the World Health Organization (WHO) recommends policies on monitoring tobacco use, smoke-free environments, smoking cessation programs, warning labels, mass media, banning cigarette advertisements, and taxation. The WHO refers to these smoking cessation approaches as MPOWER (monitoring tobacco use and prevention policies; protecting people from second hand smoking; offering help to quit smoking; warning about the dangers of smoking; enforcing bans on smoking advertising, promotion, and sponsorship; and raising taxes on tobacco) (World Health Organization, 2013, 2015a). Presently, close to 2.3 billion people (approximately one-third of the global population) are protected by at least one of the MPOWER measures and approximately 1 billion people are protected by at least two MPOWER measures with the highest level of achievement (World Health Organization, 2013). Some of the smoking prevention initiatives and progress based on MPOWER measures are briefly presented here.

The first and second MPOWER initiatives are monitoring tobacco use and prevention policies and protecting people from secondhand smoke. Smoking prevention and cessation policies are part of

the WHO Framework Convention on Tobacco Control. Some of the policy strategies used in smoking reduction include policies and laws that prohibit smoking in public places; prohibition in private and public vehicles, particularly those carrying children; and age restrictions on the sale of cigarettes, with prohibition on selling cigarettes to children or minors (Department of Health et al., 2014). Between 2007 and 2012, approximately 32 countries enacted tobacco use and prevention policies that include complete bans on smoking in public places, workplaces, and public transportation (World Health Organization, 2013). Smoking bans in public places translates to the protection of close to 900 million people from smoking and from secondhand smoke. Since 2012, 350 million people have been protected in 12 countries and one WHO region that passed strong smoke-free policies at the national level (World Health Organization, 2013).

The third MPOWER initiative is to offer help to quit smoking. Progress in pursuing this initiative demonstrates that over half a billion people have access to appropriate smoking cessation programs (World Health Organization, 2013). In these programs, attendees benefit from cost-covered, toll-free ‘quit smoking’ hotlines and tobacco treatment plans (World Health Organization, 2015a). Some of the countries that offer cessation programs include Israel, Romania, United Arab Emirates, and England (World Health Organization, 2009).

The fourth MPOWER initiative, warning about the dangers of smoking, has been implemented in more than 20 countries (over 657 million people) (World Health Organization, 2013). Strong and effective health warning labels have been placed on cigarette packages while national mass campaigns against smoking have been carried out in one-fifth of the countries in the world (over half the world’s population) (World Health Organization, 2013). The fifth MPOWER initiative includes enforcing bans on smoking advertising, promotion, and sponsorship. Since 2008, complete bans on all tobacco advertising, promotion, and sponsorship have been put in place to protect more than half a billion people (World Health Organization, 2013). Finally, the sixth MPOWER initiative (raising taxes on

tobacco products) has been used to prevent smoking and promote cessation. This approach has been slow in implementation; since 2008, only sixteen countries and one territory (with 166 million people) have increased their tobacco products tax rates to sufficiently high levels (World Health Organization, 2013).

Screening. Screening is recommended for the prevention of breast, cervical, and colorectal cancers (Canadian Cancer Society, 2017a). Cancer screening can lead to the early detection of cancers and, if combined with early treatment, may lead to better cancer outcomes (Canadian Cancer Society, 2017a). Screening may include a physical examination and history taking, laboratory tests, imaging procedures, and genetic tests (National Cancer Institute, 2014).

In some parts of Europe and North America, screening for breast cancers was introduced in years preceding the early 1990s (Blanks, Moss, McGahan, Quinn, & Babb, 2000; Duffy et al., 2002; Otto et al., 2003). In Canada, cervical cancer screening was introduced in 1949 (Walton, 1976). Such early introduction has led to a reduction in the incidence of the cancers over the years (Jemal, Ward, & Thun, 2010). In the United States, there has been a decline of over 31% (around 75,000 Americans lives saved) in breast cancer deaths which may be partly attributed to breast cancer screening (Jemal et al., 2010). Similarly, in Japan, the incidence and mortality of liver and stomach cancers has been on the decline since the late 1990s partly because of initiation of early screening with immediate treatment (Ito, Ioka, Tanaka, Nakayama, & Tsukuma, 2009). The United States has experienced decreased levels of cervical cancers because of screening with early treatment that was initiated in the early 1950s (Koss, 1989; Sherman, Wang, Carreon, & Devesa, 2005). Similarly, declining rates of cervical cancer continues to be realized in some European countries, Canada, and Australia because of established cervical cancer screening programs (Arbyn, Raifu, Weiderpass, Bray, & Anttila, 2009; Robles, White, & Peruga, 1996; R. J. Taylor, Morrell, Mamoon, & Wain, 2001). Declining incidence and mortality from skin cancer has been reported in Australia (Aitken, Elwood,

Baade, Youl, & English, 2010) and Germany (Schneider, Moore, & Mendelsohn, 2008) as a result of screening programs. Therefore, education on screening can be provided to present Kenyan adolescents so that they could take part in cancer screening from an informed standpoint when they are of age.

Skin protection. Irregular and intensive skin exposure to UV rays is a significant risk factor for skin cancer (Gandini et al., 2005; Moehrle, 2008). Exposure to UV radiation in childhood and adolescence plays a significant role at increasing the risk for skin cancer later in their adulthood years (Elwood, 1992; Gallagher et al., 1995; Kricke, Armstrong, English, & Heenan, 1995; Westerdahl, Olsson, & Ingvar, 1994; Whiteman, Whiteman, & Green, 2001). Therefore, interventions to reduce skin exposure to UV rays both in childhood and adulthood can greatly reduce the risk for skin cancer (Armstrong & Kricke, 2001). Interventions such as seeking shade, avoiding sun exposure during peak hours of UV rays exposure (10 a.m. to 4 p.m.), wearing skin protective clothing, the use of sun screen, or a combination of these approaches can be used to prevent skin cancer. In a systematic review about the effectiveness of skin cancer protective interventions, Saraiya et al. (2004) make a distinction between the effectiveness of the interventions and whether one is an adult or a young person. Saraiya et al. (2004) report that interventions that promote skin protective clothing among adults are effective while those promoting sunscreen use and sun-protective behaviour are more effective in preventing skin cancer among youth. Education and policy initiatives appear to be effective in increasing skin protective practices in primary schools, recreational, and tourism settings (Jordan, Malerich, Moon, & Spencer, 2014; Olson, Gaffney, Starr, & Dietrich, 2008; Sandhu et al., 2016; Saraiya et al., 2004).

Limiting alcohol consumption. Alcohol consumption increases the risk for several cancers that include post-menopausal breast cancer, and cancer of the larynx, esophagus, mouth, liver, and colon/rectum (Baan et al., 2007; Bagnardi, Blangiardo, La Vecchia, & Corrao, 2001; World Cancer Research Fund/American Institute for Cancer Research, 2007). To reduce the global impact of

alcohol consumption that includes risk for cancer, the WHO recommends a set of principles for policy development and implementation (World Health Organization, 2014a). The WHO recommends policies on alcohol awareness, health services response, community action, limiting drunk-driving and countermeasures. They also recommend policies on regulating availability, marketing, and pricing of alcoholic beverages. Moreover, the WHO makes suggestions for policies on harm reduction, reducing the public health impact of illegal and informal alcohol use, monitoring, and surveillance. To support effective implementation of the aforementioned policies, the WHO developed a global network of WHO national counterparts on the implementation of the global strategy.

As a result of these initiatives, many WHO member governments have instituted plans to reduce the harmful use of alcohol. For instance, in South Africa in 2010, the government established a committee at the highest level possible to urgently develop and implement strategies to reduce the harmful use of alcohol (World Health Organization, 2014a). Their approach to reducing harmful use included campaigns against drinking and driving, closing down unlicensed outlets, and increasing access to alcohol rehabilitation services. In 2011, Belarus adopted a state program for national action on the prevention of harmful use of alcohol for 2011-2015 (World Health Organization, 2014a). Following the adoption, a number of policies were developed. These policies included limiting drinking and driving, banning alcohol marketing on television and radio between 7 a.m. and 10 p.m., increasing taxes on certain alcoholic products, increasing fines, and police control on home alcohol production (World Health Organization, 2014a). Immediate results of these programs included a reduction in per capita alcohol consumption by 6.5% between 2011 and 2012 and by 11.4% between 2012 and 2013. Similarly, there was a reduction in crimes related to alcohol consumption (World Health Organization, 2014a).

Progress on reducing alcohol consumption can also be indicated by the ability of different

countries to develop policy documents and facilitate national awareness programs. Following a WHO's Global survey on alcohol and health which was conducted in 2012, 66 (39%) of the WHO's member states had written national alcohol policy documents (World Health Organization, 2014a). Of those countries, 20% of them were from the WHO African region while 64% of them were from the WHO European region (World Health Organization, 2014a). Of the 66 countries, 30 had adopted the policy documents through their national governments, 18 had adopted them through their parliaments, 13 had adopted the documents through a ministry, while five had adopted the policy documents through another national body (World Health Organization, 2014a). When it comes to national awareness initiatives regarding alcohol use, 138 countries reported at least one alcohol awareness activity. The most common awareness activities targeted drinking and driving, which was reported by 128 countries (World Health Organization, 2014a).

Another global approach to limiting alcohol consumption is community action. Governments and other stakeholders can support and empower individuals and communities to use their knowledge and cultural expertise to adopt preventive approaches to harmful alcohol use (Ramstedt, Leifman, Muller, Sundin, & Norstrom, 2013; World Health Organization, 2014a). Community actions that involve behaviour change, reducing the availability of alcohol, and increasing the enforcement of laws about alcohol purchasing and drinking and driving appear to be effective in reducing alcohol-related harm (Leifman, Sundelin, & Raninen, 2013). For example, since 2006, Zambia has developed policies to curb the harmful use of alcohol. To implement some of these laws, community stakeholders were engaged through a newly established civil society group called "Zambia Network Against Harmful use of Alcohol" (World Health Organization, 2014a, p. 65). One of the key achievements of the Zambia initiative has been the training of 360 health care workers to manage conditions that result from alcohol and other drugs use. Of the countries that took part in the global survey on alcohol and health, 108 reported government support for community action. Governments

often support these communities through training, community programs, and policies (World Health Organization, 2014a).

Other measures used by WHO member countries include limiting legal blood alcohol concentrations, regulating the availability of alcohol, restrictions on alcohol marketing and advertising, and increasing the price of alcohol (behaviour through taxes) (World Health Organization, 2014a). Other ways that the WHO has worked with member countries to reduce the harmful use of alcohol include reducing the negative consequences of drinking by providing responsible beverage services training and correct labeling of alcohol products. Furthermore, the WHO targets illicit and informal alcohol production in member countries and monitors alcohol use. Monitoring and surveillance is usually done using surveys on alcohol consumption (World Health Organization, 2014a).

Health education. Health education is an important strategy for cancer prevention. Through health education, targeted populations are made aware of cancer, cancer risk factors, and how to limit one's exposure to these risk factors. Accordingly, health education is often included in the aforementioned cancer preventive initiatives. For instance, the Task Force on Community Preventive Services found education to be one of the important factors in promoting skin protective practices in primary school, recreational, and tourism settings (Saraiya et al., 2004). Also, skin protection education among middle school students increased their intention to use sunscreen to prevent skin cancer (Olson et al., 2008).

Educational interventions about HPV vaccination have been conducted with parents and teenagers in the United States, India, Sweden, Hong Kong, Canada, and China where results have demonstrated increases in knowledge about HPV and vaccination but have been limited in predicting vaccination behaviour (Davis, Dickman, Ferris, & Dias, 2004; Fu et al., 2014; Kepka, Coronado, Rodriguez, & Thompson, 2011).

Educational interventions have included the use of fact sheets, slide presentations, educational videos, live presentations at schools, and online resources. Theory-based education approaches have offered better cancer prevention effectiveness compared to non-theory based approaches (Ersin & Bahar, 2011). Educational messages have often been based on the gain-loss messaging approach (Fu et al., 2014). Also, targeted messaging, behavioural counselling, and mass media campaigns are useful health education approaches (Holman et al., 2013).

Cancer prevention strategies in Africa. Cancer prevention initiatives in Africa are still in their infancy stages. There is a paucity of cancer and cancer prevention knowledge among African populations (Busolo & Woodgate, 2014; Finocchiaro-Kessler et al., 2016). As a result, cancer prevention initiatives are less established. The majority of African countries are burdened by communicable diseases which receive considerable attention. Common cancer preventive programs in Africa include cervical cancer screening with immediate treatment, HPV and hepatitis B vaccination programs, and breastfeeding practices. Some of these preventive approaches are coupled with health education, awareness campaigns, and health care providers' training (Busolo & Woodgate, 2014; Maree & Wright, 2011). In spite of the availability of aforementioned cancer prevention initiatives, cancer prevention efforts are still deficient. Key areas that are lacking include knowledge creation, cancer prevention policies with government commitment, cost-effective screening, effective cancer treatments, and lifestyle modifications (Busolo & Woodgate, 2014; Finocchiaro-Kessler et al., 2016). In this section, descriptions of some of the common cancer preventive approaches in Africa are discussed.

Vaccinations. Coverage for HPV and hepatitis B virus vaccination is increasing in Africa (Finocchiaro-Kessler et al., 2016). Vaccination programs against HPV and hepatitis B virus aim to reduce the burden of cervical cancer and hepatocellular carcinoma, respectively. In Gambia, hepatitis B vaccination programs were established in 1986 (Bah et al., 2013; Viviani et al., 2008). The

program has demonstrated tremendous progress due to comprehensive population coverage with active surveillance (Bah et al., 2013; Viviani et al., 2008). There has been an increase in cancer registration particularly among young Gambian males (Bah et al., 2013). Additionally, patients that have been diagnosed with hepatocellular carcinoma in Gambia have been carefully monitored and provided with adequate patient care (Peto et al., 2014; Viviani et al., 2008). Furthermore, the follow-up of adults that were vaccinated when they were infants indicates continued protection from chronic liver infections (Peto et al., 2014).

HPV vaccination was introduced to some African countries primarily because of HPV vaccination subsidization by Global Access to Vaccine and Immunization (GAVI) (Youngblood, 2013). In 2013, GAVI conducted a demonstration HPV vaccination project in Kenya. Following the successful demonstration, 21 African countries were poised to participate in analogous demonstration projects between 2014 and 2017 (GAVI, 2014). Prior to the GAVI support initiative, successful pilot HPV vaccination programs were conducted in Rwanda (Binagwaho et al., 2013; Binagwaho et al., 2012), Cameroon (Ladner et al., 2012), Uganda (LaMontagne et al., 2011), and South Africa (Moodley et al., 2013). Besides Cameroon, recipients in the aforementioned countries received HPV vaccines at no cost. Also, these countries used a school-based approach to reach and vaccinate their target population (Binagwaho et al., 2012; Binagwaho et al., 2013; Ladner et al., 2012; LaMontagne et al., 2011; Moodley et al., 2013; Watson-Jones et al., 2012). In Lesotho, a health facilities approach was used in addition to the school-based approach (Ladner et al., 2012). In Rwanda, the HPV vaccination program was conducted throughout the country in partnership with Merck—the manufacturer of the quadrivalent HPV vaccine Gardasil® (Binagwaho et al., 2012). In the pilot program in Rwanda, three doses of the HPV vaccine were successfully administered to over 93% of teenage girls in grade six (Binagwaho et al., 2013).

Although HPV vaccination is only being rolled out to a number of African countries, a

considerable proportion of African adolescents are expected to benefit from it (Cunningham, Davison, & Aronson, 2014). This is because there are reportedly high levels of willingness to receive the vaccine and acceptability among adolescents, their parents, teachers, and other stakeholders (Cunningham et al., 2014; Friedman et al., 2014; Perlman et al., 2014). Acceptability is particularly important in African populations where there are low levels of awareness about cancer, cervical cancer, HPV, and cancer prevention (Cunningham et al., 2014; Masika, Ogembo, Chabeda, Wamai, & Mugo, 2015; Ogembo et al., 2014; Perlman et al., 2014)

Breastfeeding. Exclusive breastfeeding for six months or more reduces the risk for breast cancer (Nagata et al., 2012). Exclusive breastfeeding is common practice among African women (Awatef et al., 2011; Huo et al., 2008). According to Awatef et al. (2011), breastfeeding practices significantly reduced the risk for breast cancer among Tunisian women. Women that breastfed for more than twenty-four months per child had a decreased likelihood of developing breast cancer compared to women that breastfed for less than six months [OR 0.46, 95% CI, 0.28 – 0.76]. Similarly, in Nigeria, women that breastfed had a 7% reduced risk for breast cancer for every 12 months of breastfeeding compared to women that breastfed for fewer months (P trend = 0.005) (Huo et al., 2008). Protection from breast cancer was higher among premenopausal women that breastfed three or more children and for longer durations (Awatef et al., 2011).

Screening. Cancer screening programs are common in Zambia, South Africa, Nigeria, Rwanda, Kenya, and Botswana (Binagwaho et al., 2013; Denny et al., 2005; Huchko, Bukusi, & Cohen, 2011; Odafe et al., 2013; Ramogola-Masire et al., 2012). Screening approaches include ‘screen and treat’ programs, the integration of screening programs into existing HIV/AIDS and maternal/child health programs (Mwanahamuntu et al., 2013; Odafe et al., 2013; Pfaendler et al., 2008; Ramogola-Masire et al., 2012), and the involvement of non-physicians in providing screening services (Mwanahamuntu et al., 2013). In a continent where cervical cancer is the leading cancer,

innovative approaches such as the above-mentioned continue to be needed in the wake of loss to cancer, insufficiency of preventive resources, and lack of adequate health care professionals.

The ‘screen and treat’ approach involves screening women for cervical cancer followed by immediate treatment for low-grade lesions and the referral of high-grade lesions to secondary facilities for appropriate management (Ramogola-Masire et al., 2012). The screen and treat approach is coupled with periodic evaluations for quality improvement. The integration approach to cancer screening often involves including cervical cancer screening programs into established HIV/AIDS and maternal/child health programs. The incidence of HIV/AIDS is high in Africa, leading to considerable attention both locally and internationally. Therefore, combining cancer screening services with HIV/AIDS ones is a cost-effective approach (Mwanahamuntu et al., 2013). To ensure further the effectiveness of cervical cancer screening programs and address a shortage of physicians, nurses and other non-physician health care providers are sometimes trained to screen patients for cervical cancer. This approach ensures that more patients can access and utilize cervical cancer screening services despite structural and systemic barriers (Mwanahamuntu et al., 2013; Odafe et al., 2013; Ramogola-Masire et al., 2012).

Health education and awareness. Cancer awareness through workshops and training are carried out to increase cancer and cancer prevention knowledge and awareness (Nwogu et al., 2014; Ogembo et al., 2014). In areas where health education initiatives have been conducted in African countries, the focus has been on specific cancers and cancer preventive approaches in Zambia (Kapambwe et al., 2013), Nigeria (Miller et al., 2007; Nwogu et al., 2014; Wright, Kuyinu, & Faduyile, 2010), Ghana (Mena et al., 2014), Cameroon (Wamai et al., 2012), and South Africa (Rwamugira & Maree, 2012). Population groups that have been included in these educational initiatives have been health care professionals (mainly physicians and nurses) (Kapambwe et al., 2013; Nwogu et al., 2014),

community members (Mena et al., 2014; Wamai et al., 2012; Wright et al., 2010), parents, and adolescents (Wamai et al., 2012).

In a cervical cancer prevention program in Zambia, marriage counsellors were trained about cervical health and cervical cancer screening as a strategy to improve the rates of cervical cancer screening use. The trained marriage counselors were encouraged to integrate lessons learned into existing counselling services. Over 70 marriage counsellors were trained using a cervical cancer training manual and participated in an evaluation workshop (Kapambwe et al., 2013).

In Nigeria, workshops were delivered in the form of didactic lectures, panel discussions, and interactive sessions to health care professionals (Nwogu et al., 2014). In the workshop by Nwogu et al. (2014), participants were primarily nurses and physicians (89%). Workshop topics focused on cancer statistics, prevention, registration, screening and diagnosis, and treatment options (Nwogu et al., 2014). Expectedly, higher levels of awareness have been realized following these educational initiatives (Nwogu et al., 2014). In spite of these educational initiatives in raising cancer awareness in African countries, a lack of awareness continues to be significantly reported (Busolo & Woodgate, 2014). Therefore, persistent and better approaches to cancer awareness are needed. Such approaches may include nationwide campaigns, better integration of cancer awareness in regular health programs, and the integration of cancer education in high school curriculums. Also, when awareness is introduced early in one's life, such knowledge may be useful in lifetime health promotion and cancer prevention.

Other approaches to cancer prevention in Africa include skin protection. In a limited way, Moroccans use skin protection measures of arm-covering clothes, hats, and sunscreen (Abda et al., 2012; Meziane et al., 2010). Furthermore, some facilitators utilize public and private partnerships to promote cancer preventive efforts (Ogembo et al., 2014; Oluwole & Kraemer, 2013).

Cancer prevention strategies in Kenya. Cancer prevention efforts in Kenya are greatly lacking. Generally, there are minimal public health initiatives directed at raising awareness and programs targeting prevention and control of specific cancer risk factors. The first national cancer control strategy was initiated in 2011 (Ministry of Public Health and Sanitation and Ministry of Medical Services, 2011) while a national tobacco control plan was initiated in 2010 (World Health Organization, 2012). Other cancer preventive initiatives in Kenya have focused on research assessing risk behaviour (e.g., physical inactivity), cervical cancer screening, and HPV vaccination and education (Becker-Dreps, Otieno, Brewer, Agot, & Smith, 2010; Huchko et al., 2011; Kabiru & Orpinas, 2009b; Muthuri, Wachira, Onywera, et al., 2014; Strother et al., 2013; Sudenga, Rositch, Otieno, & Smith, 2013).

Screening and vaccinations. In Kenya, cervical cancer screening, vaccination, and education is often offered in conjunction with HIV screening and treatment or maternal, child/family planning services (Becker-Dreps et al., 2010; Huchko et al., 2011; Strother et al., 2013; Were et al., 2011). For instance, Huchko et al. (2011) and Huchko et al. (2014) found cervical cancer screening and treatment to be feasible within HIV care and treatment units. Prior to initiating the cervical cancer screening program, training and educational campaigns were carried out in the region to create awareness and build capacity for screening efforts (Huchko et al., 2011). The targeted audience included patients, nurses, clinical officers, and peer educators. Posters and talks about cervical cancer and cervical cancer screening were held with patients attending the HIV clinics and in the community. Additionally, clinical officers (who perform minor duties that are analogous to those performed by physicians) were trained in cervical cancer screening procedures and reported a high level of satisfaction with their training (Huchko et al., 2011).

HPV vaccines were recently introduced in Kenya for a national vaccine roll out demonstration program (GAVI, 2014). Results of the vaccine roll out in terms of reach,

effectiveness, challenges, and success are yet to be reported. Prior to vaccine introduction, Kenyan studies on vaccine acceptability indicate mixed levels of acceptability among women (Becker-Dreps et al., 2010; Rositch et al., 2012). In studies by Becker-Dreps et al. (2010) and Rositch et al. (2012), women report high levels of HPV vaccine acceptability and willingness to have their adolescent girls vaccinated. In contrast, some women in a study by Ngugi, Boga, Muigai, Wanzala, and Mbithi (2012) were reluctant to let their children be vaccinated because of vaccine cost and lack of adequate information. Importantly, adolescents in Kenya are starting to receive HPV vaccinations (GAVI, 2013). HPV vaccination of Kenyan adolescents is an important step towards health promotion and cancer prevention efforts.

Cancer prevention research. Cancer prevention research in Kenya has primarily focused on the prevention and control of specific cancers such as cervical cancer (Agurto et al., 2005; Becker-Dreps et al., 2010; Ngugi et al., 2012; Sudenga et al., 2013; Were et al., 2011). In one study, Sudenga et al. (2013) administered a survey to 388 women whose ages ranged from 15 to 53 years old. In their survey, Sudenga et al. (2013) sought to understand the perceived risk for cervical cancer and risk factors that influenced cervical cancer screening uptake. The study found that 91% of the women had heard of cancer and only 29% had heard of cervical cancer. Only 6% of the women had been screened for cervical cancer. Among the participating women, most of them had received information regarding cancer and cervical cancer from health care workers. Also, study findings reported that women were less likely to undergo cervical screening because of fear (16%), lack of time, and lack of knowledge (14%) about the disease.

Sudenga et al. (2013) went further to report that 92% of those who were screened believed cancer was curable if detected early and that screening should be conducted yearly. Also, 65% (245/388) of the women perceived themselves to be at risk for cervical cancer. Women that perceived themselves to be at risk were less likely to feel adequately informed about cervical cancer by their

health care providers and were more likely to intend to go for screening. In the same study, 57% of the women were willing to undergo cervical cancer screening while 5% did not intend to go for screening irrespective of the cost.

In another study, Ngugi et al. (2012) used a mixed methods approach to examine factors affecting cervical cancer screening among women 18 years and older. Fifty in-depth interviews were used to explore awareness, attitudes, and behaviour towards cervical cancer and screening. The Health Belief Model was used to guide the study. Study findings highlighted the lack of awareness of cervical cancer and the benefits of early screening as key barriers to cervical cancer screening. The majority of the women in the study were not aware of cervical cancer. Those that were aware were mainly older than 30 years of age and believed their risk of cancer was increased by hereditary factors, environmental pollutants, diet (lack of eating vegetables and fruits and consuming genetically modified foods), alcohol intake, sexual intercourse, and smoking. Few of the participants attributed cervical cancer to HPV while others attributed it to HIV. Among those who were younger than 25 years and lacked sufficient knowledge about cervical cancer risk factors, some of them attributed the disease to menopause. They believed that once monthly periods cease, then “dirt” accumulates in the body and causes cancer (Ngugi et al., 2012, p. 602). Other misconceptions were that cervical cancer came as a result of failing to take a bath regularly, witchcraft, or curses.

In the study by Ngugi et al. (2012), many of the women believed that cervical cancer was not curable and if one was diagnosed then the uterus would be removed. Some of the women dreaded getting cancer but, at the same time, were less receptive to be screened. Common symptoms of cervical cancer that were reported were vaginal bleeding, painful menstrual periods, pain in the lower abdomen, and painful sexual intercourse. The majority of the women did not know the location of cervical cancer, with only the more educated and women that worked in health care professions correctly linking it to the cervix. In regard to perceived susceptibility, women that were more educated related

cervical cancer to appropriate risk factors. The more educated women talked of pollutants, toxic chemicals, smoking, drinking alcohol, physical inactivity, and failure to eat fruits and vegetables. Some women were cognizant that the virus that causes cervical cancer was sexually transmitted but very few of them correctly mentioned HPV. Some of them referred to HIV.

When it came to perceptions about the benefits of screening, participants had mixed opinions (Ngugi et al., 2012). Some were of the opinion that screening could help detect cancer early while others felt that whether it was detected early or not, cervical cancer could not be cured. Barriers to screening included lack of knowledge. Participants were surprised by the fact that no one talked to them about cervical cancer yet they frequently heard about HIV/AIDS. The cost of screening was quoted as expensive with some women reporting an inability to pay for care or transportation to a health care facility. Some participants feared the screening procedure while others reported that their partners or husbands would not let them go for screening or would not offer them the necessary financial or emotional support. Furthermore, some women felt that health care providers (particularly nurses) were less compassionate, thus making the screening procedure uncomfortable (Ngugi et al., 2012). In recommendation, some participants suggested that information about cervical cancer be relayed to people in churches and included in the education curriculum, and requested that health care personnel at health centres be more forthcoming in volunteering information about availability of screening services (Ngugi et al., 2012). Others suggested passing information about cervical cancer screening through women's groups or HIV awareness and screening programs or friends.

In another cervical cancer study by Were and colleagues (2011), 219 adult women completed a survey and were screened for cervical cancer. This study sought to establish the women's perceptions of risk and barriers to cervical cancer screening. The study found that 12.3% of women had taken part in screening, 22.8% perceived themselves to be at risk for cervical cancer, 42% had no opinion regarding their risk, 35% perceived themselves as not being at risk, while 65% of the women desired to

be screened. Furthermore, there was a positive relationship between women that desired to be screened and their perception of being at risk for cervical cancer. Barriers to cervical cancer screening included fear of abnormal results (22.4%) and lack of finances (11.4%). Over 60% of the women had their first sexual debut when they were younger than 19 years of age and 54.1% of the women had two or more sexual partners. Despite the fact these women were chosen from a family planning clinic, 18.3% were not using any form of contraception. In a study on breast cancer in Kenya, Muthoni and Miller (2010) used two focus groups to assess the knowledge, attitudes, and behaviour towards breast cancer and breast cancer screening among adult women. The study was based on the Health Belief Model and involved women from urban and rural locations who were of different socioeconomic backgrounds. The study found that breast cancer was perceived as a highly severe disease. Urban middle-income women were more knowledgeable about breast cancer than their rural counterparts. All women were aware that heredity was a risk factor for breast cancer. Urban middle-income women linked breast cancer risk to lifestyle risk factors such as sedentary lifestyles, foods that contain preservatives, and stress. On the other hand, rural women believed that breast cancer was a result of retained breast milk, keeping money or mobile phones in one's bra, certain plants, or witchcraft.

All women recognized that a lump in the breast was one of the symptoms of breast cancer (Muthoni & Miller, 2010). Some women talked about pain, itching, discharge, or soreness. Women from the urban middle-income group were more likely to describe mammography as a breast cancer detection measure while women from other groups were largely unaware of breast cancer detection measures.

Women perceived themselves as vulnerable to breast cancer and believed that breast cancer was severe and death was the most likely outcome. Generally, women did not perceive early and regular screening to be beneficial. Barriers to screening were a lack of funds, lack of support from the husband, and inaccessibility to information. Those that had learned about breast cancer had received breast

cancer information from friends and relatives, some of whom had suffered from breast cancer. Similar to recommendations made in the study by Ngugi et al. (2012) on improving cervical cancer awareness, women in the study conducted by Muthoni and Miller (2010) suggested that breast cancer information be communicated through women groups, churches, and health clinics.

The progress in cervical and breast cancer research is impressive to note. The focus on cervical cancer and adult women could be partly because Kenya has one of the leading rates of cervical cancer in the world. Also, attention to cervical cancer could be because of its association with HIV/AIDS that continues to be a concern in this part of the world. As much as focus on cervical cancer helps to address the specific challenge that it poses to Kenyans, more research that includes focus on other cancers and that involves adolescents is desired. However, most of the studies have utilized quantitative methods and have involved adult women (Ngugi et al., 2012; Sudenga et al., 2013; Were et al., 2011). By using quantitative means, these studies have provided limited information regarding participants' understanding of cancer, cancer risk factors, and cancer prevention.

For instance, Sudenga et al. (2013) sought to examine the knowledge and attitudes towards cervical cancer screening among women and their perceptions of cervical cancer risk, using survey methods. However, the reliability and validity of the survey was not reported, making it difficult to determine the extent to which the survey adequately measured the women's knowledge and perceptions. Also, the reliance on a quantitative approach might have limited the way the women expressed their awareness and thoughts about cervical cancer screening. Women that had been screened for cervical cancer were less willing to undergo screening in the future. Because the researchers used a structured survey to collect their data, reasons for unwillingness to undergo cervical cancer screening in the future were not explored. When women reported fear as one of the reasons for not going for screening, more information about the meaning of fear could have been explored through qualitative means. For instance, did women fear the procedure, health care providers, or knowing the

screening results? When such information is explored using qualitative means, participants have the opportunity to express their experiences, meanings, and perceptions in their own words. Also, the reasons why younger women perceived themselves to be at lesser risk compared to the older women could be explored by qualitative means.

Similarly, Becker-Dreps et al. (2010) and Rositch et al. (2012) provide useful information about women's acceptability and willingness to have their adolescents vaccinated, but these studies are limited in information regarding willingness and acceptability. Ninety-five percent of the women in the study by Becker-Dreps et al. (2010) were willing to have their daughters vaccinated but none of them knew about the HPV vaccine, while only 15% had heard of cervical cancer before taking part in the study. Most of the participants would only let their children be vaccinated if one shot was administered (86%) and the vaccine cost was less than 100 shillings (equivalent of USD \$1.32 at the time) (75%). By using quantitative means to measure willingness, the study by Becker-Dreps et al. (2010) was limited in terms of what willingness meant to the participants. Were participants willing only when certain conditions were met? Was willingness more about cost or the number of shots and less to do with perceptions towards cervical cancer prevention? What other reasons would affect their willingness? If participants had limited knowledge about HPV and cervical cancer, why would they be willing to let their daughters be vaccinated? To better inform cervical cancer prevention efforts such as HPV vaccination plans, more information that can be gathered through qualitative approaches is desired.

The qualitative study by Ngugi et al. (2012) provides useful information on adult women's perception, knowledge, and attitudes about cancer and cancer screening, and their suggestions for better cervical cancer prevention efforts. For instance, one participant related her awareness of cervical cancer to culture, familial relations, and value of alternative forms of medicine (such as witchdoctors). She went on to mention that in her community, disrespect for one's elders could result in a curse which

could be in the form of an incurable disease such as cancer.

In as much as women in the above-mentioned study made suggestions for health promotion approaches that could be cost effective and far reaching, similar information from adolescents continues to be desired to inform cancer prevention efforts for this population. Accordingly, Were and colleagues (2011) emphasize the need to target adolescents in cancer prevention efforts. These efforts need to assess adolescents' understanding of cancer, cancer risk, and cancer prevention, promote cancer and cancer prevention awareness, and promote healthy practices that reduce their engagement in risk behaviour. Such early engagement may inform adolescents' health promoting behaviour as they grow up into adults. Conducting research with adolescents could examine whether factors that affect awareness and preventive efforts among adult women (e.g., place of residence—rural vs urban, socioeconomic status, and level of education) are analogous to those that affect adolescents. Also, such research will most likely inform development of cancer preventive programs that can reduce cancer incidence and mortality in the long term.

Cancer awareness. Knowledge levels about cancer are low in sub-Saharan Africa including Kenya (Anorlu, 2008; Becker-Dreps et al., 2010; Duron et al., 2013). Studies to ascertain cancer knowledge and attitudes that have been done in Kenya have mainly focused on adult women and cervical cancer (Agurto et al., 2005; Ngugi et al., 2012; Sudenga et al., 2013; Were et al., 2011). In these studies, levels of cancer awareness in general were higher than the awareness of specific cancers such as cervical cancer. In a study by Sudenga et al. (2013) that involved 388 adult women, 91% of the women had heard of cancer but only 29% had heard of cervical cancer. Similarly, Becker-Dreps et al. (2010) found that 89% (130) of women had heard of cancer but only 15% (22 women) had heard of cervical cancer.

Another study that examined knowledge about cancer of the esophagus among 81 Kenyans between 18 and 91 years living in Bomet found that 30% of the participants attributed cancer of the

esophagus to smoking, 11% to alcohol, 12% to family history, and 41% attributed it to all three risk factors (Duron et al., 2013). Eleven percent of the participants smoked, 15% consumed alcohol, 11% had a family history of cancer, while 9% had a family history of cancer of the esophagus (Duron et al., 2013). Sixty-two percent of the participants believed cancer prevention was possible and 82% were of the opinion that early detection could improve cure rates. Most of the participants (79%) accurately quoted difficulty in swallowing as a symptom for cancer of the esophagus. In terms of treatment, 40% thought that herbal therapy was the treatment of choice while 49% talked of surgery. Most of the participants acknowledged that this cancer had poor prognosis; 61% stated that people die from cancer of the esophagus, while 47% were of the opinion that deaths normally occurred in the 5 years following diagnosis (Duron et al., 2013).

When it came to barriers against accessing care, some participants talked of cost (33%) while others talked of fear of cancer diagnosis (29%) as the main barriers (Duron et al., 2013). This was despite the fact that the local hospital where this research was conducted from offered free screening services for cancer of the esophagus. To elaborate on cost as a barrier to seeking care, transport cost emerged as a major barrier. To some participants (37%), cost of transport to the hospital was equivalent to a third of their monthly income, thus they could not afford to go for cancer screening (Duron et al., 2013).

Although the above-mentioned studies provide important information on awareness of cancer of the cervix and esophagus, the studies utilize quantitative methods of data collection that fail to provide more information on reasons behind study findings. For instance, how did the participants describe cancer and cancer risk factors? What did cancer or cervical cancer mean to the women in the studies by Sudenga et al. (2013) and Becker-Dreps et al. (2010)? Specifically, information is needed about what comes to mind when women think of cancer and cervical cancer. Such information could increase our understanding on why Kenyan women may be aware of cancer in general but not aware

of cervical cancer. Also such information could be useful in designing germane cancer prevention programs. For those participants that were aware of cancer of the esophagus cancer but engaged in behaviour such as alcohol consumption, what were their thoughts about their risk for cancer of the esophagus? Also, given the availability of free screening services, what did these services mean to the participants? The study by Duron et al., (2013) could also provide more findings based on different age groups given the wide variation in the ages of study participants.

To the best of my knowledge, no research assessing Kenyan adolescents' understanding of cancer in general or of a specific cancer has been conducted. Also there appears to be no research examining adolescents' understanding of cancer risk and cancer prevention. Such research is critically missing. Research on adolescents' understanding of cancer, cancer risk, and cancer prevention can be useful to guide initiation of adolescent health promotion and cancer prevention programs. Adolescent health promotion can guide these individuals into practicing health-related behaviour that can reduce their lifetime risk for cancer. Therefore, the proposed research is needed.

Summary

This literature review reinforces why conducting this study on Kenyan adolescents' understanding of cancer, cancer risk, and cancer prevention was so necessary. Cancer is an emerging crisis in Kenya and it is bound to worsen. This is in part due to present adolescents' risk-taking behaviours such as smoking that may increase their chances of getting cancer in later years. In spite of this awareness, there is limited attention to cancer prevention in Kenya. Common cancer preventive approaches around the world focus on health promotion behaviour which can be challenging for present adolescents.

Adolescents are in a transitioning period that appears to affect their health decisions. Sometimes, adolescents engage in health risk behaviour because of complex reasons. Despite the complexity of factors that influence adolescents' risk-taking behaviour, the initiation of healthy

behaviours during adolescence may significantly impact their health in the future. Often, health promotion and cancer preventive initiatives that are conducted with adolescents that attend schools are successful in influencing them to practice healthy behaviour. Given this understanding, this theoretically driven study sought to determine Kenyan adolescents' understanding of cancer, cancer risk, and cancer prevention as an initial step in the development of adolescent cancer prevention programs in Kenya and other parts of Africa. In the following chapter, the theoretical underpinnings of this research are presented.

Chapter 3: Theoretical Perspectives

Introduction

In this chapter, the theoretical frameworks that guided this study are described. Chinn and Kramer (2011) define a theory as an innovative and rigorous structure of concepts that project a tentative, definite, and systematic view of phenomena. Others define a theory as “a set of interrelated concepts, definitions and propositions that present a systematic view of events or situations by specifying relations among variables, in order to explain and predict events or situations” (Glanz, Rimer, & Viswanath, 2008, p. 26). A model, on the other hand, is defined as a schematic description or symbolic representation that presents certain perspectives about the nature and/or function of phenomena (McEwen, 2011). Research that is based and guided by theory tends to provide more useful findings (Chinn and Kramer (2011). This is partially because theories are developed following extensive research that presents patterns in the relationship between concepts and prediction of outcomes in different settings and over time.

To understand Kenyan adolescents’ understanding of cancer, cancer risk, and cancer prevention, two theoretical underpinnings were used to guide this study: the Health Belief Model and Symbolic Interactionism. According to the Health Belief Model, individuals engage in disease preventive behaviour based on their perceptions towards the illness and illness prevention (Rosenstock, 1966). According to Symbolic Interactionism, people act on things (including risk factors) based on the meanings placed on those things, and people derive their meanings about things based on social interactions (Blumer, 1969). In this chapter, a critical examination of the Health Belief Model and Symbolic Interactionism is presented. Furthermore, the relevance of the Health Belief Model and Symbolic Interactionism in guiding this study on adolescents’ understanding of cancer, cancer risk, and cancer prevention is explored.

Health Belief Model

The Health Belief Model was formulated in the 1950s amid concerns about poor public engagement in preventive health behaviour, particularly chest x-rays and vaccinations (Rosenstock, 1966). At the time, the United States Public Health System (USPHS) emphasized disease prevention as a strategy to keep the nation healthy. Importantly, disease preventive measures of screening and disease awareness campaigns were carried out to engage the public in disease prevention activities. Unexpectedly, people were less receptive to preventive messages even though their risks for contracting diseases such as tuberculosis were evident. Accordingly, several researchers including Hochbaum and Rosenstock sought to understand the reasons behind poor disease prevention practices. The results of studies that were conducted led to the development of frameworks and models including the Health Belief Model (Carpenter, 2010; Rosenstock, 1966).

The Health Belief Model has been used to predict and direct health behaviour research and programs with positive outcomes (Carpenter, 2010; Janz & Becker, 1984). The model was modified to include overall motivation (Becker, Drachman, & Kirscht, 1974) and self-efficacy concepts (Rosenstock, Strecher, & Becker, 1988). Furthermore, the model has undergone a remodeling of construct relationships (Janz & Becker, 1984). In spite of these suggestions, most researchers and program developers continue to use the original model with a focus on the four core variables of perceived susceptibility, perceived severity, perceived benefits, and perceived barriers (Carpenter, 2010). In the following paragraphs, the Health Belief Model concepts are described.

Health Belief Model concepts are perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy (**See Appendix B**). Perceived susceptibility is described as a subjective feeling about one's likelihood of being in real danger of a disease or health condition (Rosenstock, 1966). Perceived severity is the subjective feeling about the seriousness of the disease in question. According to Rosenstock (1966), these are thoughts about how

difficult it will be for the person if he or she suffers from the disease and the challenges that the disease can create for the person and his/her close social relatives. If the risk of contracting the disease is perceived as real and highly likely, the person will take an auspicious preventive action. At this point, the concept of perceived benefit becomes important. Perceived benefit refers to thoughts about the significance of taking a preventive action against the disease (Rosenstock, 1966).

Often, taking an auspicious action may be opposed by factors such as cost or accessibility. These opposing situations or obstacles are referred to as barriers and are labelled as perceived barriers in the Health Belief Model (Rosenstock, 1966). Rosenstock (1966) describes perceived barriers as subjective counter-preventive actions that the person at risk has to consider in addition to perceived benefits before taking the disease preventive action. Perceived barriers may include cost, time, and transportation. According to Rosenstock (1966), if perceived benefits outweigh perceived barriers, then the person will take preventative action.

Furthermore, the decision to take the preventative action may be informed by cues to action which are triggers to engage in the disease preventative action (Rosenstock, 1966). Cues to action include personal feelings, reminders, family or friends' illness experiences, or media information (Rosenstock et al., 1988). These triggers come into play when the person perceives to be in real danger (perceived susceptibility and severity) and ready to act, and finds the energy to act on the beneficial perception (perceived benefit) with minimal resistance (perceived barriers) (Rosenstock, 1966).

The last construct in the Health Belief Model is self-efficacy which refers to confidence in one's ability to take action (Rosenstock et al., 1988). Someone with high self-efficacy will likely take the preventative action.

Model assumptions. The Health Belief Model operates on a number of assumptions. The model assumes that the individual in question is rational, can make sound decisions about susceptibility, severity, benefits, and barriers, and is capable of taking action (Rosenstock, 1966). The

model also assumes that if the individual in question feels susceptible to a disease, the person will think of ways to prevent the disease based on cues to action (Rosenstock et al., 1988).

Next, the model assumes that the individual in question will think of disease severity and preventive actions. Also, it is assumed that the likelihood action will be favorable and if taken, will prevent the disease in question. The next assumption is that the individual in question is faced with a potential disease that requires recommendation for behaviour change (Rosenstock, 1966). Some diseases or conditions require behaviour change while others do not. The Health Belief Model also assumes that everyone has access to or is able to access equal information about the disease or illness in question. The model goes further to make assumptions that cues to action, such as media information will encourage people to act in a health protective manner and that disease prevention or health protection is the main goal in the person's decision-making process.

Model strengths and weaknesses. The Health Belief Model has been used for over half a century to effectively predict and guide health related behaviour research and programs (Champion & Skinner, 2008). The established model has been utilized as a framework to predict and organize factors associated with cancer prevention. For instance systematic reviews by Brewer and Fazekas (2007), Radisic, Chapman, Flight, and Wilson (2017), and Cunningham et al. (2014) used the Health Belief Model constructs to analyze decision-making about HPV vaccine acceptability in the United States, Australia, and African countries respectively. In Kenya, the Health Belief Model has been used to guide research on cancer screening (Muthoni & Miller, 2010; Ngugi et al., 2012). In their work, authors find the model to be a useful framework for organising and understanding relevant factors that guide cancer prevention. Because of the model's expansive and effective use, in cancer prevention research, it was chosen to guide the examination of Kenyan adolescents' understanding of cancer, cancer risk, and cancer prevention.

Success in using the Health Belief Model to guide research is partly because the model is simple and has been structured in such a way that it is easy for researchers to identify concepts and frame research interventions based on those concepts. The strength of the Health Belief Model is also due to the relevance and predictability between model constructs and preventive health behaviour (Carpenter, 2010; Janz & Becker, 1984; Zimmerman & Vernberg, 1994). Perceived benefits and perceived barriers constructs appear to measure correctly their prediction for engagement in preventative behaviour (Carpenter, 2010). Additionally, perceived threat (risk) which is described as perceived susceptibility and perceived severity appears to be critically relevant to many health-related behaviours (Champion & Skinner, 2008). In addition to the aforementioned strengths, perceived risk construct is approached as a combined perceived susceptibility and perceived severity which is unlike the approach taken in other health behaviour models that approach perceived risk using a single construct (Champion & Skinner, 2008). By using these two constructs, the model is strengthened and accounts for more factors that influence risk behaviour change.

The strength of the Health Belief Model is that it is cognitively-based and focuses on individuals' health related perceptions which perfectly fit with the objectives of this study. The model has been used where knowledge and beliefs are critical in predicting behavioural intention (e.g., intention to vaccinate) than behaviour per se (e.g., vaccine initiation) (Armitage & Conner, 2000; Bastani et al., 2010; Gibbons, Kingsbury, & Gerrard, 2012; Glanz & Bishop, 2010; Glanz et al., 2008; Kelly, Melnyk, Jacobson, & O'Haver, 2011; Radtke, Scholz, Keller, & Hornung, 2012). In the hope of developing meaningful and relevant health promotion and cancer prevention programmes that inform the behavioural intentions of Kenyan adolescents, it is imperative to understand their perspectives of cancer, cancer risk, and cancer prevention. The Health Belief Model can be very instrumental in determining opportunities for health education and health promotion.

The usefulness of the Health Belief Model as a tool for understanding and predicting factors associated with decision making is a strength. The model provides a basis for understanding decisions associated with cancer risk or cancer prevention by placing emphasis on risk evaluation. Among the model constructs, decision making receives attention whereby the model theorizes that the way individuals perceive risk and evaluate danger can affect how they make decisions about their health (Gibbons et al., 2012). For instance, Kenyan adolescents may be more likely to stop smoking (cancer risk behaviour) if they associate smoking with a negative health outcome (getting cancer). That is, the susceptibility and severity of cancer which are perceived as significant risks inform the decision to take a preventative action (Conner & Norman, 2005; Gibbons et al., 2012; Glanz & Bishop, 2010; Glanz, Rimer, & National Cancer Institute (US), 1997; Rosenstock, 1966; Rosenstock et al., 1988; Sharma, 2011)

Despite these strengths, the relationship between perceived susceptibility and perceived severity in creating perceived risk is sometimes unclear (Champion & Skinner, 2008). At certain times, perceived severity is required to be at a certain level for perceived susceptibility to become a powerful predictor of taking a preventive action. If an adolescent perceives oneself to be at risk of getting cervical cancer but does not consider the cancer to be severe enough, the adolescent may not take a preventative action. Therefore, it is likely that perceived susceptibility is a stronger predictor of disease preventive activity when severity is considered to be high than when it is low. If this is the case, then the Health Belief Model needs to reflect this. This effect can be reflected by including a multiplicative variable that combines perceived severity and perceived susceptibility instead of considering them independently.

The predictive power between the Health Belief Model concepts does not appear to be constant. Perceived benefits and barriers appear to be strong predictors of behaviour when perceived risk (perceived susceptibility and perceived severity) is high than when it is low (Champion & Skinner,

2008). In situations where perceived risk is low, perceived benefits and barriers do not need to be salient (Champion & Skinner, 2008). These relationships, however, may be altered in situations where benefits are perceived to be very high and barriers are very low. Consequently, the threat may not need to be high if perceived barriers are very low. Therefore, the predictive power of one construct in the Health Belief Model appears to depend on the predictive power of another.

Another weakness is the likelihood of falsely strong estimates in the relationships between model variables and behavioural adoption (present or recalled) when the model is applied to cross-sectional studies (Rosenstock, 1966). Falsely strong estimates are possible because once someone has adopted a behaviour, the person is likely to change his or her beliefs to reflect the behaviour. Therefore, a cross-sectional assessment may not yield accurate results (Carpenter, 2010; Rosenstock, 1966). If any meaningful results are to be achieved in cross-sectional studies, Rosenstock (1966) argues that the person needs to maintain perceptions of the variables after adopting the new behaviour which is not always easy. In cross-sectional studies, measurements are often conducted once. Therefore, the person adopting the new behaviour may have lesser perceptions of risk, severity and barriers unless their experience of overcoming the barriers is greater than they perceived before adopting the behaviour (Janz & Becker, 1984). Hence, unless one measures the Health Belief Model variables before an individual decides to or not to—engage in a behaviour, the results could misrepresent the ability of the model to predict behaviour (Carpenter, 2010). While the likelihood of falsely strong estimates between variables and behaviour is a model weakness, the present study focuses on examining adolescents' conceptualizations of cancer, cancer risk, and cancer prevention at one point and does not seek to examine a change in their conceptualizations before and after changing behaviour. In addition, more attention is placed on behavioural intentions rather than the behaviour per se.

Another weakness of the Health Belief Model is that the model has a non-significantly lower behavioural predictive power when compared to the Social Cognitive Theory and Theory of Reasoned

Action (Harrison, Mullen, & Green, 1992; Zimmerman & Vernberg, 1994). In addition, some of the model variables are predictive of behaviour while others are not. In a meta-analysis by Janz and Becker (1984), barriers, benefits, and susceptibility variables were predictive of behaviour while severity was not. Perceived barriers were the strongest predictors across all studies and behaviours (Janz & Becker, 1984). Similarly, in a meta-analysis by Carpenter (2010), benefits and barriers emerged as strong predictors of behaviour while severity was weak. Susceptibility was almost unrelated to behaviour (Carpenter, 2010).

In spite of the above-mentioned findings, each of the meta-analyses had limitations. The meta-analysis by Zimmerman and Vernberg (1994) included studies that examined the predictability of four Health Belief Model variables together with studies that examined six variables. Variation in included studies might have obscured an examination on the ability of the original and expanded Health Belief Model to predict behaviour. In the meta-analysis by Janz and Becker (1984), authors counted statistically significant relations instead of estimating the mean effect sizes of the variables. As such, the estimation of strength between the variables is brought to question and provides an inconclusive picture about the variables' predictability. In the meta-analysis by Carpenter (2010), the older Health Belief Model was examined even though modified model versions existed. Also, meta-analysis findings were based on a small number of studies (Carpenter, 2010).

Harrison et al. (1992) conducted another meta-analysis where they found that retrospective studies had substantially larger effect sizes than prospective studies. Therefore, unlike the intention of the model to predict behaviour, meta-analytic findings posit that the model is actually better at examining past behaviour than it is at predicting future behaviour (Carpenter, 2010; Harrison et al., 1992). This could be a model strength and weakness. It could be a model strength in broadening its applicability to health behaviour (past and future) and a weakness in model appropriateness for predicting behaviour.

As an individual-level theory of behaviour, the Health Belief Model may not capture macro-level impediments that synergistically influence preventive health behaviour. Instead of viewing the Health Belief Model as providing definitive answers regarding conceptualization of cancer, cancer risk, and cancer prevention, it may be more constructive to view the model as guiding the examination of critical parts of the disease prevention puzzle. The critical parts that must always be considered only in reference to the larger picture. In addition, the model may be used with other theoretical models to address other factors (e.g., illness meanings) that direct cancer risk and cancer prevention intentions. In this study, the researcher utilizes symbolic interactionism in addition to the Health Belief Model to arrive at a better understanding of youth conceptualization of cancer, cancer risk, and cancer prevention within their social world.

In summary, the Health Belief Model is characterised by both strengths and weaknesses in its application to behavioural health research and programs (Carpenter, 2010; Champion & Skinner, 2008). The focus has mainly been on the original model whose health risk or health promotion behaviour predictive ability is limited compared to the expanded model. The expanded Health Belief Model is rarely examined in systematic analyses because of a limited number of studies applying it. However, a review of studies using the Health Belief Model constructs present it as an established model whose constructs affect individuals' choices towards disease prevention or health promotion behaviour (Brewer & Fazekas, 2007; Cunningham et al., 2014; Radisic et al., 2017). In this research study, the revised Health Belief Model that includes the self-efficacy concept was used.

Symbolic Interactionism

Symbolic Interactionism which was coined by Herbert Blumer in 1937, postulates that humans are social objects who become so because of adopting the standpoints of others (Blumer, 1969). Human beings act towards phenomena and others based on meanings they attach to their social environment (Berg, 2007). When people interact with their environment, they make symbols in their

mind and form attitudes that help them to make meaning of their surroundings (Korgen & White, 2008). Accordingly, when people interact, they communicate using symbols such as language that represent the meaning they attach to their worlds (Berg, 2007). Therefore, Kenyan adolescents could make sense of cancer, cancer risk factors, and cancer prevention strategies based on the meanings they attach to certain factors (including what is often perceived as risk) in their environment.

A symbol becomes genuinely important when the recipient ascribes the same meaning to the symbol as the source of the symbol (Watson, 2010). Therefore, to gain a better understanding of symbols that people ascribe to their life worlds, one needs to examine these symbols from the “culturally indigenous position” of the person (insider) that is using the symbols rather than impose “some *a priori* externally derived” form of understanding (Watson, 2010, p. 311). Accordingly, the researcher in this study examined Kenyan adolescents’ perceptions of cancer, cancer risk, and cancer prevention from their culture and social relations as adolescents. The researcher arrived at the same or close to the same meaning as to that ascribed by Kenyan adolescents. To arrive at this meaning, the researcher utilized open-ended interviews and focus group discussions based on a focused ethnographic approach to allow adolescents to express their emic perspectives in their own words (symbols). The researcher used his “culturally indigenous position” (Watson, 2010, p. 311) as a Kenyan that went through a similar education system as the one that participants were going through to get closer to adolescent’s meanings. Additionally, the researcher conducted the study from the local settings (schools) in Kenya to situate himself in an environment that informs adolescents’ understanding.

Symbolic Interactionism is appropriate as one of the guiding frameworks for this study because Symbolic Interactionism emphasizes the significance of the social meanings that individuals attach to their social worlds and supports the notion that people respond to situations or objects based on the meanings they attach to those situations or objects (Berg, 2007; Watson, 2010). Kenyan adolescents interact with their peers, teachers, parents, community, and health care personnel which affects how

they respond to situations and the meanings they attach to those situations. Importantly, this study sought to understand adolescents' conceptualization of cancer, cancer risk, and cancer prevention; the meanings ascribed to these concepts; and how those meanings influence adolescents' engagement (or failure to engage) in health promotion.

Symbolic Interactionism was also congruent with this study in terms of how adolescents made their descriptions of cancer based on their life worlds as adolescents. Symbolic Interactionism helped to gain a better understanding of the association between adolescents' understanding of cancer, cancer risk, and cancer prevention; how their understanding relates to their actions, and why their understanding may not always be in line with their actions.

Furthermore, Symbolic Interactionism was appropriate because it placed significance on life situations in construction of meaning and went further to emphasize that meanings held by individuals' emanates from their social interactions and their contexts (Blumer, 1969). Symbolic Interactionism supports the perspectives that human and human behaviour can be understood from the social (e.g., family) context in which individuals live (Conroy, 2014). Therefore, adolescents' perspectives were examined within their social relations and socio-cultural contexts where participants had opportunities to talk about living with friends and family members with cancer. Adolescents were provided with opportunities to discuss how the social relations affected their perspectives.

Theoretical Application

Utilizing the Health Belief Model and Symbolic Interactionism allowed the researcher to arrive at how Kenyan adolescents' understand cancer, cancer risk, and cancer prevention. Accordingly, the data collection guides were designed based on the Health Belief Model concepts informed by underpinnings of Symbolic Interactionism (**See Appendix G**). The interview and focus group questions were structured based on the Health Belief Model concepts of perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy. These

concepts were explored within the adolescents' social context and participants were allowed to express their understanding using their own words (symbols) (Berg & Lune, 2012). This study focused on perceptions of risk (perceived susceptibility and perceived severity) as a key determinant of adolescents' intention to engage in cancer prevention or health promotion behaviour. Particularly, the researcher sought to understand how Kenyan adolescents perceive cancer, their risk for cancer, and cancer prevention in their own social relations.

The researcher was interested in finding out what cancer means to the adolescent or their perceptions about cancer. The researcher was also interested in understanding if the adolescents think that cancer is a serious disease and whether they think they can get cancer. Therefore, the researcher asked the adolescents questions such as, 'When you hear the word "cancer", what comes to your mind?' This question was sometimes answered by a description of cancer as a disease or by relating cancer to its severity (e.g., cancer is a curse) using the adolescent's own words (symbols). Answers to this question were followed by probes as needed to expand upon what cancer means to the adolescents. The researcher asked probing questions such as 'tell me more about what comes to your mind when you hear the word cancer' to elicit the adolescent's own conceptualization.

To specifically inquire about susceptibility, the researcher asked general then specific questions including 'how do people get cancer?', 'do you think some people are more likely to get cancer than others?', and 'what do you think are some of the things teenagers do that increase or reduce their chances of getting cancer?' These questions were also followed by probing questions as needed to expound upon adolescent's conceptualization. Adolescents could relate their susceptibility based on their own social context and social relations.

To explore perceived benefits, the researcher asked questions such as 'what things do you do to reduce your chances of getting cancer?' followed up by asking questions such as 'how do you think that these activities may reduce your chances of getting cancer?' To assess perceptions of barriers to

taking action, the researcher asked questions like ‘what kinds of things in your neighborhood affect your ability to reduce your chances of getting cancer?’ The researcher probed to get a better understanding of the barriers. Because some of the studies using the Health Belief Model to assess cancer awareness among Kenyans have reported barriers like financial limitations and lack of family support (Ngugi et al., 2012), the researcher asked participants direct questions about whether such factors affected their ability to reduce or increase the chances of getting cancer. In assessing cues to action, the researcher asked the adolescents questions like ‘can you tell me other ways (like in class) or people (e.g., classmates, teachers, health care personnel) that have mentioned “cancer” to you?’ To explore self-efficacy, the researcher asked questions like ‘how much control do you feel you have in avoiding cancer?’

The Health Belief Model and symbolic interactionism were of significance to this study because they guided the researcher’s approach to examining the research phenomena. The theories informed data collection tools and the analysis of research data. In the following section, the researcher described the research design that guided this study.

Chapter 4: Research Design

Introduction

In this chapter, the qualitative research design that guided this study is described. Importantly, focus is placed on the ethnographic research methodology, data collection methods, data analysis, and measures to ensure that this study was rigorous. Furthermore, ethical considerations and plans for knowledge translation are described.

Focused Ethnographic Approach

To provide a clear picture of Kenyan adolescents' understanding of cancer, cancer risk, and cancer prevention, a qualitative research study design was used. This study utilized a focused ethnographic approach that allowed adolescents to share their knowledge and thoughts about cancer, cancer risk, and cancer prevention. Ethnography is a systematic collection, description, and analysis of data for a theory of cultural behaviour (Aamodt, 1982). Ethnography involves the examination of shared processes, actions, patterns, or interactions of an entire group of individuals who relate on a regular basis (Spradley, 1979).

Ethnography was relevant in this study because it allowed participants to describe what they knew and thought about cancer in their own culture and social relations as adolescents (Wolf, 2013). Specifically, the focused ethnographic approach guided the exploration of participants' worlds (Wolf, 2013). Focused ethnography is a naturalistic, systematic, and interpretive approach that results in a detailed description of phenomena (Ragucci, 1972). This study allowed participants to describe their understanding of cancer, cancer risk, and cancer prevention without the imposition of the researcher's knowledge or description of cancer.

This focused ethnographic study was guided by the Symbolic Interactionism paradigm (Blumer, 1969) and the Health Belief Model (Becker et al., 1974; Rosenstock, 1966; Rosenstock et al., 1988). This approach was used to uncover the Kenyan adolescents' meanings and perceptions of cancer against the backdrop of their worldview and culture as adolescents. The researcher examined how the

Kenyan adolescents perceived their susceptibility to cancer, severity of cancer, benefits of taking a preventive action, barriers to taking action, and what cues informed their perceptions. Accordingly, qualitative interview and focus group questions based on Health Belief Model concepts and the philosophical underpinnings of Symbolic Interactionism were used to explore study objectives (See **Appendix G**). The researcher explored cancer from the emic perspectives of the Kenyan adolescents. Participants were accorded the opportunity to describe cancer and cancer prevention based on their social structures and social relationships (Fetterman, 2010).

Work plan. This study took one and a half years to complete. During the first year, the researcher prepared a detailed research proposal and data collection tools that were reviewed by his thesis committee. The proposal defense and ethical review ensued. The study was reviewed by the University of Manitoba Education and Nursing Research Ethics Board (ENREB), the Kenyatta National Hospital-University of Nairobi Ethics and Research Committee (KNH-UON-ERC), the National Council of Science and Technology (NACOSTI), and the Nairobi County and Kajiado County Councils. Following ethical approvals, the recruitment of study participants and data collection took place. Data collection was conducted and completed at the end of the first year. Data analysis occurred concurrently with data collection and was completed in middle of the second year. Knowledge translation and exchange activities are ongoing (**Appendix A**).

Methods

Participants: Setting, recruitment, and sampling. The schools are located in Nairobi which is a cosmopolitan area. Nairobi Primary School is located in Nairobi County while the OlKeri Mixed Secondary School is located in Kajiado County. The two schools were chosen because of their location and students demographics (e.g., age and socioeconomic status). Nairobi Primary School is located in the capital city of Nairobi. Its student population includes adolescents between ages 6 to 14 years who are predominantly from affluent families. OlKeri Mixed Secondary School is located 30 kilometers

from Nairobi Primary School in a rural location. The students at OlKeri Mixed Secondary School are usually between ages 14 and 19 years old and most of them are from less affluent families. Both schools have a mix of male and female students.

Adolescents were recruited from the two schools by purposive sampling to allow for the selection of information-rich participants for in-depth study and to maximize variation in the data (Berg, 2007). Purposive sampling means that the researcher selected individuals and research sites because participants from these sites could decisively address the research objectives and provide an understanding of the research phenomena (Berg, 2007). The researcher planned to maximize variation in gender, school setting, age, place of residence (i.e., urban versus rural), socioeconomic status, and cancer history (family member or friend with cancer). Additionally, involving participants from different schools provided room for exploration of variation in how adolescents understand the research phenomena based on their social interactions at the different school settings.

During the recruitment process, meetings were held with school authorities to establish rapport and obtain consent to recruit. Announcements about the study were made during school assemblies and at select classrooms. Information about the study and the researcher's contact were provided (**Appendix C**) to interested participants and their parents. Interested participants discussed with their parents and/or their teachers before providing consent or assent to participate (Gikonyo, Bejon, Marsh, & Molyneux, 2008).

Registered students between ages 12 and 19 years and proficient in either English or Kiswahili were included in the study. Participants were to be excluded if they and/or their parents/guardians suffered from a medical condition that made either or both of them unable to provide informed consent. No participants were excluded. Participants were divided into three groups: early adolescents (ages 12-13), middle adolescents (ages 14-16), and late adolescents (ages 17-19).

Data collection. Three main methods of data collection were utilized: a participant-completed demographic form (**Appendix F**) followed by face-to-face individual interviews and focus group discussions. During and immediately after the individual interviews and focus group discussions, field notes were taken by the researcher.

Demographic profile. The demographic form was used to gather descriptive information about participants such as age, gender, and education level to provide an overview of study participants. Participating adolescents were asked to complete the demographic form which took between ten and fifteen minutes to complete. The demographic form was completed at the beginning of the first interview and focus group discussion.

Individual open-ended interviews. Participant observations, individual interviews, and focus group discussions are common data collection methods in ethnography research. In this study, interviews were used to provide a ‘deeper’ examination and understanding of cancer, cancer risk, and cancer prevention. Interviews were critical in data collection because unlike participant observations where the researcher could examine contextual questions without participants’ verbal input, interviews allowed the researcher to seek participants’ perspectives and clarifications on what was discussed. Interviews allowed for a co-construction of research phenomena. Through interviews’ analysis, perspectives from different participants were collated to give voice to a pattern of recurring perspectives (Berg, 2007).

In research that examines participants’ thoughts, attitudes, perspectives, beliefs and conceptualizations, interviews are most ideal (Berg & Lune, 2012; Fielding, 1994; Polit & Beck, 2012). Participants express what is meaningful to them using their own choice of words or phrases to reflect their reality (Berg & Lune, 2012; Morse & Field, 1995; Sandelowski, 2002). Accordingly, interviews were most ideal methods for data collection in this study. Unlike participant observations which rely heavily on what the researcher observes and how the researcher makes meaning of the

observations, interviews allowed participants to express their meanings. Providing participants with opportunities to share their meanings was critical in answering the study's research questions and to reduce chances of misinterpreting the data (Morse & Field, 1995).

Using individual interviews can be cost effective and allow the researcher to collect participants perspectives in a short period of time (Fetterman, 2010). Individual interviews provided an opportunity for the collection of information-rich data driven by the emic perspectives of participants (Fetterman, 2010). Interviews were developmentally appropriate for collecting data from adolescents (Christian, Pearce, Roberson, & Rothwell, 2010). For instance, questions were written using age and developmentally appropriate words that were modified depending on adolescents' comprehension during the interviewing process (Christian et al., 2010). In two of the interviews, questions were asked in Kiswahili to allow for better comprehension. Through open-ended interviews, participants were accorded control of the information they shared and how they shared it with the researcher (Morse & Field, 1995). Furthermore, participants had the freedom to provide information that was most important to them. Open-ended interviews allowed the researcher to assess the participant's comfort level and adjust accordingly. The researcher guided the flow of questions depending on the participant's comfort in answering them (Christian et al., 2010). Interview and focus group guides were developed based on literature and the experience of the researcher and his supervisor. The interview guides were refined following the first few interviews to ensure a better understanding and exploration of research objectives (Kvale, 2007).

During data collection, 33 participants took part in digitally recorded individual interviews. Each participant took part in one to three interview sessions for a total of 50 interview sessions. Each interview lasted for between 60 and 180 minutes. All interviews and focus group discussions were digitally-recorded and transcribed verbatim to preserve their authenticity. According to Morse and Field (1995), cultural understanding of a phenomena can be achieved through thick description. To

arrive at a thick description of Kenyan adolescents' understanding, participants were interviewed more than once. In ethnographic research based on Symbolic Interactionism, interviews may be the primary source of data (Fetterman, 2010). Through interviews, the researcher explored the life situations of participants and participants were accorded the opportunity to adequately describe their perceptions or meaning using language or spoken words as the symbols (Berg, 2007; Watson, 2010).

In the first interview, the researcher started with general questions such as 'tell me about yourself' and progressed into more specific questions such as 'how do people get cancer?' (**Appendix G**). Interview and focus group questions focused on description of cancer, different cancer risk factors, how to prevent cancer, and participants' involvement or non-involvement in cancer preventive programs. The researcher also asked participants for their recommendation for cancer prevention strategies, activities, and messages. The second interview allowed the researcher to follow up with questions arising from the first interview. The use of multiple interviews allowed for an increase in depth of adolescents' descriptions of their understanding of cancer, cancer risk, and cancer prevention. Attention was given to adolescents' perceptions based on their life situations and social relations, which is congruent with ethnographic research (Fetterman, 2010).

Despite the fact that an interview guide was developed, the open-ended approach to interviewing allowed the researcher to explore issues that were not reflected in the interview guide or those that appeared to be most important to participants. Importantly, interview questions included probes that allowed the researcher to explore participants' responses in greater depth. As the researcher continued to collect data, the interview guides were revised as needed. While interviewing, the researcher used strategies of silence, probing for examples or further description, and simple questions to give room for further discussions with participants (Berg & Lune, 2012). Importantly, the researcher conducted the interviews at the school which were a comfortable, familiar, and safe environment for

the adolescents. The researcher and interviewees sat in classrooms, laboratories, or offices that were private, quiet and comfortable.

Focus group discussions. Focus groups are a type of data collection method that utilizes group communication and interaction between participants to generate data (Doody, Slevin, & Taggart, 2013; Halcomb, Gholizadeh, DiGiacomo, Phillips, & Davidson, 2007; Kitzinger, 1995; Then, Rankin, & Ali, 2014). Focus groups can be used to gather adolescents perspectives of health related phenomena that include cancer, cancer risk, and cancer prevention (Doody et al., 2013; Halcomb et al., 2007; Hyde, Howlett, Brady, & Drennan, 2005; Kitzinger, 1995; Olsson, Jarfelt, Pergert, & Enskar, 2015; Woodgate et al., 2014). In focus groups, participants have the opportunity to express their views in the presence of their peers without fear of criticism (Peterson-Sweeney, 2005).

The reasons for combining individual interviews with focus groups were three fold: first, using both methods allowed participants to choose whether to take part in individual interviews or focus group discussions. Participants were allowed to express their perspectives using a method they were most comfortable with. For instance, participants that perhaps felt the need to share their perspectives in private might have been more comfortable to take part in the individual interviews while participants that preferred to share experiences in the presence of peers (e.g., for a sense of social security) might have benefitted from taking part in the focus group discussions.

Second, the use of focus groups in addition to individual interviews allowed the researcher to seek for new knowledge, participants' beliefs, and opinions in a collective context (Barbour, 2008; Beaudin & Pelletier, 1996; Halcomb et al., 2007). Focus groups can be a 'social space' where participants make sense of their experiences based on their discussions and interactions with peers (Lehoux, Poland, & Daudelin, 2006). To arrive at an understanding of the culture and social relations of Kenyan adolescents, focus groups allowed the researcher to examine participants' group norms, meanings, and processes that were presented through their interactions.

Third, both individual interviews and focus group discussions were used to complement participants' perspectives with the aim of arriving at data completeness (Adami & Kiger, 2005; Halcomb et al., 2007). Each of the methods allowed for different ways of examining adolescents' conceptualization of cancer, cancer risk, and cancer prevention and contributed to a more in-depth understanding of their perspectives. The researcher first obtained data through individual interviews, then carried out focus group discussions to corroborate the findings. Both data collection methods had the same relative weight, with none of them being superior to the other at uncovering adolescents' conceptualizations. While interviews provided individual perspectives, focus group discussions provided interaction data in addition to individual perspectives derived in a social context.

Unlike individual interviews, focus groups have the capacity to capture the dynamics of group interactions while at the same time generate information about the issue being studied (Halcomb et al., 2007; Hyde et al., 2005). Using focus groups allowed the researcher to examine the interaction data generated from the discussions between adolescents (e.g., their comments on other adolescents' responses or their questions to each other). Examining interaction data allowed the researcher to arrive at a greater depth of inquiry and access study phenomena that may appear to be less accessible (Duggleby, 2005; Freeman, 2006). The interactions are of specific interest and are explicitly used to generate data and new insights of the study phenomena (Berg & Lune, 2012; Peterson-Sweeney, 2005). Unlike individual interviews where adolescents may feel the pressure to respond to the researcher's questions, focus groups can bring about synergy (Stewart, Shamdasani, & Rook, 2007) and participants may communicate spontaneously without being asked (Ritchie, Lewis, McNaughton Nicholls, & Ormston, 2014). The dynamic interaction of participants encourages thinking among group members, promotes reflection of others' verbal contributions, and leads to provision of detailed contributions. In addition, the dynamic interaction can mimic a more natural environment, closely related to real-life situations because participants influence and are influenced by others (Krueger & Casey, 2015). With

regard to this study, Kenyan adolescents communicated using jokes, teasing each other or arguing—which was not present during individual interviews (Kitzinger, 1995). According to Kitzinger (1995), by analysing humor, agreements, disagreements, and dissent and examining different ways of group communication, the researcher can identify common knowledge shared within the group.

When planning for the focus group discussions, the researcher considered the number of participants, number of focus groups, and homogeneity of the groups (Ruff, Alexander, & McKie, 2005). Focus groups can have between two and twelve adolescent participants (Hopkins & Mandic, 2017; Hyde et al., 2005; Peterson-Sweeney, 2005). Larger groups tend to be more relaxed compared to smaller ones and tend to have less ‘quiet’ participants. However, in larger groups, more participants tend to talk between themselves which can make transcribing difficult (Hyde et al., 2005). When a group is homogenous, participants’ views are likely to be similar (Ruff et al., 2005).

To advance discussion, focus groups may comprise participants with similar backgrounds and experiences of the study phenomena. For adolescents, similarities in age, sex, and grade level at school may make them feel more comfortable discussing the study’s topic (Peterson-Sweeney, 2005). Where there is diversity of participants’ characteristics (e.g., age), different focus groups may be held. Participants who share common characteristics may be interviewed in the same focus group. In addition to group composition, better discussions may take place when focus groups are held in safe, comfortable, convenient, private, and quiet locations. Prior to beginning the discussion, it may be important to set ground rules such as agreeing to let one participant speak at a time (Hyde et al., 2005) and how to maintain confidentiality. The researcher may assume the role of a moderator and facilitate the discussion (Hyde et al., 2005). Views from participants who appear to be quiet may be balanced with those from participants who tend to dominate the discussions.

In the present study, the researcher used three focus groups to explore participants’ understanding of cancer, cancer risk, and cancer prevention. Twenty adolescents who had not taken

part in the individual interviews were engaged in focus group discussions. Adolescents were placed in groups according to their age: 12-13 year olds, 15-16 year olds, and 17-19 year olds. No 14-year-olds took part in the focus group discussions. One 14-year-old, who had expressed interest, withdrew before the discussion began. Some 14-year-olds were part of a final-year class that was preparing for a national examination. For this reason, the final-year students were not approached to participate in the study.

Participants provided consent if they were 18 years or older. For participants that were younger than 18 years, assent was obtained from them in addition to consent from their parents. Participants completed their demographic profiles prior to focus group discussions. During the discussions, findings from individual interviews were shared with participants and explored further. Each focus group discussion was digitally recorded and took between 120-180 minutes. In the first focus group, seven adolescents (five males and two females) took part. In the second focus group, there were six adolescents (three females and three males) while in the third focus group there were seven adolescents (four males and three females).

Field notes. Writing field notes is an active and selective process where notes taken down in the field remind the researcher of important actions and possible connections to study themes (Emerson, Fretz, & Shaw, 1995; Saldana, 2009). High quality and carefully constructed field notes where the researcher describes the context and behaviour of participants could present in ‘thick descriptions’ how people make meaning of their social worlds and demonstrate transferability of study findings (Corwin & Randall, 2012; Geertz, 1973; Lincoln & Guba, 1985). Accordingly, after each interview and focus group discussion, field notes were written to gain an in-depth understanding of Kenyan adolescents’ conceptualization of cancer, cancer risk, and cancer prevention. Field notes included a detailed description of the interview and focus group settings, time of day, participant’s non-verbal behaviours, the main findings, key phrases and words to capture participants’ meanings, and the

researcher's reflection of the discussion. The researcher also reflected on the theoretical and methodological application of the discussions. The field notes were shared with the researcher's supervisor.

Data analysis. Ethnographic data analysis is a recursive and iterative process that strives to make the ethnographer's story meaningful to both insiders (participants) and outsiders (different audiences) (LeCompte & Schensul, 2010). The process involves 'a search for the parts of a culture, the relationships among the parts, and their relationships to the whole' (Spradley, 1979, p. 142). The approach is based on symbolic interactionism where the aim is to explain a culture's language and symbols to arrive at the 'cultural meanings' of the participants' group (Spradley, 1979, p. 99). It involves constantly thinking through the research questions while in the field, modifying and clarifying ideas about what has been learned. The analyst gleans information from the language, words, or symbols used by the participants in their interviews (Spradley, 1979).

In accordance with ethnographic data analysis, emic and etic perspectives were taken into consideration (Fetterman, 2010). Emic perspectives were arrived at through careful examination, identification, and using words or phrases from participants' interviews and focus groups to arrive at codes, categories, and themes. The researcher explored meanings of participants' perspectives by going through their responses to probing questions. Direct quotes of participants perspectives were used to illustrate concepts or themes being described (Morse & Field, 1995). The researcher used etic perspectives to make sense of emic perspectives and relate them with existing literature, theories and knowledge in the study's phenomena (Fetterman, 2010). The researcher's etic perspectives emanated from his previous experience with the research topic, living in both Kenya and Canada, working with youth in both countries, and examination of the literature around cancer, cancer risk, and cancer prevention. Both emic and etic perspectives were used interchangeably to make sense of the data (Grossmann & Na, 2014).

In this study, data analysis occurred concurrently with data collection which is in accordance with ethnographic methodology (LeCompte & Schensul, 2010; Morse & Field, 1995). Given that data was collected in the form of demographic profiles, interviews, focus groups, and field notes, the analysis process was conducted in two parts: demographic data analysis and interview (including field notes) analysis.

Demographic data analysis. This analysis involved simple statistics that describe the study population including mean, median, and mode. Demographic data was entered and analysed using the Statistical Package for the Social Sciences (SPSS) version 22.0 software (IBM Corp., 2013).

Interviews, field notes, and focus group analysis. The analysis process started at the research field with the first experience and the first set of interviews (LeCompte & Schensul, 2010). The analysis process continued until a well-developed and well-supported interpretation of adolescents' conceptualizations emerged, ready to be shared with other audiences (LeCompte & Schensul, 2010).

Following every interview and focus group discussion, field notes were written and shared with the researcher's supervisor. Discussions were held with regard to emerging findings. The digital recordings of the interviews and focus group discussions were transcribed verbatim. The researcher checked transcripts for missing identities, missing chunks of data, and inaudible words. The researcher listened through the recordings to fill in inaudible words or phrases. In some interviews, inaudible words or phrases could not be filled because the researcher could not determine what the respective participants were saying. The researcher and his supervisor read the scripts multiple times to get a sense of the data (Berg & Lune, 2012; Cope, 2014; LeCompte & Schensul, 2010).

The next step was to code the interviews and focus group transcripts. Statements, mentioned events, or activities that stood out in the interview scripts or occurred frequently, or because they were crucial, rare, or influential were highlighted and assigned a code name (LeCompte & Schensul, 2010). Finding the codes involved an inductive process of repeatedly reading through the interview and focus

group scripts and field notes to identify codes relevant to the research questions. Focus was placed on the choice of words and phrases that were used by the adolescents (Spradley, 1979). Most codes were applied to data chunks that varied in length from one sentence to a small paragraph. In some cases, multiple codes were applied to the same sentence. When this happened, the sentence was broken into chunks that represented separate codes. The codes were copied to a word document in the form of a table of content to allow the researcher to easily go through codes from different interview scripts.

Using the process of comparing and contrasting, codes were combined into categories based on similarities and differences (LeCompte, 2000). For instance, codes that described what came to the mind of adolescents when they heard the word cancer were placed in the same category. Codes on adolescents' perspectives of different risk factors were placed in different categories. Perspectives of different risk factors were compared with each other. The process involved the researcher working with his supervisor to examine the codes and categories, how they reflected adolescents' perspectives, and how the categories compared and contrasted each other.

The next step involved identifying patterns in the categories. Categories that fit together or could relate to one another were combined further to form themes. The researcher examined characteristics of the codes such as frequency of occurrence and the relationships between categories and participants' characteristics (e.g., age, sex, and place of residence) to illuminate differences in the categories and themes. The researcher held a series of meetings with his supervisor to discuss the characteristics and emerging themes (Cope, 2014). Attention was paid to whether any differences between participants with differing backgrounds emerged. Furthermore, the researcher looked for patterns emerging from the interviews and how these patterns related to patterns emerging from the focus group discussions (Cope, 2014).

While the researcher intended to conduct all the interviews in English, there were two interviews that were partially carried out in Kiswahili. The researcher noticed mid-interview that

participants were more comfortable in discussing their perspectives in the local language. Being a bilingual speaker (in English and Kiswahili), the researcher proceeded on with the interviews to allow participants to share their perspectives. Data from these interviews was analysed through listening to the interview recordings, and translating the audio recording to English. The English translation was transcribed verbatim and included in other English transcripts analysis.

Measures to Enhance Rigour and Trustworthiness of the Study

To ensure that this study was rigorous, measures to enhance rigor through credibility, transferability, dependability, and conformability were taken (**Table 1**) (Graneheim & Lundman, 2004). Further credibility of the results was achieved by the researcher using methods and investigator triangulation (Cope, 2014; Lincoln & Guba, 1985). With regard to methods triangulation, the researcher used individual interviews and focus group discussions with field notes. Investigator triangulation was achieved through involving the researcher's supervisor in independent review of all the interviews and how the results were presented (Cope, 2014; Lincoln & Guba, 1985). To achieve credibility, the researcher also kept an audit trail of his experiences documented in the field notes. The audit trail was also made of notes of the researcher's preconceptions of study findings, data collection experiences and what to expect in the field—a practice that is usually referred to as bracketing in phenomenology (Fischer, 2009; Tufford & Newman, 2012).

Another measure of trustworthiness is transferability. According to Lincoln and Guba (1985), transferability (sometimes referred to as generalizability) refers to the ability to extrapolate research findings to other settings or groups. Transferability is inherently a collaborative process. The researcher is expected to provide detailed descriptive information which the reader can rely on to make inferences about extrapolating the findings to other settings or groups (Houghton, Casey, Shaw, & Murphy, 2013; Polit & Beck, 2012). The researcher has provided sufficient information about the research such as characteristics of participants, the study context, data collection, analysis, findings, and

recommendations that can be used to make inferences about the findings with other adolescent groups.

Dependability refers to the consistency of research findings if the study were to be repeated with the same participants or over similar conditions (Morse & Field, 1995; Polit & Beck, 2012; Tobin & Begley, 2004). Although inconsistency is expected in qualitative research because of the uniqueness of human situations (Morse & Field, 1995), the researcher kept an audit trail through field notes, interviews, and focus group scripts and held regular discussions with his thesis supervisor to arrive at a reasonable level of consistency.

The final measure of rigor is conformability or neutrality which refers to freedom from bias in the way the researcher captures and expresses participants' feelings and emotions (Morse & Field, 1995; Polit & Beck, 2012). In this measure, the researcher remains authentic to the research procedure and reporting of study results (Cope, 2014; Polit & Beck, 2012). Accordingly, the researcher remained neutral by keeping an audit trail throughout the research process. The audit trail included detailed field notes and interview scripts. Additionally, the researcher took measures of reflexivity throughout the research process. The researcher documented in the field notes his preconceptions, values, and behaviour that may influence the findings. The first set of field notes were shared with his advisor. These reflective pieces were revisited as a reminder of preconceived ideas about the research topic.

Table 1

Rigor enhancing measures

<p>Credibility (Cope, 2014; Lincoln & Guba, 1985)</p>	<ul style="list-style-type: none"> • Spending time with the data. Reading and reflecting on study materials including field notes and transcribed interviews and focus group discussions • Triangulation—using interviews and focus groups for data collection. Requested a trusted experienced qualitative researcher (researcher’s supervisor) to review transcripts, field notes, themes and the study. • Researcher’s supervisor reviewed transcripts, codes, and themes to ensure credibility. Additionally, the researcher thesis committee reviewed the thesis.
<p>Dependability (Polit & Beck, 2012)</p>	<ul style="list-style-type: none"> • Audit trails (e.g., field notes) were made available for review by thesis committee and other interested investigators. • Manuscripts will be prepared and submitted for peer review and publication.
<p>Transferability (Lincoln & Guba, 1985; Polit & Beck, 2012)</p>	<ul style="list-style-type: none"> • Thick description of the study—particularly process of data collection, analysis, findings, and recommendations.
<p>Conformability (Cope, 2014; Morse & Field, 1995; Polit & Beck, 2012)</p>	<ul style="list-style-type: none"> • Conformability audit by research committee and external examiner. • A detailed audit trail that includes field notes, interview and focus group scripts, clear data analysis process and findings have been kept. • Triangulation – using interviews and focus group discussions. Checking out the consistency of findings generated by the two methods. Checking the consistency of findings from different children or different ages and from the two different schools.

Ethical Considerations.

The researcher ensured that ethical considerations were observed throughout the study. Kirk (2007) mentions three issues in relation to conducting research: power relations, obtaining informed consent, and ensuring confidentiality. In this study, observing ethical considerations included getting appropriate ethical review before data collection. Accordingly, ethical approval was obtained from the University of Manitoba's Education/Nursing Research Ethics Board (ENREB) and from The Kenyatta National Hospital-University of Nairobi Ethics and Research Committee (KNH-UON-ERC). Following ethical review and approval, research permits were obtained from The National Commission for Science, Technology and Innovation (NACOSTI) and the Nairobi County and Kajiado County Education and Research Departments in Kenya.

Besides ethical review at research ethics boards, ethical considerations call for consistent self-reflective evaluation and application of ethical principles throughout the research process. During recruitment, consent was sought from parents, responsible school personnel, and adolescents before data collection. Permission from participating schools was obtained in writing (**Appendix H**) and through face-to-face meetings. Informed consent was sought from adolescents between 18 and 19 years of age and from the parents/guardians for adolescents under the age of 18 years. Assent from adolescents 17 years and younger was also obtained. Throughout the study, the researcher constantly evaluated the willingness of participants to take part. The consent seeking process included the researcher reading the consent aloud in English and responding to any questions or comments about the study. Subsequently, signed copies of the consent and assent forms (where applicable) were provided to adolescents and their parents for their records. Participants had the option to contact the researcher's supervisor for any questions or comments.

Internationally conducted research and research involving adolescents may sometimes introduce ethical issues of power imbalances between the researcher and the participants. It is

important to note that the researcher, who may be considered an outsider, is a native from Kenya that was schooled through a similar education system as the participants. The researcher speaks both Kiswahili and English which are the national languages in Kenya. In this research, the researcher spent five months at the research sites. The extensive time was necessary to form relations, create rapport with teachers and students, and collect data. Relations and communication started before the researcher developed the research proposal. The researcher continues to maintain relations with the head teachers.

To promote ethical principles, the researcher presents study findings with transparency and demonstrates reflexivity in the research process. The researcher has reflected on the influence he brought to the research and the methods used, and made adaptations in the research process (Redman-MacLaren et al., 2014). During the process of data collection, the researcher adapted the research questions by using words that adolescents could easily understand. The researcher made efforts to overcome any power gaps between him and the adolescents. He dressed in casual clothing, attended adolescents' social activities, and held informal conversations some of which were in Kiswahili to get closer to the level of Kenyan adolescents. The researcher was aware of the obligation to promote adolescents' safety during the data collection process. Accordingly, the researcher conducted the research from the school settings that were familiar and comfortable to the adolescents.

Participants were identified by a code number or the name of their favorite colour to protect their identity. Demographic forms, interviews, focus group scripts, and field notes were assigned these code numbers. Only the researcher knows participants by their names and replaced participants' names with code numbers before sharing data (interviews and focus group scripts, demographic forms, and field notes) with his advisor and transcriber. Subsequently, all data has been stored in secure cabinets and on a password-protected computer that is only accessed by the researcher. During the informed consent process, participants were made aware that their information would be presented in a manner that ensures their confidentiality.

Participation in this study was voluntary and participants could opt out at any time without prejudice. This study posed minimal risk to study participants. However, some questions evoked memories that might have been stressful to participants. Three participants became emotional and shed tears when talking about experiences of losing their loved ones to cancer. Participants were comforted and only continued with the interviews when they were comfortable to do so. These participants were referred for counselling.

Study participants had no direct benefit from this study other than the recognition that they were participating in a process of knowledge generation. Every adolescent that took part in the study received an honorarium of Kenya shillings 400 (equivalent to approximately \$5.26 CAD) school shopping voucher. This honorarium was given even if participants chose to withdraw from the study. No direct travel expenses were incurred, thus no reimbursements were made. Upon completion of the study, the researcher will engage in knowledge translation and exchange activities at participating schools which is an ethically important piece in international research (Benatar & Fleischer, 2007; Benatar & Singer, 2010).

Knowledge Translation and Exchange Activities.

A number of knowledge translation and exchange activities have been undertaken and more activities are planned. Preliminary findings of this study were presented at the College of Nursing Researcher in Residence poster competition where the researcher was awarded the best poster award. Preliminary findings were also presented at the Canadian Student Health Research Forum at the Bannatyne Campus, University of Manitoba in June, 2016.

Reports are being written for both lay and professional groups. These reports include a comprehensive thesis and three manuscripts which may inform education and cancer prevention policies in Kenya. Written reports will be presented to the Kenyan Ministry of Public Health and Sanitation and Ministry of Education. Reports will also be given to participating schools. Suggestions

will be made to participating schools to share study reports with other schools in Nairobi and Ngong counties for learning purposes.

At the end of the study, participants, their parents, and school personnel will be invited for a workshop on cancer prevention. In the workshop, lectures and informational packets on prevention and control of cancer will be presented. Subsequently, presentations to professional groups working with adolescents, including the primary and secondary school teachers' associations will be conducted. Presentations will also be made to groups that are interested in or running adolescent cancer prevention programs such as local hospitals and community groups.

The researcher will publish research findings in peer reviewed journals such as the Journal of Adolescent Health, the Journal of Health Education, and the International Journal of Health Promotion. The researcher will also make presentations at local and international conferences.

Summary

This study utilized focus groups, interviews, and field notes to collect data on Kenyan adolescents' conceptualization of cancer, cancer risk, and cancer prevention. The research methods were appropriate and allowed the researcher to address the research questions. Throughout the individual interviews, the researcher examined research phenomena from an individualistic standpoint while the focus groups allowed the researcher to examine research phenomena from the adolescents' point of view in a group setting. Participants' perspectives that were influenced by their interactions were also examined. Field notes allowed the researcher to document participants' perspectives and non-verbal communication that was useful for data analysis and presentation. Data analysis involved examining adolescents' perspectives using qualitative analysis methods to generate important findings. Important findings have already been presented at local university forums and plans are underway to share the findings with other audiences. Study findings are presented in the next chapter.

Chapter 5: Results

Chapter five describes the study findings which includes a description of the study sample. The study sample, key themes, and sub-themes that emerged from the data are presented in the following sections:

- 1) Description of the study sample;
- 2) Kenyan adolescents' perspectives of cancer;
- 3) Kenyan adolescents' perspectives of cancer risk; and
- 4) Kenyan adolescents' perspectives of cancer prevention.

Description of the Study Sample

The study sample included adolescents between ages 12 and 19 enrolled at OlKeri Mixed Secondary and Nairobi Primary Schools. Nairobi Primary School and OlKeri Mixed Secondary School were the sampling units. A purposive sample of 53 was used: twenty-six (49%) were males while 27 (51%) were females (**Table 2**). The sample of 53 adolescents was arrived at during the data collection process when data saturation around thematic areas was achieved (Berg & Lune, 2012; Morse & Field, 1995). Nineteen (36%) participants attended Nairobi Primary School while 34 (64%) attended OlKeri Mixed Secondary School. The participants' ages ranged from 12-19 years old (Mean 15.43 Standard Deviation = 4.95). Participants from Nairobi Primary School were between ages 12 and 14 years old while participants from OlKeri Mixed Secondary School were between ages 14 and 19 years old. Although the researcher planned to recruit an equal number of participants from urban and rural places of residence, it was not possible. Thirty-two (60.3%) adolescents had lived in rural areas for most of their lives while 21 (40%) had resided in urban places. Twenty-one (40%) of the adolescents had a history of cancer either in the family or knew a friend with the disease.

Table 2:

Characteristics of study participants

Characteristics	n	Percentage
Age group (years)		
12-13	18	34.0
14-16	15	28.3
17-19	20	37.7
Sex		
Male	26	49.1
Female	27	51.0
Location		
Nairobi Primary School	19	35.9
OIkeri Mixed Secondary School	34	64.2
Place of residence		
Urban	21	39.6
Rural	32	60.4
Family history of cancer		
Yes	21	39.6
No	32	60.4

Kenyan Adolescents' Perspectives of Cancer

In this section, the researcher presents healthy Kenyan adolescents' perspectives of cancer. Adolescents perceived cancer in two ways: 1) There is no other disease like it and 2) Lay understanding through metaphors (Table 3).

There is no other disease like it. 'There is no other disease like it' refers to Kenyan adolescents' perspectives of cancer as a strange and unique disease. Perspectives of cancer as 'there is no other disease like it' was common to all ages although 13-year-olds were most likely (seven out of 20 students) to perceive cancer this way. Adolescents found cancer to be very different from aspects of other diseases. In their explanations, adolescents used words like "weird" to express the uniqueness and strangeness of cancer. Twenty adolescents (37.7%) of which eight (40%) were males and 12 (60%) were females) described cancer as weird. Half of them attended Nairobi Primary School and were either 12 or 13 years old while the other half attended OlKeri Mixed Secondary School and their ages ranged from 15 to 19. Eight (40%) of the adolescents that perceived cancer as so different from other diseases had a history of cancer in their family or friends.

Adolescents perceived cancer as so different from other diseases because 1) cancer is complex and confusing, 2) cancer is dangerous (it leads to death), 3) cancer is very expensive to treat, 4) cancer leads to isolation and loneliness, and 5) cancer results in many emotions (e.g., fear).

First, adolescents felt 'there is no other disease like cancer' because cancer is complex and confusing. Adolescents believed cancer presents in different types—"skin cancer," "brain cancer," "breast cancer," or "lung cancer"—yet it affects the same body. When the researcher asked adolescents what came to their minds when they heard the word cancer, the responses were diverse. Some adolescents stated that cancer is a disease but differed on the nature of the disease. Some adolescents perceived cancer to be a contagious disease while others felt it was not a contagious

disease. In their descriptions, adolescents used words or phrases like “*cancer is a disease,*” “*cancer is not, is not a communicable disease,*” “*sickness,*” “*it’s a type of disease which has no cure,*” “*it’s a bad disease*” “*a tumor,*” and “*lump.*”

As a complex illness, cancer affects various parts of the body and sometimes presents with debilitating signs and symptoms. Adolescents talked about cancer as a complex disease because sometimes people with cancer present with symptoms while at other times they do not. When people with cancer present with signs and symptoms, they are usually diverse. Cancer usually presents with “*wounds,*” “*hair falling off,*” “*coughs,*” “*pain,*” “*depression,*” and “*loss of appetite.*” Adolescents who described cancer signs and symptoms were mainly those with experiences of cancer in their families or whose friends had been affected. Because signs and symptoms were not usually present when someone had cancer, adolescents found it difficult to make predictions on what to expect of someone with cancer. Certain symptoms appeared to guide adolescent’s perception of whether someone had cancer. When those symptoms were absent, adolescents seemed to be confused. One of the adolescents mentioned:

Yeah before I used to say that when you see someone, it’s like let’s say someone slim and say that is a cancer patient, but for now what I understand is that even cancer patients they are so healthy, and you can’t notice if he or she has cancer. (17-year-old female)

Table 3:

Summary of themes, sub themes, and codes for perspectives of cancer

Themes	Sub-themes	Codes
There is no other disease like it	Cancer is complex and confusing	<ul style="list-style-type: none"> • Presents in different types • Cancer is a disease • Cancer is not a disease • Cancer is a communicable/contagious disease • Cancer is not a communicable/contagious disease • Affects both children and adults • Cancer is weird • Related to other diseases • Affects different parts of the body • Sometimes it does not show symptoms • Cancer is common
	Cancer is dangerous (it leads to death)	<ul style="list-style-type: none"> • Cancer is dangerous • Declining health • Complications

Themes	Sub-themes	Codes
		<ul style="list-style-type: none"> • Delayed diagnosis affects treatment outcome
	Cancer is expensive to treat	<ul style="list-style-type: none"> • Has no cure • Brings suffering to the family • Cost of transport • Cost of medication and consultations
	Leads to isolation and loneliness	<ul style="list-style-type: none"> • Shameful to talk about • Stumbling block • Makes you less wanted • Lose sense of belonging • Suffering • Robs families of bread-winners
	Results in many emotions	<ul style="list-style-type: none"> • Fear/scary • Pain • Greater fear than other diseases • Worry • Hopelessness

Themes	Sub-themes	Codes
		<ul style="list-style-type: none"> • Searching for answers
	Lack of awareness	<ul style="list-style-type: none"> • Fear of cancer related activities (e.g., screening) • Unsure • Desire to know • Awareness improves with age • Parents influence awareness • Limited awareness on the processes • Awareness could reduce risk
	Sources of information	<ul style="list-style-type: none"> • Parents • Educational sessions • Family members with cancer
Lay understanding through metaphors	Military metaphors	<ul style="list-style-type: none"> • Inflicting harm • Fight • Kills/killer • Thief • Attacks

Themes	Sub-themes	Codes
		<ul style="list-style-type: none"> • Destroys • Survivor • Difficult and demanding • Survive if they get right treatment • The rich can survive • Doctors as important players
	Cancer as a living thing metaphor	<ul style="list-style-type: none"> • Spreads—cells spreading • Cells eating other cells • Liver going out • Swollen • Getting out of control • Growth • Divides uncontrollably
	Cancer as death	<ul style="list-style-type: none"> • Cancer is death itself • Cancer leads to death • Kills/killer disease

Themes	Sub-themes	Codes
		<ul style="list-style-type: none">• Hard to survive• Cancer is not a death sentence• Early treatment can avert death• God would not let you get cancer• Faith and obedience to god

Adolescents talked about their family and friends with cancer who appeared healthy yet were living with the disease. Maybe adolescents expected to notice certain signs and symptoms (e.g., suffering or losing one's breast if one has breast cancer).

I feel that she was okay, so when we went and were talking in private, she started to tell me she's not okay, she has breast cancer and yet she has her breast. So I started telling, asking her how, how she meant by saying that she has breast cancer. So she told me that she has a breast cancer, but still she has her breast and yet you can't see the disease and you can't see she's suffering, so she told me that one. (16-year-old female)

While some adolescents believed cancer was unique, others associated the disease with other illnesses (e.g., HIV/AIDS and heart disease).

Mostly I think cancer and HIV they look the same. (12-year-old female)

Participant: ... cancer could be related to heart disease.

Researcher: Hmm, in what way?

Participant: because let's say when you are obese you might get cancer. You might get cancers. I also think heart disease can be caused by cancers. (12-year-old male).

The second attribute related to the severity of cancer and the potential that it could lead to death. Cancer was described as a “dangerous” disease that could affect anybody and lead to death. Participants used words like “hazard” or “very dangerous” to demonstrate the severity of its nature and associated cancer with aggressive treatment like surgery. Because of being dangerous, adolescents held the belief that cancer is very difficult to treat and almost certainly leads to death.

Researcher: What comes to your mind when you think of someone who has cancer?

Participant: Hmm-mmm, someone with cancer, the first thing that comes to my mind is admission to hospital...surgery. (13-year-old female)

Researcher: *When you hear the word cancer what do you think about?*

Participant: *A dangerous and painful disease.*

Researcher: *Um-hmm. What do you mean when you say dangerous?*

Participant: *It can easily kill...weird as in, it makes you look just weird. (13-year-old female)*

Some adolescents compared cancer to other equally dreadful diseases to perhaps demonstrate how different they felt cancer was. Common to adolescents' discourse was the comparison of cancer to HIV/AIDS. Adolescents, especially from the rural school, believed cancer was more severe and could spread and kill faster than HIV/AIDS.

It [cancer] kills, it kills faster than AIDS. (16-year-old female)

What I heard is that cancer spreads faster than the HIV and AIDS. (17-year-old female)

Some adolescents perhaps believed cancer is dangerous because it cannot be cured.

They said that cancer cannot be...cured... (14-year-old male).

Adolescents' perspectives of cancer as a dangerous disease were based on what they had learned from their social circles, especially from their parents.

They [my parents] told me that cancer is a very dangerous disease that has no cure and it can be cured if you know it earlier, yeah. (13-year-old female)

The third attribute was related to the cost of treatment. Cancer was perceived as a disease that was very expensive to treat. Adolescents talked about hospital bills, the cost of physician consultations, and the cost of transportation and medication. Adolescents, primarily from the rural school whose relatives or friends had cancer, found it very difficult to seek cancer treatment because of the costs incurred.

They said that the bills to cater for cancer are higher than the bills to cater for any other disease. (17-year-old female)

You know if you have a cancer patient taking the cancer patient in the hospital and, and to pay all those payments to us, you can't pay. (16-year-old female)

The fourth attribute is that cancer was perceived as so different from other diseases because it created isolation and loneliness for those affected by the disease. When someone had cancer, the person felt uncomfortable to interact with people without the disease. In the same manner, healthy people felt uncomfortable to interact with the person with cancer.

It [cancer] makes you less wanted to the community...it also makes you just too um neglected. (13-year-old female)

It [cancer] just makes them feel like they do not belong to Kenya or any other place. (12-year-old female)

In addition to isolation and loneliness, cancer brings about suffering. Adolescents believed cancer brings about suffering to the families of people with the disease as well as the people living with the disease. Cancer could bring about death and rob those who are left behind of basic needs like food. Suffering was also perceived in terms of treatment experiences.

Hmm, like maybe if I'm a single parent then I'm involved in that disease [cancer] when I die I'll leave my kids alone, they'll suffer...then maybe they'll not get food enough food, maybe in studies they'll not be able to go to school, yeah. (16-year-old female)

I usually think that that person suffers a lot...like drinking a lot of medicine, going to hospital regularly, being injected, yeah. (16-year-old female)

Beyond describing how different cancer is, adolescents expressed emotions related to cancer as the fifth attribute. Forty (75.5%) adolescents talked about feeling “bad,” “scared,” “sad,” “depressed,” “awful,” “shocked,” “sorry,” and expressed a sense of “rejection.”

When you get cancer you become sad which makes you rejected by the society. Um, it also makes you feel like nobody wants to stay with you, you're alone. When you need money for ...bills, no one to support you, so you just stay there and wait till you die. (13-year-old female)

They also talked about “*fear*” which dominated their conversations. In addition to adolescents’ verbal description of cancer using emotions like fear, two students became emotional and cried as they narrated their perspectives of cancer. Adolescents’ perspectives seemed to come from a place of painful experiences of losing close relatives with cancer. Those who expressed fear used words like “*terrified,*” “*scared*” or “*scary,*” “*nervous,*” and “*afraid*” to describe their thoughts and feelings. In this study, 18 (45%) of the adolescents who found cancer to generate fear were males while 22 (55%) were females. Adolescents from the rural school were the most likely (52.5%) to talk about feelings of fear when the word ‘cancer’ came to their mind. However, when it comes to specific ages, 13-year-olds were most likely (18.9%) to talk about fear related to cancer.

It [cancer] makes some people fear walking with their friends or even getting out of their house. (12-year-old female)

Adolescents feared cancer because of the painful experiences of living with and dying from the disease. They also feared that other people could reject them if they learned they had cancer. Fear appeared to be reflective of how adolescents described cancer using metaphors of death, military, and describing the disease as dangerous. Some adolescents described cancer as a dangerous illness, an illness that could kill. Such descriptions could initiate fear.

For me when I hear the word cancer I somehow fear because I've already heard other people who are being affected by cancer. I've heard what they go through so for me I fear to get cancer and also let's say for my parents I can't let's say I can't want them to get cancer, even my relatives or my siblings. (17-year-old female)

When compared to other dreadful diseases like HIV/AIDS, cancer generated greater levels of fear.

People fear cancer more than HIV/AIDS. (18-year-old female)

Fear was not only felt, but it also affected how adolescents associated themselves with activities related to cancer (e.g., cancer prevention and supportive care). To these adolescents and other people that might have the disease, fear of cancer could hinder one's intentions and engagements in preventive cancer plans.

Like when you go for screening, and you're scared, when you find out you have cancer you're scared of death, and when you realize you don't have cancer it's a really big relief. (12-year-old male)

Most people suffer from cancer and some of them they don't know 'cause they don't, because some of them if you hear the symptoms of it, you start saying that, oh I can't go to the hospital because what if they find that I have this cancer. (17-year-old female)

Fear could also affect how the adolescents relate and share information about their loved ones with cancer.

Okay, I did not tell anyone 'cause I was afraid, and she was afraid too. So plus not everyone it's good, some people like talking or gossiping, so I kept quiet. (16-year-old female)

Yeah and okay maybe I thought that maybe she'd be cut that breast, so I got scared. (16-year-old female)

Lay understanding through metaphors. Lay understanding of cancer refers to the ideas, thoughts, and meanings that adolescents attached to cancer and were expressed through metaphors.

Adolescents expressed their lay understanding of cancer using military metaphors, living thing metaphors, and death metaphors.

Military metaphors. Military metaphors in cancer are figures of speech whereby words that are common in military or battle situations are used in discussions about cancer. Adolescents described cancer using militaristic words like “*attack,*” “*fight,*” “*destroy,*” “*kill*” and the illness process as “*the infection attacking the cells*” (14-year-old male). Although cancer is a disease, 21 (39.6%) adolescents from both schools portrayed it as an enemy that launched an attack on the body. Adolescents from the rural school were more likely to describe cancer using military metaphors than those from the urban school 13 (61.9%) vs. eight (38.1%). The description of cancer using military metaphors was not specific to adolescents of a certain age or age group but was common with at least six (30%) of the adolescents with a history of cancer in their family or friends.

Adolescents described cancer as capable of inflicting harm to body organs and thus, needed a fast and equally forceful counter-attack. When one gets cancer, participants made suggestions for the person to seek immediate medical attention, which was similar to seeking refuge when attacked on the battleground. Like an army, cancer was portrayed as powerful and could cause harm or death to those it “*attacks.*” Some adolescents mentioned:

They say that cancer destroys you. (13-year-old female)

What we know about cancer is that when it attacks you, you have to go to the hospital really fast. (16-year-old male)

Adolescents also perceived cancer as a merciless killer.

Because it kills many people...especially innocent children...it really kills them. (13-year-old female)

Beyond the description of cancer as an enemy, adolescents talked about the processes through which cancer strikes and causes harm. Cancer somehow confuses healthy cells such that instead of performing their normal functions in the body, they turn to each other and ‘fight.’

Yeah, so they [red blood cells and white blood cells] keep on fighting against each other, and they’re supposed [to] help each other cure the body...so that way if they keep that up that, that means your immune system first goes down, so you can’t, it can’t, the body can’t help itself and if you don’t get [the] treatment you will, you die. (12-year-old female)

To other adolescents, cancer involves a painful, torturous process that could only be described using militaristic mental images. They perceived the disease as more than an event; it was a torturous and agonizing experience. One of the adolescents at the urban school mentioned:

Participant: *my mind is when I hear the word cancer, is sometimes cancer is a dangerous thing, but in my imagination, I feel like cancer is like a thief who is going to strangle you for like a whole year.*

Researcher: *What do you mean by that?*

Participant: *I mean that first, it starts strangling you slowly and when you already get the scientist to struggle slowly, like cancer, it takes some time to develop, and the last time it’s very painful and disturbs you always. (12-year-old male)*

In participants’ perspectives, it is “hard to survive” cancer.

That it [cancer] is a killer disease...it’s hard to survive with it...it is the most harmful disease. (15-year-old male)

In the same way that military forces would respond to attacks by fighting back, study participants described cancer patients, treatment, and health care providers as key players who fight when cancer strikes. One 12-year-old male adolescent gave an account of his aunt whom he described as a fighter, “...she can fight through, that she can fight it, she can fight through.” Another adolescent

from the same school described cancer treatment as ammunition. He mentioned, “*they* [health care providers] *can use radioactive materials to destroy the cancer*” (12-year-old male).

Winning the war was equated with being a survivor. Ten (18.9%) adolescents related recovery from cancer as “*survival*” and mainly used the term “*survive*” in their discourse. Among the adolescents who equated living with cancer or recovery to survivorship, eight (80%) attended the rural school while two (20%) attended the urban school. Six (60%) of the adolescents were females while four (40%) were males. Survival meant being fortunate enough to escape death and was only possible for the very “*strong*” patients that could overcome cancer or those who were fortunate enough to receive proper treatment. Those who survived cancer were lucky partly because adolescents perceived cancer as death.

Okay the first thing I see when somebody’s in hospital [with cancer], I see death or life...one of those two, it’s not in the middle, it’s never in the middle, it’s death or survival. (13-year-old female)

Winning the war involved ‘fighting’ or ‘pushing’ on and not giving up. Adolescents viewed themselves as ‘supporters’ who could bring hope and cheer on the patients with cancer by visiting them. Visitations could ‘strengthen’ the patient with cancer and give them a greater purpose to live.

If the students are involved in visiting the patients with cancer, you know if I’m seeing someone visits me and gives me hope that I can get out of the hospital then I’ll have the strength to continue living, pushing on so that I can survive the disease. So to us young people if we visit the people with cancer it will be helpful to the people who have cancer. (16-year-old male)

Surviving was a difficult experience that was worth celebrating. Adolescents believed those who survive cancer go through difficult experiences that are demanding to their bodies. Their bodies are usually frail because of the grueling experiences.

Researcher: *Are there people who survive or who recover from cancer?*

Participant: *Yes.*

Researcher: *Tell me what you think about that.*

Participant: *I just think that's a miracle because most of the people who have recovered from cancer are very very thin like or two and the people who recover from cancer they've gone for a lot of treatment, chemotherapy, surgeries, sometimes they even have to go through blood transfusion, they go through a very tough time, a tough period. (12-year-old female)*

Because of the difficult experiences, some patients with cancer only survive temporarily

Participant: *But that boy survived for some time.*

Researcher: *He did what?*

Participant: *He survived for some time. (13-year-old female)*

Sometimes, the choice to survive was dependent on whether the person with cancer was ready to make difficult decisions like undergoing surgery.

Cancer affected him through his private parts...so the doctor told him to, they cut that, that thing so that he can survive and the doctor, okay the doctor told him that he couldn't survive until it was being cut. So it was not cut, and he died just like that. (16-year-old female)

In their perspectives, adolescents related the chances of survival to getting proper treatment.

Their perspectives were similar to this:

They can survive for long if they take the right medication. (13-year-old female)

Survival was sometimes associated with one's socioeconomic status where the affluent were more likely to survive because they could pay for expensive treatment.

'Cause some of the people might survive and others might not survive 'cause some of the people might be rich, they can afford the medication and others cannot. (13-year-old female)

Beyond treatment, some adolescents expressed their desire to know how one could ‘survive’ from cancer. They also mentioned how they could share messages on cancer survivorship with others.

Maybe some people who are involved in that disease, maybe they can tell me more about that disease, how they survived, what treatment they were being given. (16-year-old female)

Researcher: *Okay. Is there anything else that the government can do?*

Participant: *Yes... teaching people the risks of cancer...how to prevent it...moreover, how, and how to go and to survive with it if you are a victim. (15-year-old male)*

Researcher: *How will you, what will you want to say in those messages?*

Participant: *I’ll say how to prevent it...how to survive it as a victim...how harmful it is if you get it. (15-year-old male)*

Doctors were regarded as important players in the battle and compared to heroes. Adolescents expected oncology doctors to have the right expertise and use proper treatment to save the lives of their patients with cancer. From the adolescents’ perspectives, there was no room for mistakes.

If you’re a doctor you may be saving someone’s life right. Cancer is a deadly disease which can kill somebody either you give him a medicine which you made, and he’s good, he becomes good or if you don’t give him one he will be gone. (12-year-old male)

Researcher: *So what does the word cancer mean to you?*

Participant: *It means something that can very easily harm you, and whenever it does that’s when you lose your, you lose your life unless you go to a really highly trained doctor. (12-year-old male)*

Cancer as a living thing metaphor. Living thing metaphors refer to how words or phrases normally associated with living things (e.g., movement of animals) are linked to or are associated with

cancer. In our interviews and focus groups discussions, 15 (28.3%) adolescents described cancer as a living organism using metaphors and mental images. Of the 15 adolescents, seven were females while eight were males. Eight adolescents attended the urban school while seven attended the rural school. Some of the words and phrases used in their descriptions were “a lump,” “tumor,” “move fast, develops in a hurry if you chokoza [disturb] it,” and “it keeps growing and growing.” Cancer initiated mental images of living organisms. For instance, some adolescents compared cancer to a process of cells “eating” each other, which is similar to living organisms preying on other living organisms. Although it is normal for living organisms to eat, it is not normal for cells to eat each other as mentioned by some participants.

Because cancer is when a part of your body, your body cells has, goes wrong. Like, for example, the white cells eating the red cells, or the red cells eat the white cells. (12-year-old male)

Another adolescent believed that cancer was not only part of an abnormal process, but cancer was also the initiator of the strange process. Cancer was embodied and appeared to come from outside into the patient’s body. He stated:

When cancer cells get into your body they, they make the function of the cells work abnormally. (12-year-old male)

Once cancer had developed, treatment was required to contain it. If not, cancer as a living organism could grow and spread as mentioned by these adolescents:

It forms a tumor, and the tumor develops and sometimes if it is not treated it spreads into the body. (12-year-old male)

For me what I know as in when someone gets cancer if it’s not prevented or being taken care of it can spread to other parts of the body. (17-year-old female)

Adolescents' perspectives were shaped by educational sessions at social gatherings such as at church or during their classes. During the sessions, teachers described cancer using living thing metaphors such as describing cancer as an animal. When such metaphors were used, students took the information literally. For instance, one of the teenagers at this study was informed that cancer was an animal that destroys everything. She believed cancer to be an animal and longed to come across the animal. To her surprise, she learned that cancer was a disease.

I first heard it [cancer]; it was ...when I was in Class seven [grade seven]. As we were doing our examination it was English; it was English, and we used to be given some passages [texts] so that you can read and answer. So that time we were brought [information] about cancer, but they used it as an animal that destroys everything. So deep in my heart, I used to say I want to meet this animal. So when I came to know it [cancer] is a disease I was much shocked. (16-year-old female)

Cancer as death. In the same manner with which adolescents used metaphors associated with military and living things, 40 (75.5%) adolescents associated cancer with death. Among the adolescents that described cancer this way, 19 (47.5%) were males while 21 (52.5%) were females. Twenty-five (62.5%) of the adolescents attended the rural school while 15 (37.5%) were enrolled at the urban school. Thirteen-year-olds were most likely to describe cancer using the death metaphor. Ten of them described cancer this way.

With regard to the theme of death, adolescents perceived cancer as life limiting and, as such, described it using metaphors of death. The adolescents described death as a sad, scary, and an unwanted result of having cancer. In their descriptions, adolescents spoke of cancer as death itself, cancer as the initiator of death (the killer), and death as a consequence of having cancer.

When I hear the word cancer to me it's death. (13-year-old female)

The first thing that comes to my mind when I hear cancer is death, and it's really scary. (12-year-old male)

To other adolescents, death was the consequence of getting cancer. Cancer was a death sentence rather than death itself.

Researcher: *when you heard she had cancer what did you think.*

Participant: *The first thing I thought that she was going to die. (12-year-old male)*

As for me mostly or sometimes I can say cancer that it causes death. (13-year-old female)

Adolescents believed that people usually do not recover or survive once they have a diagnosis of cancer. They die.

Um many people, okay most people don't survive cancer that I know of...but some people survive but not many. (13-year-old female)

When talking about people admitted to the hospitals with cancer, another adolescent mentioned that although it was possible to survive from cancer, it was not common.

Okay, I've not heard anything good; I usually hear bad things, like people dying, people suffering...yeah it's costly to go to the hospital to be treated, it takes time; maybe others don't survive, yeah. (16-year-old female)

Adolescents' perspectives of cancer using death metaphors were shaped by lessons at social gatherings, social relations with parents who had knowledge of cancer or from family members or friends who were diagnosed with the disease.

In church, they usually tell us about what cancer does to your body... how it destroys you, so... you should prevent cancer. (13-year-old female)

Mum told me every time people get cancer they have to die. (12-year-old male)

I think she always thinks that pretty soon she's going to die, she's going to leave her children, she's not going to live a happy life because of cancer. (13-year-old female)

While adolescents believed cancer was death itself, or a death sentence, there were some who thought otherwise. Some adolescents felt people diagnosed with cancer could seek for treatment and avert death. The time between diagnosis and treatment was important in describing cancer using death metaphors. Some adolescents believed that one could die of cancer if there was a delay between diagnosis and treatment. As such, death could be avoided by prompt treatment.

Because when people get cancer they die...when the cancer is not discovered early. (12-year-old male)

I heard that cancer sometimes could go around like and just like in some years cancer can kill just somebody in like six months or so and it takes some months to develop inside the body...and sometimes cancer kills a lot of people at the same time, today maybe some other people in some other countries have got cancer, and they are, they are dying today...and some people have cancer, and they are going to die tomorrow without knowing. (12-year-old male)

Twenty-one (39.6%) adolescents who had experiences with cancer went beyond sharing their perceptions of cancer using death metaphors. Death metaphors initiated a sense of bleakness about the benefit of seeking treatment. Some felt that if they were diagnosed with cancer, they would wait for their death.

You don't even have the need to go for the, to go to the hospital because many of the people who have cancer tell them that they are dying...so when they give you the negative impacts you find that it's so difficult for you to take it because you see that if these people are telling me that I can't seek, I can't seek medical attention from the hospital, it's like I'm dying, then why am I

going to the hospital to seek attention, so I can stay at home and wait for my last day to come.

(17-year-old female)

Beyond associating cancer with death, some adolescents believed God could affect cancer outcomes. Adolescents believed that God would not let people get cancer. In their belief, it was the nature of God to protect people from getting the disease. When an 18-year-old female participant was asked whether she thought she could get cancer in future, she responded by stating “*I pray God not to*” which was perhaps an indication that God had some form of power or influence that could determine whether someone gets cancer or not.

God wouldn't let anybody get cancer that easily, yeah. (12-year-old male)

Adolescents believed God could use special approaches that needed the person at risk to be obedient and follow. Following God's plan could prevent death. Failing to adhere to God's plan could lead to undesirable “consequences.” In their narrations, God was like a doctor who administered medication or vaccinations.

Cause I sometimes know there's a cure, when God has like given you medicine, if you take it or you will just die the way you are, if you take it right, so whenever God has given you, abstaining from cancer, God has given you a vaccine and a way of preventing cancer, so you won't get it, but if you, if you disobey God and it happens, that's your decision there will be a consequence and the consequences you'll die. (12-year-old male)

Apart from being the will of God, the people likely to get cancer needed to have faith so that they do not get the disease.

Researcher: *Then you also said its God's will that you cannot get cancer.*

Participant: *Yes.*

Researcher: *What does that mean?*

Participant: ... when you believe in God that you cannot get something you can't. (14-year-old male)

In addition, prayers were important in making God's will possible.

Cancer may make people ... too weak for their lives and most of that I think like it's going to happen once to me, but I just pray a lot that it might not happen to me. (12-year-old female)

Well, I thought that she's going to get cancer, at first, I started praying that God don't let her get cancer. (12-year-old male)

Kenyan Adolescents' Perspectives of Cancer Risk

Conceptualization of cancer risk refers to how adolescents made sense of risk about cancer. Overall, two themes emerged to describe adolescents' perspectives of cancer risk: (1) cancer risk as lifestyle behaviours and (2) the process of risk perception (**Table 4**).

Cancer risk as lifestyle behaviours. Adolescents perceived cancer risk as involving oneself in behaviour that could increase their chances of getting cancer in future. In their discourse, adolescents used words such as 'likely,' 'probable,' 'can,' or 'chances' to express their meaning.

When I talk about risk, I'm referring to the rate of let's say that those who take, those who involve themselves in physical exercises they can't get cancer easily 'cause they're always active. (17-year-old female)

Adolescents went on to perceive cancer risk as being about lifestyle behaviours that could increase their chances of getting cancer in future (risk factors).

Cause people who just take drugs get cancer or are at the risk of getting cancer. (12-year-old male)

Adolescents described their perspectives of different risk factors. All adolescents related cancer risk to at least one lifestyle factor. Common lifestyle factors were smoking, alcohol consumption,

unhealthy eating, drug use, sun exposure, risky sexual intimacy, and physical inactivity. Protective factors were sun protections, physical activity, screening, and HPV vaccinations. The top four risk factors pertained solely to lifestyle: cigarette smoking including second-hand smoking (92.5%), unhealthy diet (88.7%), alcohol consumption (79.3%), and physical inactivity (77.4%). Exposure to pollution (71.7%) and UV rays (69.8%) emerged as the main environmental risk factors while genetics was the only biological risk factor (**Table 5**).

With regard to cigarette smoking, close to three-quarters (n=34; 69.4%) of the adolescents from the rural school and 16 (32.7%) adolescents from the urban school perceived smoking to be a cancer risk factor. Older adolescents were more likely to hold this belief than their younger peers. Additionally, more females (n=26, 53.04%) than males (n=23, 46.94%) identified tobacco use as a cancer risk factor.

Something like lung cancer it can come as a result of smoking...and taking a lot of drugs. (12-year-old male)

Smoking was perceived as particularly harmful because adolescents felt their lungs were too young to be exposed to cigarette smoke.

When you smoke ... you inhale the smoke. ...When you inhale the smoke, and your body has not yet really matured it can affect you, and if you continue inhaling the smoke, it cannot be good for health. (13-year-old female)

I think that they should not start smoking in their brain they're not yet mature, yeah. (13-year-old female)

Adolescents equally felt passive smoking could increase their chances of getting cancer in future. Passive smoking was possible because some adolescents lived in homes where their parents or siblings smoked.

Maybe at night people start smoking ... and maybe the full house will be, the air is contaminated with smoke. By the time you wake up every day, you start inhaling that smoke, and you start getting, you start increasing the chances of getting cancer. (12-year-old male)

In interviews and focus group discussions, adolescents shared their perspectives of people who smoked. They were unimpressed and saddened by their smoking behaviour.

Um he [father] uses alcohol and cigarettes, and there's this one I don't remember the name, he usually sniffs them...Yeah, then when he, yeah when he sniffs them ... you can find them he has thrown them on the floor, now the whole house is smelling cigarettes. (13-year-old female)

That's bad like I'd feel sorry for them...a kid who smokes...that's sad. (13-year-old female)

In addition to adolescents' dislike for smoking, four adolescents from the rural school had a history of smoking. One of the adolescents quit smoking because of health concerns and a desire to get her life back on track.

With regard to consuming unhealthy foods, 29 (61.7%) adolescents from the rural school and 18 (38.3%) adolescents from the urban school perceived unhealthy diet to be a cancer risk factor. In their narratives, adolescents used examples such as red meat to refer to unhealthy diets and felt red meat was more likely to increase their chances of getting cancer than white meat.

People get cancer like sometimes people like red meat and they eat, they eat food the chemicals that have the carcinogens of cancer. (12-year-old male)

Red meat increases your chances of getting cancer more than white meat. (12-year-old female)

Adolescents felt commercially prepared and marketed foods (e.g., chicken) contained chemicals that could increase their chances of getting cancer in future. They believed that traditional foods were a less 'risky' option.

Researcher: *Which foods can increase your chances of getting cancer?*

Participant: *Foods with more chemicals.*

Researcher: *Like which ones?*

Participant: *Like when...like when you, you give a chicken filled with chemicals. (14-year-old male)*

Adolescents derived some of their perspectives about unhealthy diet as cancer risk factors from mainstream media. The messages generated emotions where some adolescents expressed fear of getting cancer because of consuming red meat.

As yesterday they say that the news that all meat bring cancer, that I felt bad, so I thought like I can have cancer because most of the time I eat meat at school. (12-year-old female)

Twenty-five adolescents (59.5%) from the rural school and 17 (40.5%) from the urban school perceived alcohol consumption as a cancer risk factor.

Wines and spirits ... they have alcohol in it...so in taking it you might get cancer, you might get cancer like liver cancer. (12-year-old male)

Table 4:

Summary of themes, sub themes, and codes for perspectives of cancer risk.

Themes	Sub-themes	Codes
Cancer risk as lifestyle behaviours	Perspectives of different risk factors (e.g., smoking, alcohol consumption)	<ul style="list-style-type: none"> • Words describing risk • Perspectives of smoking <ul style="list-style-type: none"> ○ Too young to smoke ○ Passive smoking can increase risk ○ Dislikes smoking by peers/parents ○ Personal history of smoking • Perspectives of food/diet <ul style="list-style-type: none"> ○ foods with chemicals ○ commercial vs. traditional ○ sources of information • Perspectives of drinking <ul style="list-style-type: none"> ○ history of drinking • Perspectives of physical inactivity • Perspectives of sexual intimacy • Perspectives of screening

Themes	Sub-themes	Codes
		<ul style="list-style-type: none"> • Perspectives of HPV vaccine • Perspectives of tobacco/drug abuse • Process
	Risk factors – lifestyle factors	<ul style="list-style-type: none"> • Drugs • Diet • Smoking • Alcohol • Physical inactivity • cell phone use • Genetics • Sunlight exposure • Body weight • Myths • Risky sexual intimacy
	Environmental factors	<ul style="list-style-type: none"> • Chemicals • Pollution

Themes	Sub-themes	Codes
		<ul style="list-style-type: none"> • Radiation • A break in the ozone layer • Mobile phones
	Biological factors	<ul style="list-style-type: none"> • Genetics
Process of risk perception	Managing cancer risk information	<ul style="list-style-type: none"> • Downplaying risk information • Evaluating information e.g., advertisements • Suppressing knowledge by ignoring • Paying less attention • Too young to get cancer • Justifying risk behaviour • Ignorance/lack of awareness • Appreciation for prevention messages
	Benefits-cost of the cancer risk	<ul style="list-style-type: none"> • Immediate pleasures and they are addicted to the behaviour • Engage in behaviour out of need • Behaviour as fun and full of enjoyment • Resisting behaviour because of personal health

Themes	Sub-themes	Codes
		<ul style="list-style-type: none"><li>• Resisting behaviour because of shame ‘<li>• It is against our religious beliefs

Table 5:

Adolescents perspectives of cancer risk

Characteristics	Total	Rural	Urban	Male	Female
Cancer risk as lifestyle behaviours (%)					
Smoking	49 (92.5)	33 (67.3)	16 (32.7)	23 (46.9)	26 (53.1)
Unhealthy diet	47 (88.7)	29 (61.7)	18 (38.3)	24 (51.1)	23 (48.9)
Alcohol	42 (79.3)	25 (59.5)	17 (40.5)	18 (42.9)	24 (57.1)
Physical inactivity	41 (77.4)	24 (58.5)	17 (41.5)	20 (48.8)	21 (51.2)
Risky sex	13 (24.5)	4 (30.8)	9 (69.2)	5 (38.5)	8 (61.5)
Cancer risk as environmental factors (%)					
Sun exposure	37 (69.8)	26 (70.3)	11 (29.7)	19 (51.4)	18 (48.6)
Environmental pollution	38 (71.7)	22 (57.9)	16 (42.1)	19 (50)	19 (50)
Chemicals	24 (45.3)	17 (70.8)	7 (29.2)	12 (50)	12 (50)
Cancer risk as biological factors (%)					
Genetics	14 (26.4)	10 (71.4)	4 (28.6)	8 (57.1)	6 (42.9)

While most adolescents believed consuming alcohol could increase their risk for cancer, four adolescents from the rural school believed that a local brew – *muratina* was not detrimental to their health. These adolescents had a history of drinking alcohol and categorically suggested that commercialized alcoholic beverages contained higher alcohol levels and could cause more harm than *muratina*. The adolescents believed *muratina* was healthier because it was made from honey and sugar while commercialized alcoholic drinks were manufactured from chemicals.

Participant 1: *There is this drink that, let's say the villagers or when you go to ushago [rural home] over there. There is this drink that they usually make, they call it muratina. Is it, is it bad? Is it like the actual alcohol, can you get cancer from a drink like that one?* (16-year-old female)

Participant 2: *No. I'm black [pseudoname], but I think no.... It's normally known in Kenya as Chang'aa. That cannot cause cancer, but maybe it can it depends on with the way it is cooked. But it is not like the other types of alcohol. The other ones are made from chemicals, but this is made up of honey and sugar.* (16-year-old male)

Over three-quarters of the adolescents (n=41, 77.4%) believed physical inactivity could increase their lifetime chances of getting cancer.

Researcher: *What if you don't exercise?*

Participant: *You have higher chances of you getting cancer.* (12-year-old female)

Cancers is brought about by not being physically fit. (12-year-old male)

In their perspectives, physical inactivity could not only increase one's risk for cancer but could also lead to being overweight. As a result, they made suggestions for people to be physically active to limit the amount of fat in their bodies.

You have to be used to doing physical exercises in order to reduce the amount of fats in our body. (17-year-old female)

Physical activity was perceived to be more important when the person's diet was not healthy.

eating fats and sugars every time and you don't go to exercise to burn up all the fats and sugar inside your body. (12-year-old male)

Because some people they are way fat and some are thin. The thin people maybe they do exercises, they don't eat sugary foods, but some of the fat people maybe eat sugary foods and fat stuff. And my dad always says sugary foods make you fat. (12-year-old male)

As much as most adolescents believed physical inactivity could increase one's lifetime risk for cancer, their conversations mainly focused on physical activity and cancer prevention. They believed engaging in physical exercises could 'burn up' excess body fat and reduce their risk for cancer.

Well every time maybe ... they go outside to play so they can burn the other fat, so they won't get cancer easily. (12-year-old male)

Sixteen (30.2%) adolescents believed that using illicit drugs could increase their lifetime risk for cancer. Adolescents believed the substances contained chemicals that could increase their chances of getting cancer in future.

Participant: *I suspect that maybe people who, most people, actually most people who take drugs get lung cancer more often than anyone else...or throat cancer.*

Researcher: *Um-hmm. Why people who take drugs?*

Participant: *'Cause of those chemicals in drugs that affect the lungs. (13-year-old female)*

Adolescents also talked about cell phone use as a cancer risk. Fourteen (26.4%) adolescents believed cellphone use could increase one's lifetime risk for cancer. Adolescents believed cell phone vibrations or the heat emitted from the phones could interfere with body cells and lead to cancer.

Of the phone when its overheating and you put it on your hand, and it starts, usually the skin cancer because all that heat is coming from the engine which has a lot of greases and stuff ... so maybe you'll get skin cancer. (12-year-old male)

Maybe you have a phone and it has vibration, when you put it, maybe you have a pocket ...when you put it there, then it vibrates, you may suffer from breast cancer. (16-year-old female)

Thirteen (24.5%) adolescents believed that engaging in risky sexual relations (e.g., sex with multiple partners) could increase their lifetime risk for cancer. They derived their knowledge about the risk for cervical cancer from their parents.

I asked my mom what causes cervical cancer, then she told me,... if you started having sex, or if you are involved in having sex with many men you will get cervical cancer. (16-year-old female)

Because of the belief that risky sexual relations could increase one's lifetime risk for cancer, adolescents believed teenagers or unmarried people should not have sex.

Sex are not for unmarried people. (14-year-old male)

No sex for teens. (15-year-old male)

Thirty-seven (69.8%) adolescents felt exposure to sun rays could increase their chances of getting skin cancer in future while other adolescents thought otherwise.

When those sun rays get on your skin, they damage your skin...they lead to cancer. (14-year-old male)

Some adolescents felt sun exposure was not a risk factor while others felt sun exposure could only affect certain population groups (e.g., albinos). Adolescents did not consider themselves as likely to get skin cancer in the future because of sun exposure.

Researcher: *Do you think the sun can increase your chances of getting cancer?*

Participant: *No, the sun is healthy.*

Researcher: *Um-hmm. What does the sun do?*

Participant: *Vitamin D. (13-year-old female)*

Participant: *You know like there are albinos they have to cover themselves to prevent them from direct sunlight 'cause of getting cancer.*

Researcher: *What about those that are not albinos.*

Participant: *They just say that it can't affect them; it can't affect the black people. (17-year-old female)*

With regard to the environment or exposure to pollution, 38 (71.7%) adolescents believed they were cancer risk factors. In some of their narrations, adolescents dismissed myths like God could bring about cancer and felt human beings play a crucial role in destroying the environment and making it a cancer risk factor.

I believe cancer is not a disease from god, that god will give you disease...yes. It's according to how we have taken care of our environment, we have destroyed our environment and that's why cancer is coming to us. (16-year-old male)

Pollutants could come from vehicles exhaust fumes or factory emissions and bring about cancer.

Factories and cars the, the dust, the smoke that comes from, the chimney, the industry and exhaust of the car ... they may enter the body of a non-smoker and the non-smoker may get cancer. (12-year-old male)

It [pollution] can cause cancer because let's say like you're a person and you don't have a mask or you're working in the factory and you don't have a mask then you'll inhale a lot of the smoke it might damage the lungs and you'll get cancer. (13-year-old female)

In addition to environmental factors and pollution, adolescents believed exposure to certain chemicals could increase their lifetime risk for cancer. Twenty-four (45.3%) adolescents expressed these perspectives.

Those people who work in factories um I think some of them may be suffering from cancer because of the chemicals. (13-year-old female)

While lifestyle and environmental factors were most talked about, other adolescents associated cancer risk with biological factors. Genetics was the only biological factor that adolescents associated with cancer risk. Importantly, 14 (26.4%) adolescents; 8 (57.1%) males and 6 (42.9%) females shared this belief. Ten (71.4%) of the adolescents attended the rural school while four (28.6%) attended the urban school. In their interview and focus group discussions, adolescents believed having a family member with cancer increases the likelihood that children will develop cancer in future.

Participant: *Now that my grandfather and my grandmother had cancer, does that mean it is most likely that I can get cancer?*

Researcher: *What do you think?*

Participant: *I think yes.*

Researcher: *Why?*

Participant: *'Cause it runs in my family. (12-year-old female)*

Beyond the cancer risk factors mentioned above, 37 (69.8%) adolescents related cancer risk to other factors. Some of these factors were myths and based on hearsay. The ‘other factors’ were low immunity, mixing of body fluids, sharing of objects (e.g., toothbrushes), evil spirits, perfumes, putting on tight bras, being a female, and poverty. These other factors may reflect limited knowledge about cancer, and cancer risk.

Let’s say like you have the same toothbrush as your brother and he has cancer then you go and take his toothbrush by mistake then brush with it you might get cancer. (13-year-old female).

Like for me maybe when you sleep with a bra, some people, okay we are being told when you sleep with a bra you’ll maybe suffer from breast cancer. (16-year-old female).

Some adolescents felt cancer could be transmitted at birth.

Because if maybe your mother has cancer and a baby and she’s carrying a baby, maybe that baby when he or she is born, is likely to get cancer. (12-year-old male)

Process of risk perception. On the theme of the process of risk perception, adolescents talked about how they made sense of cancer risk. Specifically, they shared perspectives on how they evaluated cancer risk factors and how they justified their choice to take part or avoid cancer risk behaviour. Processes of risk perception are grouped into sub-themes of ‘*managing cancer risk information*’ and ‘*benefits-cost of the cancer risk.*’ Overall, most (86.8%) of the participants reported that they did not engage in risk behaviour and focused their perspectives on the behaviour of other adolescents. Study participants portrayed their behaviour as healthy and that of other adolescents as ‘risky.’ Nevertheless, they shared perspectives of why other adolescents engaged in cancer risk behaviour.

Managing cancer risk information. Managing cancer risk information refers to how adolescents evaluated what they learned about cancer risk factors. Adolescents managed cancer risk information in ways that impacted their perception of risk. Adolescents evaluated what other people,

the media, or the Bible said about cancer risk behaviour and determined whether the information was true or not. Some of the adolescents felt that what others told them about cancer risk factors was not true and went on to engage in cancer risk behaviour.

Sometimes they think that what the other people are saying is not, is not true...or sometimes they say drugs are good, but, but they are not good. (12-year-old male)

There was even I think something like that on the news, like meat, all that stuff, but I'm not sure if it's true, I've just been told, I have to go and do research when I get home. (13-year-old female)

Adolescents evaluated advertisements about cancer risk factors like alcohol and took part in risk behaviour with the intention of finding out whether advertised information was true or not.

Alcohol is usually advertised I can't remember the name, you find that on the bottle you find that there is a flying horse, so the person will want to know what's happening, so if I take this alcohol will I fly like this horse. So you find that you will take the alcohol in order to know what will happen or see how he will react. (17-year-old female)

Other adolescents managed cancer risk information by suppressing their knowledge of cancer risk behaviour. Adolescents turned a blind eye to what they knew about risk or cancer risk factors and the detrimental health effects of taking part in risk behaviour. Despite being aware, adolescents took part in cancer risk behaviour even though they were aware of the consequences of such conduct. In their discourse, adolescents used words like “ignore” to express how those who engaged in cancer risk behaviour suppressed cancer risk information.

Okay, some of them like there are those who smoke and yet they know that ... there are diseases like lung cancer, so they keep on smoking. (16-year-old female)

Researcher: *Do you think it [risky sexual activity] can affect their health?*

Participant: *Yeah.*

Researcher: *Do they know?*

Participant: *They know but they just ignore it. (17-year-old female)*

Suppression of cancer risk information appeared to take an active form of knowingly and persistently choosing to ignore information on cancer risk. Adolescents talked about their peers' choice to take part in cancer risk behaviour and how nothing could influence them to change their minds. They may "never" stop to take part in cancer risk behaviour.

Participant: *They just ignore assume.*

Researcher: *They ignore what?*

Participant: *What they are taught, even if they hear they can never, they can never maybe stop taking those sweets and juices. (15-year-old male)*

Managing information also took the form of paying less attention to the importance of cancer risk messages. Adolescents evaluated information depending on whether they felt susceptible to getting cancer in future.

Participant: *Also those messages tell people to stop eating foods that are not healthy and also to do exercises so that they cannot get cancer...*

Researcher: *Okay. Do you think teenagers can be attracted to listen to such messages?*

Participant: *Some of them may but some of them don't have, do not care about it.*

Researcher: *What do you mean?*

Participant: *Okay, there's some teenagers like us [adolescents' grade], some of us are interested but some are not...so the ones who are not interested feel that in future they'll never get cancer, but anything can happen. (13-year-old female)*

Managing information also took the form of evaluating cancer prevention information around personal health and age. Some adolescents appeared to dismiss information because they were young and healthy.

let's say you're sitting with your parents in the living room then they hear that children are supposed to be going for checkups, um you think that checkups is not really important because you're healthy because you're small, but your parents know that you have to go for that checkup so that they can ensure that you're healthy in your future (13-year-old female)

Adolescents believed their peers continued to smoke because they downplayed the riskiness of their behaviour. These peers took part in cancer risk behaviour because they felt no harm could befall them. In essence, they evaluated cancer risk by downplaying cancer risk information.

They say its beliefs...they say some are beliefs and nothing can happen to them. (17-year-old female)

They believed that engaging in cancer risk behaviour like smoking and drinking alcohol would not be harmful and they justified engaging in this behaviour. Some equated smoking to behaviours they thought to be of lesser or no cancer risk such as eating 'foodstuffs.'

Researcher: *So when you look at smoking and taking alcohol, are those like bad things to do?*

Participant: *I don't think they're bad...because they're just like sodas...and food stuffs. (13-year-old female)*

However, some were cognizant that downplaying perceived risk was not good for them and could increase their risk for cancer. Therefore, to feel less susceptible to cancer risk, adolescents associated their perceived low risk to more careful behaviour.

Researcher: *Why do you think they continue to smoke?*

Participant: *I think it's due to ignorance. (16-year-old female)*

Those who smoke because their friends smoke they don't know the effects of smoking....but I do.

(15-year-old male).

Adolescents appreciated cancer prevention messages that cautioned them against engaging in risk behaviour and expressed hope that those who were not aware would learn.

First of all, I thought they [messages] were really good for them to put it [the messages] on air 'cause they'll help someone out there, yeah... because first of all maybe someone didn't know that, that someone smoking in your face is, harmful, it's really bad for your health, but now they know...or they didn't know that taking alcohol right now will not have an effect on you but later in life it might. (12-year-old male)

I think that it's good because they, they encourage you to live a healthy lifestyle 'cause most of the teenagers they just like to eat ice cream or chicken or pizza and stuff, like that's why they are telling them that they should live a much healthier lifestyle and avoid eating those foods and eat more healthy foods, yeah. (12-year-old female)

Benefits-cost of the cancer risk. 'Benefits-cost of the cancer risk' refers to how adolescents rationalized risk regarding short-term benefits versus long-term negative consequences. Adolescents expressed the immediate pleasures of engaging in risk behaviour and disregarded the long-term harmful effects. In another way, benefit was approached as necessary. When the benefit to take part in the behaviour was out of need, the cost did not appear to count as much. More than a third (34%) of the adolescents rationalized and made comparisons about the riskiness of their behaviour by comparing short-term benefits versus long-term negative consequences. Eight females and ten males who rationalized risk this way attended the rural school (76.2%) and were mainly (38.1%) 16 years old.

When adolescents thought and talked about the benefits of engaging in risk behaviour, they described the behaviours as okay, fun, and used words like ‘enjoy’ or ‘feel high’ to express the benefits.

Some drink for enjoying themselves like maybe you want to feel high, higher than others. (16-year-old female)

Maybe they smoke for enjoying themselves maybe, maybe they feel they are more satisfied when they smoke, they’ll be active, they’ll refresh their minds, they’ll be strong maybe, and like okay like when you take bang [marijuana] usually you are being told when you take bang you’ll become more energetic. (16-year-old female)

Despite the short-term benefits, most of the adolescents (77.8%) resisted the urge to engage in cancer risk behaviour. Those who resisted the urge often cited concerns about their future health, shame, and religious reasons.

Yeah, ‘cause me I see cancer is very dangerous and I don’t want to get cancer...so I abstain from it by not eating sugary foods and oily stuff and, and drinking you know juices which have some tiny sugar inside it. (12-year-old male).

Another way of evaluating benefit versus cost of taking part in cancer risk behaviour was about whether adolescents perceived the behaviour as an addiction. Twelve (22.6%) adolescents believed their peers engaged in cancer risk behaviour because they were addicted. Adolescents believed substances like cigarettes contained nicotine that made it necessary for their peers to smoke. Those who smoked needed to do so to satisfy their craving. In their discourse, they suggested that because nicotine makes one addicted, quitting needed to be gradual. Adolescents felt taking part in the cancer risk behaviour was out of need (because of addiction) rather than out of pleasure. In their narrations, the need to fulfil the cravings was more beneficial than the cost of experiencing withdrawal symptoms.

Adolescents went on to justify the benefits versus cost of taking part in risk behaviour because of addiction. They mentioned that when people with addictions want to change their behaviour (e.g., quit smoking), they do not stop taking part in the behaviour abruptly. The people use a gradual process to reduce how often they take part in the behaviour.

'Cause if you do it once, the second time because of the nicotine you have the nicotine becomes, makes you addicted to it, so you want to have more and more. That's why when you also go down, they take, it goes less and less. They give you little by little less until you stop. (13-year-old female)

Kenyan Adolescents' Perspectives of Cancer Prevention

Kenyan adolescents' perspectives of cancer prevention focused on how cancer could be avoided. Overall, 42 (79%) adolescents knew a little information about cancer, ten (19%) knew just enough while one (2%) female adolescent did not know anything about the disease. Forty-seven (86.8%) adolescents believed that cancer is preventable while 6 (11.3%) thought that cancer is not preventable. Adolescents' described their perspectives of cancer prevention in ways that are grouped into themes of *avoiding cancer risk factors*, *avoiding peers who partake in risk factors*, and *being healthy* (**Table 6**). Beyond these perspectives, adolescents expressed their thoughts about cancer prevention plans.

Avoiding cancer risk factors. Thirty-nine (73.5%) adolescents believed people could prevent cancer by avoiding cancer risk factors. Of these adolescents, more females (n=22; 56.4%) than males (n=17; 43.6%) held the belief that cancer could be prevented by avoiding risk factors. Twenty-five (64.1%) of the adolescents attended the rural school while 14 (35.9%) attended the urban school. Over three-quarters (n=14; 77.8%) of the adolescents from the urban school who took part in the study believed cancer prevention to be possible. In the rural school, a similar proportion (n=25; 71.4%) of those who took part in the study believed cancer prevention to be possible. The perception that one can

prevent cancer by avoiding certain risk factors was common among all the adolescents although the younger (n=13) and the older adolescents (n=15) were more likely to hold this belief than their mid-aged peers (n=11).

Adolescents alleged that people could prevent cancer by staying away from certain cancer risk factors. In their narrations, adolescents used words like “*avoid*” or “*abstain*” to express their perspectives. To prevent cancer, people can avoid lifestyle risk and environmental risk factors. Reference to avoiding these cancer risk factors was often related to the belief that cancer is a very severe disease to which adolescents were susceptible.

If you avoid the following foods: blue band, oils, sweets and sugar you may not get cancer, you will be far away from it. (12-year-old male)

It is possible, if, you can stop taking a lot of alcohol and wine, wines and spirits. And don't smoke, and just avoid dusty places. (12-year-old male)

Eighteen (34%) of the 39 adolescents who believed cancer prevention to be possible went further to talk about their cancer preventive behaviour. They talked about avoiding drugs (cigarette smoking, and alcohol consumption) or unhealthy foods. Part of their motivation to practice avoidance behaviour was their perception of cancer as a severe disease.

Yeah, 'cause me I see cancer is very dangerous, and I do not want to get cancer...so I abstain from it by not eating sugary foods and oily stuff and drinking you know juices which have some tiny sugar inside it. (12-year-old male)

Others were motivated by knowing that engaging in cancer risk behaviour could lead to addictions. As such, adolescents chose to avoid taking part in cancer risk behaviour.

Table 6:

Summary of themes, sub themes, and codes for perspectives of cancer prevention.

Themes	Sub-themes	Codes
Avoiding cancer risk factors	Avoiding cancer risk factors	<ul style="list-style-type: none"> • Staying away from risk factors • Avoid/abstain • Reasons for avoiding risk factors • Taking care of oneself • Difficult to break habits • Self-control • Sources of information • Social norms/acceptability of behaviour
Avoiding peers who partake in risk factors	Avoiding peers who partake in risk factors	<ul style="list-style-type: none"> • Making friends with those who do not engage in risk behaviour • Avoiding bad company • “I” versus “them” • Better informed • Self-image • Distancing oneself

Themes	Sub-themes	Codes
		<ul style="list-style-type: none"> • Seeking advice • Mockery vs praise from peers • Evaluating the behaviour • Copying the adults
Being healthy	Keeping healthy lifestyle	<ul style="list-style-type: none"> • Being the young and strong • Eating healthy foods <ul style="list-style-type: none"> ○ Fruits and vegetables • Physical activity <ul style="list-style-type: none"> ○ Keeps the body fit ○ personal behaviour • Medical check-ups <ul style="list-style-type: none"> ○ Early cancer detection • Sun protection <ul style="list-style-type: none"> ○ Direct sun-exposure ○ Adolescents' behaviour • “I” vs. “them”

Themes	Sub-themes	Codes
	Challenges/ barriers	<ul style="list-style-type: none"> • Lack of awareness • Parental influence / lack of support • Health reasons • Lacking structures • Conflict with school schedules
	Sources of information	<ul style="list-style-type: none"> • Health promotion messages • Messages were influential • Limitations on cancer messages
	Cancer prevention plans	<ul style="list-style-type: none"> • Limited cancer prevention plans • Government legislation on smoking • School legislation – environment, physical activity, healthy eating • Education on cancer, cancer risk factors, and cancer prevention • Not taken part in prevention plans • Parental influence towards prevention • Family support

Themes	Sub-themes	Codes
		• Interest in health promotion/cancer prevention

When someone chose to avoid 'risk' behaviour, adolescents believed the person was reducing his or her chances of getting cancer in future. In a way, avoiding risk behaviour was perceived as a way of taking care of oneself. Adolescents appeared to isolate different risk factors as predictors rather than perceive cancer risk as determined by a combination of factors.

It will depend on how you take care of yourself, to avoid, okay if you avoid, okay if you take care of yourself, and you avoid those things that cause cancer you will not get it...if I'm a girl, I'll avoid sex and if I'm married I'll avoid having sex with many men, so I'll avoid that cervical cancer. (16-year-old female)

Adolescents went on to suggest that two worlds existed: a world of those who participated in risk behaviour and a world of those who did not. Adolescents from both worlds were happy with their actions.

Like for me because I'm not in the same categories with them, so I'm happy for myself... because I'm not addicted to those drugs, yeah, and they are addicted, so they feel happy, they feel higher than me, and they feel as if their world is okay with it, yeah. (16-year-old female).

Avoiding cancer risk factors was presented as a process that was sometimes difficult especially if the person had developed a habit of taking part in the risk behaviour.

Like, let me say if I'm being used to take things like the sausages it will be difficult for me to stop taking them...so you'll find like I can start today without, but when tomorrow I get it I will not eat all of them, I will just take like four of them. So you'll find that even if I skip one day later that I get it, I will take more of it. (17-year-old female)

He can't stop [drinking alcohol] because he started it when, when I was really young, and even if I was small I used to see him drinking, ... so to me I just say that he can't stop because we have tried so many times and he can't, so maybe he can't stop. (13-year-old female)

Some adolescents resisted the urge to take part in risk behaviour because they had self control and did not want ‘anything bad’ to affect them. In their narrations, they appeared to evaluate the ‘cost’ of taking part in cancer risk behaviour.

I don't think that I can get used to smoke because I have self-control...and I usually control myself and I have my own principles, so I don't think that I can be used to those drugs. (13-year-old female)

Adolescents derived their perspectives of how to prevent cancer from their social relations (e.g., their parents and teachers).

Researcher: *Where else have you heard about cancer?*

Participant: *My mom.*

Researcher: *Okay. What does she say or what did she say about cancer?*

Participant: *Just what not to eat and what to eat, how to prevent cancer... (13-year-old female)*

What I heard from the teachers that all of the teachers talked about cancer...and they told us on how to prevent it... also advised us not, for those who are taking the drugs...The cigarettes, the bang, they should stop taking them...The smoke gets into your lungs; it somehow affects them. (17-year-old female)

And even fellow students, there are students who told us more how to avoid drugs and how to avoid those people who are drug addicted. (16-year-old female)

Or the media...

One of the [television] stations that I watched, they said that they could prevent it by avoiding taking the bottled water. These rich people they can even prevent it by stopping taking that

canned meat....they also say that you can prevent it by avoiding using the cell phone for long hours. (17-year-old female)

Adolescents questioned and evaluated cancer risk behaviour along the lines of appropriateness and acceptability of such behaviour at their schools and communities. From their narrations, they asked themselves whether the behaviour was right or wrong and whether the behaviour was allowed or not. When behaviour like smoking was not allowed, adolescents avoided such behaviour. Also, adolescents avoided smoking because they felt they were too young to smoke.

Researcher: *What is it about smoking or alcohol that kids here don't engage in smoking or drinking alcohol?*

Participant: *I don't know, I am not sure.*

Researcher: *Is it a bad thing to do?*

Participant: *No, oh taking yeah its bad...first, anyone who is under 18 is not technically allowed to take anything like that. (13-year-old female)*

Researcher: *Has anybody ever asked you to take alcohol?*

Participant: *Yes.*

Researcher: *And then?*

Participant: *I refused.*

Researcher: *Why?*

Participant: *Because I know that it's not right to take alcohol. (17-year-old female)*

Avoiding peers who partake in risk factors. Adolescents held the belief that one could prevent cancer by avoiding people who engage in cancer risk behaviour. In their perspectives, spending time with peers who take part in risk behaviour such as smoking could expose them to cancer risk

factors. Instead of associating with people who participate in risk behaviour, adolescents made suggestions of making friends with those who did not engage in risk behaviour.

The things that I can do to reduce the chances of me getting cancer is to keep away from the people who abuse, who smoke so that I do not get the smoke from the cigarette and to make good friends who do not abuse drugs. (12-year-old male)

People who engaged in risk behaviour were described as ‘bad company’ and were perceived to have intentions of increasing healthy adolescents' risk for cancer. Adolescents found it necessary to avoid these people as a way of reducing their risk of getting cancer. In their narrations, adolescents appeared to portray cancer as a contagious disease that ‘bad’ people could spread intentionally. They went on to suggest the ‘bad’ people appeared to approach them in their social environments (e.g., schools) and take advantage of established relationships (e.g., friendship with adolescents’ parents) that could provide easy access to healthy adolescents.

In school you avoid that company, at home, you also avoid the companies... like let's say like your parents' friends, maybe they have cancer and they want to make you also to have cancer...to me to avoid bad companies its good...I was saying like at home maybe your parents' friend has cancer and their friend wants to make you also to have cancer um and they want to make you have cancer. (13-year-old female)

The adolescents reflected on their avoidance behaviour and felt they were making the right choices. They described their actions in comparison to other adolescents' behaviour using terms such as “I” versus “them” to suggest perhaps how their behavioural choices were different from their peers.

I've avoided smoking, drinking, [un]like those kids who were found yesterday at a bar club who have who were in class four, I have avoided that. I've also avoided eating a lot of red meat and mostly focusing on vegetables and fruits, yeah. (12-year-old male)

Healthy adolescents appeared to suggest that they were more informed about cancer risk factors than their peers. As a result, the healthy adolescents avoided risk taking behaviour.

Researcher: *Now if your friends smoke, how come you don't smoke?*

Participant: *It depends on how I take the risk after I smoke...*

Researcher: *Tell me what you mean?*

Participant: *Those who smoke because their friends smoke they don't know the the effects of smoking...But I do. (15-year-old male)*

Adolescents appeared to be concerned by their self-image in terms of how their peers would perceive them if found engaging in risk behaviour.

Everybody, most of the people know me, and they can't imagine me smoking....yeah.

(15-year-old male)

The adolescents went on to describe the way they avoided friends who participated in risk-taking behaviour by distancing themselves.

Participant: *I won't get cancer easily 'cause I will avoid the things which would make me get cancer ...like fries...fast food...burgers, sausages and the junk food...*

Researcher: *And how do you avoid?*

Participant: *By not following people who do that stuff...*

Researcher: *So you do not follow them.*

Participant: *Yeah.*

Researcher: *When you see other children going to eat fries what do you do?*

Participant: *I just tell them I'm going home. (13-year-old female)*

Apart from refusing to participate in risk behaviour by avoiding peers, adolescents took additional steps of seeking advice from adults on how to avoid friends who influence them into risk-

taking behaviour. Adolescents who sought for advice were asked to keep away from their peers by taking part in other activities.

I ask for advice for my relatives; then she told me what to do to avoid those friends, to stay alone, keep myself busy, read and study books, watching cartoons, listening to music, so get myself busy, yeah. (16-year-old female)

Adolescents made decisions around taking part or avoiding cancer risk behaviour depending on what their peers thought of the behaviour. They evaluated how their peers reacted when they engaged in cancer risk behaviour and when they avoided the behaviour. In their narrations, adolescents talked about being mocked and laughed at because of not smoking. When adolescents gave in, they were praised.

Because I have other friends they use them [cigarettes] and when they stop using them their friends sometimes laugh, laugh and say that they are babies ... and then when they use them other friends say that they are now becoming like adults. (12-year-old male)

Researcher: *How do people start smoking?*

Participant: *When they are told by their friends that smoking is good. (14-year-old male)*

When mocked, some adolescents gave in to the influence to take part in cancer risk behaviour. However, their intention to take part in the behaviour appeared to be that of experimenting. From their narrations, experimenting with cancer risk behaviour allowed them to make the decision on whether to continue to take part in cancer risk behaviour or not. The adolescents evaluated whether they liked the behaviour or not.

Okay, the first time when they told me that I'm behaving like a kid I tried it [drugs] but I didn't feel that it [the drug] was good, so I stopped it and went home. So they started saying that at

unakaziwa ati (my mom does not allow me) to go for night parties, yeah so that's the reason so I told them I'm not used to those drugs, yeah. (16-year-old female)

Adolescents felt it was okay to take part in cancer risk behaviour if adults (e.g., their parents) involved themselves with the same behaviour. Maybe adults played a more influential role whereby seeing them take part in risk behaviour meant the behaviour was acceptable.

They continue drinking alcohol because it's something that maybe they've seen from their parents doing, so when they take alcohol maybe when they see their parents doing it they see that it will not affect their body, so they continue drinking alcohol till they die. (13-year-old female).

Being Healthy. On the theme of being healthy, 30 (56.6%) adolescents suggested that they could prevent cancer by keeping a healthy lifestyle. Adolescents talked about their perspectives of healthy living then spoke about their healthy living behaviour. Of these adolescents, 19 (63.3%) came from the rural school while 11(36.7%) attended the urban school. Most (n=11; 20.75%) of them were young (ages 12-13) and believed being young meant they were stronger and could engage in cancer preventive behaviours.

When you're younger, you're more energetic and when you move around you're being active, when you jog, when you run, when you jump. Also when you do water activities like swimming or surfing. Yeah that way you can, you can live a much healthy lifestyle. (12-year-old female)

Being healthy was described as eating healthy foods by 13 (43.33%) adolescents, taking part in physical activities by 29 (96.7%) adolescents, going for medical check-ups by 23 (76.67%) adolescents, and sun protection by 5 (16.67%) adolescents. With regards to healthy eating, adolescents perceived consuming fruits and vegetables as cancer preventative and counterintuitive to cancer risk behaviour.

Researcher: *is it possible to avoid cancer?*

Participant: *Yes.*

Researcher: *In what way?*

Participant: *Through eating a lot of vegetables, fruits and not eating fat foods (12-year-old female)*

When you eat healthy food, you are not going to be able to get cancer. (13-year-old female)

'Cause oil and fats may be increasing the chances [of getting cancer] and the oil and fats inside your body, if you run and burn them up and the ones that you eat you run every day they burn up, you eat some more, you burn them up, giving you more energy and strength and you get more healthy. (12-year-old male)

According to adolescents' beliefs, physical activities could reduce one's chances of getting cancer in future by keeping the "body fit" or by distracting one from risk-taking behaviour.

If you exercise I don't think you'll get cancer 'cause you're keeping your body fit and you're living an active life. (12-year-old female)

Because you know when you at least go for some exercise maybe that person who smokes maybe will not think about smoking at that time. (17-year-old female)

Adolescents believed regular check-ups could prevent cancer because it creates an opportunity for the physician to examine the person. In case signs of cancer are noted, the physician can initiate early treatment. Their description of how screening could reduce one's chances of getting cancer in future was similar to the description of secondary prevention.

Once you go for checkups now and then when you have any signs and symptoms the doctor will notice and tell you what to do before its late. (13-year-old female)

When you go for a checkup, they might detect it [cancer] before it gets to the latter stages. (12-year-old male)

With regards to sun protection, avoiding direct exposure to sunlight was important. Adolescents believed subjecting oneself to direct sunlight could expose them to ultraviolet rays.

Researcher: *What else can you do to avoid cancer?*

Participant: *You avoid direct sunlight.*

Researcher: *Um-hmm. How can you do that?*

Participant: *Maybe if you want to bask in the sun you only, you only bask the one that comes only in the morning. (17-year-old female)*

A few of the adolescents believed sunscreen could be used to prevent exposure to harmful sun rays and shared their experiences of using it.

Participant: *I even use sunscreen. It's not oily, its lotion that protects skin from the sun, the rays, the sun rays.*

Researcher: *Do you use it?*

Participant: *Yeah, if I don't I usually get sunburns on my face.*

Researcher: *Oh. When do you use it?*

Participant: *When I go for swimming...and when I go for trips that I know include a lot of heat. (13-year-old female)*

Beyond expressing perspectives of cancer prevention as healthy living, adolescents described how they engage in physical activities. They talked about taking part in healthy living behaviour in the company of their parents who appeared to offer support.

I wake up; I'll do a bit of exercise with my mom, skipping rope, and in the evening when she comes, [we] go for an evening run and then finish my day. (13-year-old female)

While most of the adolescents talked about practicing healthy lifestyles, they believed their peers did not. Their peers smoked cigarettes and engaged in sedentary lifestyles.

Cause the more active they are, the fewer chances that they have of getting cancer, [but] they're just lazing around and smoking all day (12-year-old female)

Even though adolescents took part in healthy behaviour, some faced challenges. They faced personal barriers (e.g., fear), parental influence, lack of awareness, health reasons, or lacking structures that could guide them on healthy living. One adolescent talked about the reasons why some adolescents do not go for HPV vaccinations.

Researcher: *Are there kids that when they say they're supposed to go for the [HPV] vaccine they don't go.*

Participant: *Yes...Because sometimes small people they fear needles....maybe their parents don't believe in the vaccines.*

Researcher: *What else?*

Participant: *The person is not given, doesn't know more information about the disease and they think they, they cannot get it. (12-year-old male)*

At other times, barriers to preventive behaviour were a lack of support from parents. Sometimes parents did not have the time and resources to take the adolescents for screening.

I always tell my mom that we should go for a checkup it's just that she has a lot of things to do so we don't get time to go to the, for the checkup yeah. (12-year-old female)

At other times, adolescents' interests in healthy living practices were in conflict with the school's schedules and activities. School work and the demand to attend to this work meant that adolescents forego their interest to engage in health promotion behaviour to attend to school work.

Participant: *I can't carry skates to school. But there's something like a skating club, but once you get to class it becomes hard to go for clubs, the different clubs, and then you still have to be in class.*

Researcher: *Why does it become difficult?*

Participant: *'Cause you're pressured to you must do this work, and there's so much work. Sometimes there's so much work you have to do revisions 'cause the exams might come hard.*

Adolescents derived their perspectives of cancer prevention through healthy lifestyles from health promotion messages.

Participant: *The message was that you first always go for checkups or if you don't have time to go for checkups you at least make sure you have a healthy lifestyle, yeah be active...Yeah.*

Researcher: *What else did you hear?*

Participant: *I heard that you should also mostly be eating those traditional foods and also avoid ...frying or deep-frying foods and boil more foods than frying or deep-frying. (12-year-old male)*

They appreciated the prevention messages that focused on healthy living.

I think that it's [the message] good because they, they encourage you to live a healthy lifestyle 'cause most of the teenagers they just like to eat ice cream or chicken or pizza and stuff, like that's why they are telling them that they should live a much healthier lifestyle and avoid eating those foods and eat more healthy foods, yeah. (12-year-old male)

Appreciation of the message content went beyond liking the messages to taking preventative action. Importantly, adolescents talked about changing their behaviour.

They made me feel happy 'cause now I had more information [on] how to change my, my lifestyle. (12-year-old male)

After we heard that [the message] we mostly started eating more healthy foods and less of ordering stuff, yeah...we changed our number of ordering times and also how much, or how much fat we eat or how much salt we eat and sugar...we started watching that and also our salt intake. (12-year-old male)

Cancer Prevention Plans

Adolescents also shared their perspectives of cancer prevention plans. Adolescents spoke about areas where the plans were limited and opportunities for improvement. There were very few cancer prevention programs and initiatives in the communities, at schools, or from the government. Specifically, of the few preventive programs that were available, they were spearheaded by the government, parents, peers, and the schools. These efforts focused on health promotion. One of the adolescents at the urban school stated that people promote healthy living through physical activities, healthy eating, and health promotion communication.

When they [neighbours] go for jogging, when they usually eat healthy foods, sometimes they, when they have a feast usually they have a table of healthy and junk food...so they can help you, they'll also tell you things, they provide food, and if they provide food that is healthy they do not want you to have diseases in future. (13-year-old female)

At the government level, adolescents reported that the government has enacted legislation to prohibit smoking in certain places while at the same time encourages the public to stay healthy by keeping fit.

The government, they help when they say that nobody should smoke in a certain place and they put places for smokers...So that you don't make the smoke to non-smokers...And they destroy

certain drugs... when they phone people about preventing cancer. And they do counseling for the people who abuse drugs...they inform people about the dangers of drugs and how they can make somebody get cancer. (12-year-old male)

They [government], mostly they just advise to keep fit...They [government] also, also have research places where, where you can, where you can go and get, like get the right, and get the specified help that you need, whether or whether not you're a cancer patient. (12-year-old male)

At the school level, school administrators promote environmental conservation, physical activities, healthy eating, and sharing information about cancer that sometimes includes information on cancer prevention

Researcher: *What about here in school do they do anything?*

Participant: *Yeah, they planted a lot of trees and they've made sure that our water is clean and they've also made sure that we usually go for games, swimming, they make sure we are usually active apart from sitting in class.*

Researcher: *Um-hmm. What else do they do?*

Participant: *Sometimes they organize walks or sports days, swimming gala days. (12-year-old male)*

Schools promote healthy eating by providing healthy meals which include fruits and vegetables.

In school they prevent cancer 'cause they don't give junk food most of the time and they buy us fruits, after lunch we take fruits, yeah. (13-year-old female)

Teachers educate the adolescents about cancer, cancer risk factors, and cancer prevention. Often, education about cancer is presented during health classes. Adolescents were presented with

content in their classrooms, guided about where they could find additional information (e.g., the internet), and informed about actions to take (e.g., to stop smoking).

Well for me we have just been educated just a little especially in school, because when the teacher is like talking about a disease, any teacher talks about a disease he or she also includes the cancer...and talks about how you can prevent it and sometimes the teachers tells us that if we are interested to know about cancer you can Google in order to get more information about it. (17-year-old female)

Participant: *What I heard from the teachers that all of the teachers talked about cancer...and they told us on how to prevent it.*

Researcher: *Okay. Which teachers?*

Participant: *The science teacher here at our school...he also advised us not, for those who are taking like the drugs...the cigarettes, the bang, they should stop taking them...The smoke gets into your lungs, it somehow affects them. (17-year-old female)*

Although the schools have taken initiatives towards cancer prevention, the preventive plans were limited. Some adolescents had not received any information about cancer and the disease had not been presented in their classes. However, these adolescents had learned about other diseases such as malaria. Maybe greater attention was placed on diseases such as malaria because many people die from them.

Researcher: *Do they teach about cancer in classes here?*

Participant: *No.*

Researcher: *Have you ever been taught about cancer?*

Participant: *No.*

Researcher: *How come they don't teach about cancer?*

Participant: *I really don't know why...maybe because they, they know more about us because malaria, it used to be a disease that used to kill people every day, so I think they just want us to be aware of what, how malaria spreads really fast and also I don't know, I don't know why they don't teach about cancer. (13-year-old female)*

Similarly, when asked about cancer preventive plans in general, some adolescents had not taken part in any cancer preventive programs. Adolescents' responses were similar to this:

Researcher: *Okay. Um, what type of cancer prevention programs have you taken part in?*

Participant: *I haven't taken any. (12-year-old male)*

Researcher: *Have you ever attended any club for cancer prevention?*

Participant: *No.*

Researcher: *Any activities for cancer prevention?*

Participant: *No. (14-year-old male)*

At the family level, parents took initiatives to influence the choices adolescents make about their diet, physical activities, and whether to go for screening or not.

Participant: *Sometimes our mother is thinking about how to get us away from sugary stuff and oily stuff.*

Researcher: *What was she thinking?*

Participant: *She was thinking maybe if I drink this type of juice maybe it has only a tiny percent of sugar, and you can use it every day and till you won't use a lot of sugar in it, and she will hide it away from her children, maybe lock it up in the wardrobe or somewhere else. (12-year-old male)*

Parents also educated adolescents about not smoking.

Researcher: *Who helps reduce your chances of getting cancer?*

Participant: *Me and my parents.*

Researcher: *What do they do?*

Participant: *They stop storing fresh things for a long time...they tell me not to smoke. (17-year-old female)*

Although parents were educative, sometimes their messages lacked important cancer information (e.g., association of risk factors to cancer).

You'll find like your parents they told you that stop taking this its harmful to your health but they don't somehow tell you how harmful to your health, they don't tell you that you can get cancer, they just say its harmful to your health. (17-year-old female)

In addition to family members, friends offered support to healthy adolescents in their quest to take part in healthy lifestyle practices.

Researcher: *Does anybody help you to do things like swimming?*

Participant: *Yeah, my friend, my friend does a lot of swimming, we actually do like everything together, only that she's not in my class. (13-year-old female)*

The adolescents from both schools went beyond talking about cancer preventative plans and areas of limitations. Adolescents made suggestions about what could be done to improve cancer, cancer risk, and cancer prevention efforts. They expressed their desires to learn and felt they could learn with their parents and at school. Health promotion programs at school could also be improved. For instance, some adolescents desired to have more time for physical activities.

What I would love is first I tell my mom that I want to know more, so we start our research, we go to the internet, we Google cancer, we take short notes about cancer, then we tell our friends

what we have learned about cancer, the things that we did not know, now we know, yes. (13-year-old female)

Researcher: *What can your school do in terms of cancer prevention?*

Participant: *Um it can, if the food, the food when they provide for us good food they should also ensure that the water is clean and also they should provide also time for us to go for games and when, say for games the teacher is not supposed to be taking that lesson, yes. (13-year-old female)*

Researcher: *How about your school, what can your school do to help you and other teenagers prevent cancer?*

Participant: *Educating us more about cancer. (14-year-old male)*

Summary

Fifty-three healthy adolescents that were predominantly from the rural school (64%) took part in this study and shared their perspectives of cancer, cancer risk, and cancer prevention. A considerable proportion (40%) had experiences of with cancer either in their family or from friends. In their discourse, adolescents talked about cancer as a strange disease that was complex and confusing, dangerous, expensive to treat, isolating and could generate a myriad of emotions. They also described cancer using metaphors (military, living thing, death) with death metaphors dominating their descriptions. Adolescents went on to talk about cancer risk where they related it to lifestyle, environmental and biological factors. Adolescents made sense of cancer risk by examining cancer risk information and evaluating the benefits versus the costs of taking part in risk behaviour. In essence, adolescents shared knowledge on how they make decisions around risk behaviour by processing cancer risk information. When it came to cancer prevention, Kenyan adolescents believed cancer prevention

could be approached by avoiding cancer risk factors, peers who take part in cancer risk behaviour and maintaining healthy lifestyles. Furthermore, adolescents felt they had limited awareness of cancer, cancer risk, and cancer prevention and desired to be involved in cancer prevention and health promotion efforts.

Chapter 6: Discussion of the Findings

In this chapter, a discussion of the findings is presented. The discussion is organized under the following headings: 1) 'Kenyan adolescents' perspectives of cancer,' 2) 'Kenyan adolescents' perspectives of cancer risk,' and 3) 'Kenyan adolescents' perspectives of cancer prevention.' Adolescents' conceptualizations are examined and related to existing research in this area. The themes under each of the findings are examined by linking them to relevant literature, the Health Belief Model, and Symbolic Interactionism which formed the theoretical underpinnings of this study.

Kenyan Adolescents' Perspectives of Cancer

There is no other disease like it. Adolescents perceived cancer as very complex, confusing, dangerous, expensive to treat, could lead to isolation and loneliness, and could result in painful emotions. Cancer was complex and confusing because it comes in the form of different types and one can be confused about whether cancer is a communicable or a non-communicable disease. Adolescents distinguished cancer from other diseases because of its complexity and severity. In spite of their descriptions, adolescents appeared to have limited awareness of the disease. For instance, whereas adolescents talked about cancer as a very different disease, cancer in itself is a group of diseases. There are over 100 different types of cancers which affect different organs or tissues of the body and have certain unique features (National Cancer Institute, 2015). For instance, breast cancer may present with a growth or mass while leukemias may not.

Adolescents talked about cancer symptoms as diverse and sometimes were not sure what signs and symptoms to expect when they meet someone with cancer. Maybe adolescents expected people with cancer to present with certain signs and symptoms. While it is possible for different people with cancer to present with similar symptoms, different cancers present differently. Also, sometimes the side-effects of cancer treatments can be confused with signs and symptoms of the disease. Adolescents' perspectives were similar to those reported by Knighting, Rowa-Dewar,

Malcolm, Kearney, and Gibson (2011) where children talked of a wide range of signs and symptoms of different cancers. However, unlike the Kenyan adolescents, the Scottish children did not express doubt or feel confused by the differences in cancer symptoms (Knighting et al., 2011). Kenyan adolescents' perspectives call for better education and information sharing about how cancer presents, different types of cancers, and cancer treatment.

Cancer was described as dangerous because it leads to death. In the wake increasing cancer incidence and mortality in Kenya and other parts of Africa, adolescents' perspectives are reflective of the grim consequences of getting the disease. In studies that have examined cancer prevention and treatment in Kenya report of delays in seeking care, deficiency of health care resources to curb cancer incidence and mortality. Unlike these studies which are mainly based on quantitative methods and involve adult participants, the present study presents qualitative findings based on adolescents' perspectives. Adolescents described cancer as death because there are limited to no resources for prevention and treatment. In situations where resources are available, only the rich and people living close to health institutions can access them. Adolescents also believed that cancer cannot be cured. Perhaps their perspectives were based on awareness of limited treatment options, late presentation at the time of diagnosis. While it is true that some cancers have no cure, certain cancers (e.g., breast cancer) can be treated. In more developed parts of the world, survival rates for breast cancers have been about five years (Canadian Cancer Society, 2017). Cancer was also related to death and compared with other illness that could lead to death. HIV/AIDS is one of the illnesses that claims many lives in Kenya and other parts of Africa. Making reference to HIV/AIDS while talking about cancer and death strengthens the magnitude of adolescents' perspective of death as a cancer attribute. In the same way that HIV/AIDS has attracted attention that has led to research, prevention and treatment efforts, there is need for more concerted efforts towards cancer prevention and treatment in Kenya.

Cancer was described as costly to treat and was often compared to other diseases. Adolescents made sense of cancer based on their life worlds as adolescents. Adolescents particularly from OlKeri Mixed Secondary School lived far from the city and found it challenging to access cancer treatment centers. Access was limited by cost of transport, paying doctors' fees and other treatment expenses. Until recently, payment for cancer care (from diagnosis to palliation) in Kenya was fully made by patients. Recently, the national medical insurance program agreed to cover costs related to cancer screening, treatment, and medication. When total cancer care was paid for out-of-pocket, some people with the disease did not go for screening and treatment (Duron et al., 2013). Patients experienced suffering and financial burdens while the government grappled with a lack of resources (Busolo & Woodgate, 2014; Finocchario-Kessler et al., 2016).

Kenyan adolescents derived their conceptualizations from what they had learned at school, from the media, or living with people with cancer. In a study by Del Castillo, Godoy-Izquierdo, Vázquez, and Godoy (2011), healthy adult participants were asked to express their perspectives of cancer. Healthy adults who had a family experience of cancer shared significantly more representations of cancer based on its identity (signs and symptoms) and emotional components compared to participants without a family history of the disease. In a similar way, eight (40%) of the adolescents who described cancer as so different from other diseases had family members or friends with cancer. Adolescents who knew of someone with cancer were more likely to talk about cancer signs and symptoms as strange compared to participants who did not know of a relative or friend with cancer. As such, their social relations with people with cancer may have influenced their conceptualizations.

Adolescents' views were consistent with concepts of Symbolic Interactionism and the Health Belief Model whereby adolescents used words (symbols) that were common in their conversations and from message sources (Blumer, 1969; Rosenstock, 1966; Rosenstock et al., 1988). Although

healthy Kenyan adolescents did not have cancer, they based their representations of the disease on their culture as adolescents and factors within their social surroundings. Adolescents' friends and family members with cancer appear to present in ways that are difficult to understand. Kenyans hospitalised with cancer experience suffering, delays in getting appropriate care, face socioeconomic challenges, and often find themselves at very disadvantaged positions to negotiate for their care (Mulemi, 2008). Adolescents' narratives demonstrate the grim picture of what it feels like to have cancer from their social relations. Similarly, Canadian adolescents, particularly those with friends and family members with cancer, presented sad and scary impressions of what it means to live with cancer (Woodgate & Busolo, 2017).

Adolescent studies on cancer representations by healthy adolescents are limited (Mosavel et al., 2010; Woodgate & Busolo, 2017). Studies on cancer representations usually focus on adult patients (Varkula, Resler, Schulze, & McCue, 2010; Woodgate & Busolo, 2017). Often, these studies focus on how cancer perceptions are explained by the Health Belief Model (Gibbons et al., 2012; Woodgate & Busolo, 2015, 2017; Woodgate & Kreklewetz, 2012; Woodgate et al., 2014). According to the Health Belief Model, perceptions of an illness are affected by the seriousness, severity, and susceptibility to the disease (Rosenstock, 1966; Rosenstock et al., 1988). Illness perceptions may influence disease preventative efforts whereby if an illness is perceived as serious, severe, with high levels of susceptibility, individuals may take preventative action (Rosenstock, 1966; Rosenstock et al., 1988). Kenyan adolescents shared perspectives of cancer along the lines of how serious, severe, and susceptible they were to the disease. Similar to Woodgate's study involving Canadian adolescents (Gibbons et al., 2012; Woodgate & Busolo, 2015, 2017; Woodgate & Kreklewetz, 2012; Woodgate et al., 2014), most of the adolescents perceived cancer as a very serious and severe disease to which they were susceptible.

Adolescents from both schools perceived cancer as an emotional disease that generated fear.

Fear is an emotional feeling that usually results from threats of death, danger, or pain (Oxford University Press, 2016a). When adolescents heard the word cancer, they felt “*bad*,” were scared, felt “*sad*,” were depressed, shocked, or felt “*sorry*.” Although they felt this way, feelings of fear were the most expressed emotions especially by participants from the rural school (52.5%). Similarly, in a study by Mosavel and colleagues, South African adolescents expressed fear when they heard the word “cancer.” Some of them expressed fear because their family members had died of the disease.

Emotional reactions such as fear could have important implications for cancer prevention (Hauser & Schwarz, 2015; Woodgate & Busolo, 2017). For instance, fear towards cancer can lead to higher cancer preventive practices (e.g., screening) but fear of the preventive strategies (e.g., Pap testing) could lead to low cancer preventive practices (Consedine, Adjei, Ramirez, & McKiernan, 2008; Consedine, Magai, Krivoshekova, Ryzewicz, & Neugut, 2004). Whereas most of the adolescents who talked about fear directed their emotions to the disease, some were afraid of screening and HPV vaccinations. Adolescents who express fear towards the disease may need more information about the disease and more support. Adolescents in fear may need to know that some cancers can be treated and not all people who get cancer die from the disease. Also, adolescents in fear may need support to manage their emotions and cope with experiences with the diseases.

Lay understanding through metaphors. A metaphor is a figure of speech that is used to link two unrelated subjects in a new way in the form of some comparison (Oxford University Press, 2016b). While metaphors may seem innocuous, they are powerful and may influence how we think, act, behave, and treat others. Metaphors may allow adolescents to arrive at deeper meanings of cancer, enable them to express their thoughts, and present their social and moral worlds (Czechmeister 1994). On lay understanding through metaphors, adolescents described cancer using the military, living thing, and death metaphors. Perhaps Kenyan adolescents described cancer using military metaphors because they felt all resources and efforts need to be directed at cancer treatment whenever one is

diagnosed. Their meanings could also imply that cancer prevention and treatment need combined efforts where different people play different roles similar to how different soldiers play different roles in the battle field. Research on healthy adolescents' description of cancer using metaphors is only emerging with these descriptions shared by adolescents in developed countries (Knighting et al., 2011; Oakley, Bendelow, Barnes, Buchanan, & Husain, 1995; Varkula et al., 2010; Woodgate & Busolo, 2017). The metaphors used by adolescents in the present study support the metaphors identified by Woodgate and Busolo (2017) in their study involving healthy Canadian adolescents.

With respect to military metaphors, Kenyan adolescents' described cancer using terms such as "*attack*," "*fight*," "*destroy*," and "*kill*." Cancer was perceived as an enemy to be fought because it attacked the body. When the body is under attack, healthy adolescents believed health care providers and body cells needed to combat the cancer cells and save the body. Adolescents felt 'fighting' could lead to losing the 'war' on cancer. Adolescents' descriptions using military metaphors are similar to military metaphors used by adolescents elsewhere (Oakley et al., 1995; Woodgate & Busolo, 2017). Canadian adolescents described cancer using military metaphors of war where the good cells could fight the bad cancer cells (Woodgate & Busolo, 2017).

Kenyan adolescents spoke of the possibilities of living with cancer and recovering. In their discourse, they used words such as "*survive*" and associated survivorship with winning the war. Survivorship was associated with being very strong or being affluent and able to pay for expensive treatment. Cancer survivorship was also possible because of luck because people with cancer often died from the disease. Adolescents' belief that survival was possible generated a sense of hope and belief that after all not all who get cancer lose the war. Their views are supportive of the views by Knighting et al. (2011) who made the suggestion to present information about cancer so that adolescents see the possibility of surviving from the disease.

Although adolescents talked about the possibility of surviving, they felt it was difficult to survive

once one developed cancer. In their expressions, they used statements like “*it’s a miracle.*” The term “survivor” has been around since Dr. Fitzhugh Mullan described the experience of living with cancer in the article “Seasons of Survival” (Kolata, 2004; Mullan, 1985). Cancer survivorship is the period from diagnosis to living with cancer through treatment to either reduce the chance of recurrence or manage the disease in the long term (NCCS, 1995). Healthy Kenyan adolescents attributed survivorship to recovery and felt the chances of cancer survivorship were very slim. Kenyan adolescents’ perspectives could be reflective of the challenges that people with cancer experience in the country. Unless they are rich or fortunate, they are challenged by limited treatment choices which make survivorship difficult (Mulemi, 2008).

Although describing cancer using metaphors allowed adolescents to talk about cancer in ways that were meaningful to them, militaristic metaphors could have detrimental effects on cancer prevention efforts (Hauser & Schwarz, 2015). Cancer prevention requires healthy adolescents to take measures that include self-limiting behaviour. Adolescents who perceive cancer as an enemy may not think of approaching cancer prevention through self-limitation. Instead, they might think of the need to fight (Hauser & Schwarz, 2015). Therefore, before military metaphors are used, careful considerations may be needed.

When describing cancer using living thing metaphor, adolescents described cancer using words and mental images that were associated with life or living organisms. Adolescents used phrases like “*move fast, develops in a hurry if you chokoza [disturb] it,*” and “*it keeps growing and growing*” in their descriptions. Cancer was believed to have a life. Therefore, it could grow while cancer cells could eat other cells. In the same way, Canadian adolescents described cancer using living things metaphors where they suggested that cancer can grow and get out of control (Woodgate & Busolo, 2017). In their narration, Canadian adolescents described cancer as “haywire cells” and shared a picture of “garbage” which one of the adolescents described as “polluting cells” specifically

because cancer cells can grow and spread “uncontrollably” (Woodgate & Busolo, 2017, p. 8).

The metaphor of death dominated adolescents’ conceptualization of cancer. Over 75% of the adolescents who took part in this study described cancer using metaphors of death. An almost equal number of males and females described cancer using metaphors of death with the 13-year-olds being most likely to describe cancer this way. Adolescents described cancer as death itself or as the initiator of death (the killer). In their discourse, they used words like “*death*,” “*loss*,” “*going to die*,” or described death as an unwanted result of having cancer. Kenyan adolescents’ descriptions are similar to those of South African adolescents (Mosavel et al., 2010). When South African adolescents were asked what came to their minds when they heard the word ‘cancer,’ 50% of them thought of death. The South African adolescents went on to elaborate on their thoughts of cancer as death by mentioning that cancer was an incurable illness, a disease that kills like AIDS. Similarly, Canadian adolescents described cancer using metaphors of death (Woodgate & Busolo, 2017). Cancer as death initiated thoughts of helplessness which were also expressed by adolescents’ in South Africa (Mosavel et al., 2010). Adolescents’ perspectives of cancer as death suggests a dominant theme on how this age group perceives the disease irrespective of where they reside. The death metaphor is important and could affect how adolescents approach cancer, cancer risk, and cancer prevention.

In the wake of increasing cancer incidence and mortality particularly in African countries, perceiving cancer as death reflects the significant impact of this chronic disease to society. Cancer claims lives at alarming rates and calls for more efforts towards prevention. The need to take important measures to prevent the disease are now. Kenyan adolescents perspectives of cancer as death adds information on why Kenyans with cancer sometimes delay seeking treatment (Busolo & Woodgate, 2014). Some of the Kenyan adolescents believed there was no need to seek for cancer treatment when the person was going to die. When mortality rates are high, cancer will almost be

perceived as a death sentence. Unless better cancer outcomes are realized, it is possible that healthy adolescents will continue to perceive cancer as death.

As much as death was possible, adolescents felt God could affect cancer outcomes. Adolescents believed God could prevent cancer if it was His will. In their narrations, God appeared to have powers or a form of influence on whether or not one could get cancer. Adolescents based their understanding on their culture and beliefs. Kenya is a predominantly religious country where majority of the people are either Christians or Muslims. Some of the adolescents in this study attended church and took part in religious activities. In the same way, Canadian adolescents from a predominantly religious community perceived cancer as God's will and believed that praying and trusting God could protect them from cancer (Woodgate & Busolo, 2017). In Morocco, mothers who did not perceive the need to get their daughters vaccinated with the HPV vaccine because they believed God would take care of their health (Mouallif et al., 2014). Similarly, some Kenyan adolescents believed they needed to pray and have faith so that God could prevent cancer.

The belief that cancer prevention depends on the will of God could have harmful effects on cancer preventive efforts (Hauser & Schwarz, 2015). The belief that God can prevent cancer is concerning and may lead to harmful outcomes. For instance, healthy adolescents might avoid engaging in healthy behaviour or could involve themselves in lifestyle risk behaviour as long as they prayed and trusted in God. Therefore, there is need to increase awareness on cancer prevention and demystify myths such as cancer depends on God's will.

Kenyan Adolescents' Perspectives of Cancer Risk

This study is among the few qualitative studies that explore adolescents lay understanding of cancer risk (Lipworth, Davey, Carter, Hooker, & Hu, 2010; Woodgate et al., 2014). Unlike quantitative studies which can deductively impose notions of risk to participants' understanding, this study allowed Kenyan adolescents to inductively describe cancer risk based on concepts with which

they were more familiar (Ben- Ari & Or- Chen, 2009). Adolescents conceptualized cancer risk in ways that were grouped into two main themes of cancer risk as lifestyle behaviours and the process of risk perception. Overall, adolescents from both schools perceived risk as serious and cancer risk as the chances or likelihood of getting the disease in future. They felt susceptible to cancer especially if they took part in cancer risk behaviour. Both urban and rural Kenyan adolescents shared the same perspectives of cancer risk. Similarly, adolescents in Sweden made sense of risk in similar ways irrespective of their place of residence (urban vs. rural) (Wall and Olofsson, 2008). The adolescents in Sweden related risk to daily occurrences while growing up (e.g., health risks) (Wall and Olofsson, 2008).

Cancer risk as lifestyle behaviours. Kenyan adolescents perceived themselves as susceptible to cancer and suggested that cancer risk is determined by the type of behaviour and frequency of taking part in cancer risk behaviour. The higher the frequency of engaging in cancer risk behaviour, the higher the chances of getting the disease. In the same manner, making a choice to avoid risk behaviour reduced the likelihood that one could get cancer in future. Relating cancer risk to the type of behaviour and frequency of taking part in a behaviour is similar to Canadian adolescents' perspectives of cancer risk (Woodgate, et al., 2014). Canadian adolescents believed the frequency and cumulative effect of taking part in risk behaviour could increase one's lifetime chances of getting cancer in their adulthood years. Perception of risk around susceptibility is reflective of the Health Belief Model concept of perceived susceptibility (Janz & Becker, 1984; Rosenstock, 1966; Rosenstock et al., 1988).

Adolescents described their perspectives of different cancer risk factors. Adolescents believed that engaging in lifestyle behaviours such as smoking, drinking alcohol, eating foods rich in fats and sugars, drug use, risky sexual intimacy, and physical inactivity could increase their chances of getting cancer in future. In a study by Woodgate et al. (2014) on Canadian adolescents' perspectives

of cancer risk, the adolescents viewed cancer risk regarding particular risk factors. In their narrations, they related cancer risk to lifestyle risk factors such as smoking.

In addition to the lifestyle factors, adolescents from both studies expressed some level of misinformation or confusion. Some of the adolescents from the Canadian study did not know that HPV was a cancer risk factor while some Kenyan adolescents related cancer risk to other factors (myths) such as mixing of body fluids or evil spirits. While Kenyan adolescents talked about risky sexual intimacy as a cancer risk factor, they rarely talked about HPV transmission. Adolescents' perspectives appeared to demonstrate limited awareness of cancer risk factors. Similarly, other studies from African populations suggest limited levels of awareness of cancer risk factors (Busolo and Woodgate (2014).

In addition, Kenyan adolescents related cancer risk to environmental and biological factors. In their discourse, they believed exposure to pollution, chemicals and genetic factors could increase their chances of getting cancer in future. Adolescents' perspectives reflect the work by Danaei, Vander Hoorn, Lopez, Murray, and Ezzati (2005) and Lindor et al. (2008). Danaei et al. (2005) examined systematic reviews, meta-analyses, and primary data to determine the effect of a number of risk factors on cancer mortality. They found that that environmental factors such as indoor smoke from burning solid fuels and urban pollution increased the risk for lung cancer. Lindor et al. (2008) studied familial connections to cancer risk. While study participants were aware of environmental and biological factors, their level of knowledge was limited. For instance, participants only referred to genetic factors as biological risk factors. Other biological risk factors such as age were not mentioned (Smetana et al., 2016). Therefore, in cancer awareness and health promotion initiatives, more information about other cancer risk factors could be shared with Kenyan adolescents.

In addition to associating cancer risk to lifestyle behaviour, Kenyan adolescents made sense of their understanding of cancer risk by reflecting on people who participated in risk behaviour and

how they disliked their behaviour. Adolescents talked about their parents or friends who smoke and how they found smoking to be distasteful. Similarly, Canadian adolescents perceived adolescents that smoked as unpopular and did not want to associate with them (Woodgate & Busolo, 2015).

Kenyan adolescents made sense of cancer risk based on the social norms at their schools, community, and homes. Adolescents who disliked smoking, drinking alcohol, unhealthy eating, and using drugs mainly attended the rural school where the head teacher often cautioned students against engaging in lifestyle risk behaviours. These adolescents were also likely to live with parents or siblings who took part in lifestyle risk behaviours. In a similar way, Swedish adolescents made sense of risk based on the current norms of where they resided (Wall and Olofsson, 2008). According to Berg and Lune (2012), when people interact, they communicate in ways they attach meanings to their world. Therefore, Kenyan adolescents dislike of smoking, drinking alcohol and eating unhealthy foods reflects the meanings they attach to these cancer risk factors.

Process of risk perception. Adolescents made sense of risk perception in ways that are represented by the theme of the process of risk perception. Similar to Canadian adolescents (Woodgate et al., 2014), Kenyan adolescents used processes of suppressing knowledge, managing cancer risk information, downplaying cancer risk behaviour, and evaluated the benefits versus the costs taking part in the behaviours. Some adolescents took part in cancer risk behaviour because they ignored or paid less attention to information about cancer risk. In the interviews and focus group discussions, some adolescents continued to take part in cancer risk behaviour in spite of being informed about cancer and cancer risk. Similarly, a study by Lake, Thomson, Twelves, and Davies (2014) about adolescents' motivation for sunbed use, study participants valued tanning in spite of demonstrating awareness of the risks of sunbed use. Although they were aware, participants either downplayed and/or ignored information regarding the risks for sunbed use. Unlike participants in the study by Lake et al. (2014), some Kenyan adolescents embraced cancer risk information and made

behavioural modifications to reduce their risk for cancer. For adolescents who acknowledged information on cancer risk, they expressed hope that their peers could listen and change.

Some adolescents managed cancer risk information by evaluating whether the information was true or not. Some adolescents took part in the behaviour because they wanted to experiment while others participated because they felt that cancer risk information was not true. Similarly, in the study by Lake et al. (2014), some of the female participants continued to tan their skin and mentioned that cancer risk information was exaggerated by the media or that one could easily recover from sunbed use. Canadian adolescents questioned media information on cancer risk factors (e.g., cell phone use), created their own interpretations, and presented their own positive effects of smoking. As such, Canadian adolescents expressed misconceptions and misinformation about cancer risk (Woodgate et al. (2014).

Another way that Kenyan adolescents' rationalized risk was by evaluating the benefits versus the costs of cancer risk-taking behaviour. Adolescents who rationalized risk this way found it pleasurable and rewarding to engage in cancer risk behaviour. Most of these adolescents attended the rural school. The strategy to rationalize cancer risk with a focus on the short term benefits is similar to how adolescents in Canada (Woodgate et al., 2014) and UK (Lake et al., 2014) rationalized cancer risk. Healthy Canadian adolescents engaged in the cancer risk behaviour because they were interested in the short-term benefits (Woodgate et al. (2014). Similarly, female adolescents in UK, placed greater value on social significance, a sense of being healthy and a sense of control in relation to sun tanning (Lake et al., 2014). According to the Health Belief Model, adolescents may rationalize cancer risk by evaluating perceived severity of risk behaviour (Rosenstock, 1966; Rosenstock et al., 1988). Adolescents may perceive the severity of the risk behaviour as minimal compared to perceived benefit. In the end, adolescents may choose to engage in the risk behaviour (Gibbons et al., 2012; Rosenstock, 1966; Rosenstock et al., 1988; Sharma, 2011).

According to Slovic's research on risk perception, adolescents give limited conscious thought to risk (Slovic, 2010). For instance, although adolescents may be aware that smoking increases cancer risk, adolescents who smoke may have limited and sometimes unrealistic awareness of the cancer risk and consequences of smoking. These adolescents may not have lung cancer and thus, may be unable to evaluate the impact of living with the disease (i.e., experience with the treatment, the disease, and quality of life) in their decision to smoke or not. Their decisions to smoke may be affected by positive or negative evaluative feelings toward smoking instead of an analysis of facts and consequences (Slovic, 2010; Sterling, Fryer, & Fagan, 2016). As such, although adolescents in the UK were aware of the risk of skin cancer because of skin tanning, they did not appear to give much thought to what it means to have cancer (Lake et al., 2014). Perhaps they were convinced by the immediate benefits such as fulfilling social expectations. In fact, some of the participants felt the media did not report the benefits of skin tanning. In situations where certain populations present low cancer preventive patterns (e.g., screening) (Demers et al., 2015), an examination of their rationalization of cancer risk might offer useful information.

Unlike the UK adolescents (Lake et al. (2014), some Kenyan adolescents took part in cancer risk behaviour out of necessity or because of addictions. Study participants felt their peers and parents who took part in risk behaviour could not carry out their usual daily activities without engaging in addictive cancer risk behaviour. Most of the adolescents who shared this belief attended the rural school and believed that those who take part in risk behaviour were 'stuck' with the behaviour and could not change. They felt that peers who were addicted to risk behaviour could develop detrimental health effects if they attempted to stop. In the Czech Republic, Kralikova, Kmetova, Zvolska, Blaha, and Bortlicek (2013) found adolescents who smoked were unhappy and desired to quit. However, when they attempted to quit, they found the process to be difficult. Overall, 67% of adolescents who attempted to quit failed.

Out of fear of addiction, healthy Kenyan adolescents avoided risk behaviour. Healthy Kenyan adolescents appeared to rationalize risk by evaluating the consequences of their choices (perceived severity versus perceived benefits) and the likelihood of taking action (Rosenstock, 1966; Rosenstock et al., 1988; Woodgate et al., 2014). Healthy adolescents believed those who were addicted to certain risk behaviour made similar evaluations of benefits versus the harm of making behavioural changes.

Adolescents primarily from the rural school believed their peers engaged in risk behaviour because of ignorance. Adolescents at the rural school lived in areas that were poorly served by the media (e.g., radio or televisions) and were not taught about cancer at their school. In contrast, adolescents at the urban school lived close to the city and often obtained information about cancer and cancer risk from mainstream media. In the city, walks (e.g., cancer walk) to raise awareness and funds to support people with cancer were common. Adolescents who believed their peers engaged in cancer risk behaviour because of ignorance felt their peers would stop engaging in cancer risk behaviour if they were informed. Similarly, Hayes and Plowfield (2007) and Kulbok et al. (2008) suggest that adolescents health awareness can deter adolescents from smoking.

Kenyan Adolescents' Perspectives of Cancer Prevention

The third finding of this study was about the conceptualization of cancer prevention which generated three themes of cancer prevention as *avoiding cancer risk factors*, *avoiding peers who partake in risk factors*, and *being healthy*. Almost all (86.8%) adolescents who took part in this study perceived cancer as a preventable disease. This belief was in contrast to their conceptualization of cancer as a death sentence (death metaphor).

Avoiding cancer risk factors. Adolescents believed that one could prevent cancer by avoiding certain lifestyle and environmental factors. Adolescents found it necessary to avoid these factors because of their susceptibility to cancer and its severity. Adolescents appeared to understand

cancer prevention based on the Health Belief Model constructs of perceived susceptibility, perceived severity, and perceived benefits by taking preventative action against cancer risk factors (Janz & Becker, 1984; Rosenstock, 1966; Woodgate et al., 2014). Adolescents perceived themselves as susceptible to getting cancer later in their lives if they engaged in or exposed themselves to lifestyle or environmental risk factors. Similarly, prevention research which includes cancer prevention by adolescents suggests avoiding risk behaviour (Catalano et al., 2012; Fergusson & Horwood, 2003; Woodgate & Busolo, 2015).

Additionally, only 18 (34%) adolescents talked about their avoidance behaviour. These adolescents were ‘taking action’ towards cancer prevention which is in line with Health Belief Model concepts (Rosenstock, 1966; Rosenstock et al., 1988). The adolescents found cancer to be severe, felt susceptible, and thus, avoided the lifestyle factors. Similarly, Canadian adolescents who perceived cancer as a severe disease distanced themselves from peers who smoked (Woodgate & Busolo, 2015). In the wake of limited cancer awareness and preventative plans in Kenya (Kinyanjui, 2006; Muthoni & Miller, 2010; Parliament of Kenya, 2011), it is encouraging to find adolescents taking action towards cancer prevention. However, the small proportion of adolescents (34%) who talked about cancer preventative behaviour reflects the need for more health promotion efforts.

Avoiding peers who partake in risk factors. Healthy adolescents believed they could reduce their lifetime risk for cancer by avoiding peers who participate in risk-taking behaviour. Kenyan adolescents felt vulnerable and believed peers with risk-taking behaviour could influence them into cancer risk behaviour. Their beliefs support the understanding that adolescents take part in risk behaviour such as smoking through socio-cultural identities (Poland et al., 2006; Seo & Huang, 2012) where peers influence each other (Kobus, 2003). To counteract their vulnerability, adolescents found it necessary to avoid peers whose behaviour could increase their lifetime risk for cancer. Similarly, Canadian adolescents perceived smoking as uncool and resisted peers who urged them to

smoke (Woodgate & Busolo, 2015). In contrast, Turkish (Tamvakas & Amos, 2010) and Swedish adolescents (Nilsson & Emmelin, 2010) found smoking to be important for their social relations and thus, kept friends who smoked.

Canadian adolescents avoided peers who smoked perhaps because of Canadian health promotion and cancer prevention initiatives that discourage teens from smoking or starting to smoke. Among adolescents between ages 15 to 19, there has been a steady decline in smoking prevalence in Canada (Reid, Hammond, Rynard, & Burkhalter, 2015). In 1999, 28% of adolescents between ages 15-19 years smoked cigarettes compared to 11% in 2012 (Government of Canada, 2013). However, in Kenya, there are limited health promotion and cancer prevention initiatives that influence adolescents from engaging in cancer risk behaviour. Kenyan adolescents may have resisted the influence to smoke because of experiences of living with people who smoke, school policies, and the culture around smoking. Some parents smoked and adolescents found their behaviour distasteful which is similar to how Canadian adolescents perceived the smoking behaviour of their parents (Woodgate & Kreklewetz, 2012). Parents who smoked often neglected their families and their behaviour was embarrassing. At school, smoking was prohibited and those who smoked risked expulsion. Adolescents felt that teenage smoking was looked down upon and only adults were allowed to smoke. In their culture and social relations, adolescents felt they were too young to smoke.

Peers who took part in risk behaviour used positive reinforcement and coercion to influence those who did not participate in the behaviour to start smoking. Those who smoked laughed at peers who did not smoke and teased them. When teased, some adolescents gave in to peers demands to smoke. These findings are similar to existing research on peer influence towards smoking (Johnston, Westphal, Earnshaw, & Thomas, 2012; Kobus, 2003; Simons-Morton & Farhat, 2010). While adolescents in our study were influenced to participate in risk behaviour, most of them demonstrated

self-efficacy by avoiding peers who took part in cancer risk behaviour (Rosenstock et al., 1988).

Avoiding peers involved distancing oneself and seeking advice from trusted adults (e.g., parents) about how to avoid friends with risk-taking behaviour. Similarly, Canadian adolescents who no longer perceived smoking as appealing resisted the influence to smoke by peers who smoked. They set rules around their association with peers who smoked and encouraged other adolescents who were perhaps likely to smoke not to start (Woodgate & Busolo, 2015). Unlike the Canadian adolescents, when healthy Kenyan adolescents did not know how to avoid peers who engage in lifestyle risk behaviour, they sought for advice from adults they could trust (e.g., their parents). Approaching trusted adults for advice demonstrates adolescents' reliance on parental/peer influence to guide their behaviour. Similarly, 39 African American and Caucasian adolescents in United States talked about parental and peer influence as reasons for not to smoking (Kulbok et al., 2008). Therefore, it is possible that other Kenyan adolescents can benefit from responsible adults on making decisions around peer selection and risk taking behaviour (Allen et al., 2016). Adults may need to be aware of cancer, cancer risk, and cancer prevention and be prepared to support peers to prevent risk taking behaviour.

Kenyan adolescents perceived peers who took part in risk behaviour as “bad” people with intentions to get them to take part in cancer risk behaviour. Adolescents may have perceived themselves as easy targets because of their developmental stage, the importance of peer groups, and their social environments (Steinberg & Monahan, 2007). Adolescents talked about the “bad” people targeting them at school and home environments. Labeling people who smoke as “bad” people and feelings by healthy adolescents as targeted is concerning. The adolescents who engaged in risk behaviour may not be “bad” but could be facing challenges with addictions and may need support. At the same time, feeling targeted could be an issue that needs examination. For instance, why do adolescents feel targeted and what motivates adolescents who take part in risk behaviour to seek

peers who do not take part in the behaviour? A distinction between how adolescents view themselves and their peers versus how they view the behaviour can play an important part in health promotion. Better communication of cancer risk and prevention messages where clarity is directed at distinguishing risk behaviour from the people who participate in the behaviour could be useful.

Being healthy. Kenyan adolescents believed they could prevent cancer by practicing healthy lifestyles which was similar to perspectives by Canadian adolescents (Woodgate et al., 2014). Adolescents shared their perspectives of being healthy, their healthy living behaviour, challenges to engaging in healthy lifestyles, and sources of information about healthy living as a way to prevent cancer. Kenyan adolescents' perspectives of being healthy focused on physical health. Being healthy meant being physically active, eating healthy foods, going for routine medical check-ups, receiving vaccinations, and sun protection. In a similar way, healthy Canadian adolescents talked about lifestyle practices of physical activity and healthy eating as determinants of health (Woodgate & Leach, 2010) and making the right choices about health lifestyles (Woodgate et al., 2014). Likewise, Canadian adolescents narratives around cancer prevention echoed the importance of being healthy and sustaining a healthy body (Woodgate et al., 2014).

Although 23 (76.67%) of the adolescents felt being healthy needed one to get routine medical check-ups and vaccinations, none had heard of HPV or HPV vaccinations. Cancer prevention through screening and vaccinations are still limited in Kenya. Because of these limitations, GAVI initiated HPV vaccination demonstrations in 2013 and there are plans to expand HPV vaccination programs in the country (GAVI, 2013). In addition to the expansion, health education and health promotion need to be part of the vaccination programs. Health education and awareness around cancer prevention initiatives e.g., Pap testing or HPV vaccinations could start early for present adolescents. Adolescents could be informed on why they should be screened when they are old enough. Such timely preventative efforts can lead to reducing adolescents' lifetime risk for cancer.

When present adolescents are old enough and meet recommended guidelines (e.g., for screening), they could seek for the services from a more informed standpoint. Awareness, screening and treatment could reduce the risk for cancer. In a study about Pap test use and screening opportunities for women diagnosed with cervical cancer in Manitoba, Decker et al. (2009) found that invasive cervical cancer was more common among women who had not received a Pap test. Therefore, in Kenya, better awareness of cancer preventive services during adolescence could reduce the lifetime risk for cancer.

Kenyan adolescents also talked about how they took part in healthy lifestyle practices within their social environment. They talked about participating in physical activities with their parents, taking part in sports, following their parents' advice on what to eat, and sometimes going to the doctor for medical check-ups. Although adolescents engaged in these behaviour, they felt their peers did not. Adolescents believed their peers engaged in unhealthy behaviour such as smoking and sedentary lifestyles. In the same way, Muthuri et al., (2014) and Adamo et al. (2011) share findings with regard to Kenyan adolescents' behaviour around obesity and physical activities. Muthuri et al. (2014) found that only 12.6% of the 9-11-year old children and adolescents who took part in their study engaged in greater than or equal to 60 minutes of moderate-to-vigorous physical activities while Adamo et al. (2011) found 6.8% of the boys and 16.7% of the girls who resided in urban places in Kenya were overweight and obese. From both studies, it is evident that although Kenyan adolescents are physically active and eat healthy foods, a considerable proportion are physically inactive and unhealthy. Unlike the children and adolescents who took part in the studies by Muthuri, Wachira, Leblanc, et al. (2014) and Adamo et al. (2011), this study provides more qualitative information that reports on where adolescents derived their perspectives about cancer prevention as healthy living and the factors that support or act as barriers to Kenyan adolescents intentions to engage in healthy living practices.

Adolescents faced barriers to engaging in healthy behaviour including personal factors (such as fear), parental influence (e.g., where parents did not have the time to take them for routine medical check-ups), lack of awareness, and a deficiency of programs to guide and support them about healthy living. Studies conducted with Kenyan women about their perceived risk for cervical cancer (Becker-Dreps et al., 2010; Ngugi et al., 2012; Sudenga et al., 2013) and factors that affect screening practices found similar reasons for participants not seeking screening. Participants expressed fear, were not aware of the cancers, did not have the time, or could not afford the transportation costs and care. In this study, adolescents also talked about fear of the screening or vaccination procedures (e.g., they feared needles or Pap tests even though they were too young for Pap tests). Adolescents talked about the lack of time by their parents, competing academic priorities, and not having enough information about what they could do to stay healthy. According to the Health Belief Model, for adolescents to engage in healthy behaviour, they need to perceive the value of the healthy behaviour as greater than the barriers (Janz et al., 1984; Rosenstock 1966). To improve cancer preventative efforts, approaches that reduce perceived barriers are needed. Such approaches could focus on addressing participants' fears, improving cancer, cancer risk, and cancer prevention knowledge and awareness, and offering the services at locations that are easy to access such as at schools.

Adolescents derived their perspectives of cancer prevention as healthy living through health promotion messages from the media, from their parents, and their teachers. Usually, adolescents form ideas about health from didactic and organic learning contexts (Michaelson, McKerron, & Davison, 2015). The didactic learning contexts include formal learning at school and informal learning from their conversations with their parents. Organic learning contexts refer to self-reflection, experiences with people they closely associate with, by way of observing others, and common conversations. The health promotion messages accessed by adolescents in our study encouraged adolescents to go for routine medical checkups and to practice healthy lifestyles. Adolescents were encouraged to take part

in physical activity and to eat healthy meals. Consequently, they appreciated the health promotion messages which influenced their health behaviour. According to the Health Belief Model, people may be influenced to engage in disease preventive behaviour by cues to action (Rosenstock, 1966). Cues to action can include media messages, personal feelings, reminders, or experiences of close persons with the illness.

Cancer Prevention Plans

Finally, adolescents shared their thoughts about cancer prevention plans in Kenya. Adolescents talked about scanty cancer prevention efforts which is similar to findings from other populations in Africa (Busolo & Woodgate, 2014). In particular, adolescents felt that the government had enacted policies that prohibit smoking in public places and was supporting cancer research activities. At school, there were clubs that focused on healthy promotion and school authorities provided healthy meals and encouraged students to take part in physical exercises and healthy eating. Parents and community members created opportunities for adolescents to engage in cancer prevention. For instance, some parents provided healthy foods and took part in physical activities with their children.

In spite of these initiatives, cancer prevention plans were limited. Sometimes teachers provided little information about cancer or how to prevent the disease. Often, students are asked to find information on their own and some students did not know where and how to find the information. To improve cancer preventative efforts, better awareness and prevention plans are needed. The government may need to enact and facilitate implementation of policies around cancer, cancer risk, and cancer prevention awareness and health promotion. Further research about how to engage Kenyans as well as educational and health institutions about cancer prevention efforts are needed (Busolo & Woodgate, 2014).

In the wake of limited cancer prevention plans, adolescents believed the deficiency of these

plans was because greater attention was placed on malaria and HIV/AIDS. Attention was placed on other diseases like Malaria and HIV/AIDS because of their high mortality rates. While such attention might have been warranted, adolescents were of the suggestion that equal or even greater attention needed to be placed on cancer prevention. Adolescents' calls support the recommendations by Busolo and Woodgate (2014) who called on researchers, policy makers, funding organizations, and African governments to place greater emphasis on cancer prevention efforts.

Kenyan adolescents made suggestions to educate them about cancer, cancer risk, and cancer prevention as a way of empowering them with information to share. Adolescents were eager to learn so that they could be part of creating change. Their desire for knowledge support their perspectives of cancer, cancer risk, and cancer prevention particularly where some adolescents presented with limited levels of awareness. Informing Kenyan adolescents about cancer, cancer risk, and cancer prevention could go further by engaging them about how to use social networks to influence the peers. Adolescents could be informed on how they can be agents of health promotion. Kenyan adolescents also made recommendations about better cancer, cancer risk, and cancer prevention messaging. They desired the media, teachers, parents, and community members to present more factual and comprehensive information on these phenomena. When information is comprehensive and factual, better cancer preventive action is possible.

Strengths and Limitations of the Study

This study was the first of its kind to be conducted in Kenya and engaged a large number of adolescents to generate important findings. The large number of participants allowed in-depth examination of study phenomena before attaining theoretical saturation of key themes. Some of the adolescents attended Nairobi Primary School while others attended OIKeri Mixed Secondary School. The inclusion of two schools allowed for diversity of views based on differences in age, sex, place of residence, and socioeconomic status of participants.

Research examining African adolescents' perspectives of cancer, cancer risk, and cancer prevention using qualitative methods is lacking. Research examining these phenomena using qualitative methods is important to understand how adolescents make sense of cancer, cancer risk, and cancer prevention. Such awareness can be combined with other research to inform bottom-up cancer prevention and health promotion for this population. In the wake of increasing cancer incidence and mortality in Kenya and the rest of Africa, qualitative findings like those generated by the present study are important because they generate knowledge on gaps and opportunities for cancer prevention. For instance, adolescents who took part in this study expressed limited awareness of cancer risk factors like HPV but were interested in learning and taking part in prevention efforts. An additional strength of this study was the use of multiple methods that include individual interviews, focus group discussions, and field notes to arrive at adolescents' conceptualizations in their own social worlds. The study findings present adolescents' perspectives which are important in informing adolescent cancer prevention research and programs.

In spite of these strengths, there are a number of limitations that need to be considered. First, the study was cross-sectional in nature where data were collected at one point in time. Participants' perspectives can change over time especially as they advance in classes and perhaps learn more about cancer, cancer risk, and cancer prevention. Therefore, the views presented by adolescents who took part in this study need to be interpreted with caution.

Second, although the adolescents' shared information about their behaviour, the researcher did not observe adolescents' behaviour. Research that examined adolescents perspectives and their behaviour could provide more information on how adolescents' perspectives of cancer and cancer risk affect their behaviour. For instance, if adolescents perceive cancer as a dreadful disease, research that monitors their behaviour could also provide more information on whether their behaviour correlates with their perspectives. Such research could also examine behavioural decisions and

challenges that affect cancer prevention efforts. By doing so, researchers may determine how adolescents' perceptions are correlated with practical lifestyles.

Third, while adolescents' perspectives provide useful information, the perspectives of their teachers, parents, and an examination of their sources of information was not examined. An examination of their sources of information could provide more information about their conceptualizations of cancer, cancer risk, and cancer prevention. In a similar way, perspectives of their teachers and parents can provide information on the cancer information (or lack of information) that they share with adolescents. In future, research that examines adolescents' sources of information and gaps in information content could be conducted.

Fourth, there is value in getting a translator to translate and back interpret interviews when they are conducted in a local language. In this study, two interviews were partially conducted in Kiswahili. The researcher was not able to seek independent translation and back interpretation services which could be a study limitation. Nevertheless, the researcher believes the lack of an independent translation and back interpretation might have minimal effect to the study's generated findings. In future, studies examining adolescents' conceptualizations may need to put in place plans on how to go about interviewing and managing data from participants who may be more comfortable to share perspectives in their local language.

Finally, data collection took place during the months of September to January. Breast cancer awareness month is usually held in October. During this month, cancer awareness activities were carried out in Kenya. There were media talk shows where patients, survivors, and health care professionals discussed the disease. Because of the increased publicity about cancer, cancer risk, and cancer prevention, it possible that adolescents' views were affected. The study findings could reflect the higher levels of awareness among Kenyan adolescents at this time compared to when there is limited publicity about the disease. Some of the adolescents who took part in the study might have

shared information derived from the media. In addition, because of the increased publicity, more adolescents may have been interested in taking part in the study.

Summary

Research on Kenyan adolescents' conceptualizations of cancer, cancer risk, and cancer prevention is lacking. To date, cancer, cancer risk, and cancer prevention research in Kenya has mainly focused on cervical cancer, involved adult women, and used quantitative research methods (Agurto et al., 2005; Becker-Dreps et al., 2010; Ngugi et al., 2012; Sudenga et al., 2013; Were et al., 2011). While Woodgate examined Canadian adolescents' perspectives of cancer, cancer risk, and cancer prevention (Woodgate & Busolo, 2015, 2017; Woodgate & Kreklewetz, 2012; Woodgate et al., 2014), this study is the first of its kind to examine Kenyan adolescents' perspectives. The useful findings suggest that for the most part, Kenyan adolescents express similar perspectives of cancer, cancer risk, and cancer prevention as adolescents in other parts of the world (Woodgate & Busolo, 2015, 2017; Woodgate & Kreklewetz, 2012; Woodgate & Leach, 2010; Woodgate et al., 2014). However, Kenyan adolescents experience limited awareness and lack opportunities to improve their understanding of cancer, cancer risk, and cancer prevention.

Chapter 7: Recommendations

The findings of this study have implications for education, research, and policy. In this chapter, recommendations for education, research, and policy are made.

Recommendations for Education

The findings of this study have important implications for education. First, the study reveals that Kenyan adolescents describe cancer in ways that are similar to that of adolescents in other parts of the world. Kenyan adolescents describe the disease using metaphors and find the disease to be unique. We recommend examining adolescents' conceptualization of cancer before developing cancer awareness information. Since adolescents describe cancer using metaphors, it may be useful to approach cancer education using the language and parts of speech that adolescents are more familiar with (e.g., metaphors). Such an approach can allow educators to get their messages closer to the level of adolescents' conceptualization. In the same way, adolescents may be more receptive to cancer information that is presented using metaphors or figures of speech they are more familiar with.

Second, adolescents perceive cancer using metaphors that are common in their social worlds. While these metaphors are useful to understand the disease, some of the metaphors only focus on the loss aspect of the disease (e.g., death metaphor). People with cancer might experience the disease in ways that are more than alluding it to death. Some may perceive cancer as a journey or a sport and enjoy the joys of winning (Crane-Okada, 2007; Czechmeister, 1994; Harrington, 2012). In this regard, it is important to approach cancer description carefully. Teachers, parents, and health care professionals may need to assess the metaphors to use so that accurate meaning of cancer is conveyed. Teachers, parents, and health care providers could ask adolescents how they describe cancer then use adolescents' choice of metaphors to discuss the disease.

While it is important to tailor cancer education to adolescents' way of communicating (e.g.,

using metaphors), factual and comprehensive information is needed. Health educators and health care professionals need to present important facts (e.g., cancer definition, cancer risk factors, cancer preventing approaches). In our study, some adolescents had limited understanding of cancer, cancer risk, and how to prevent the disease. When accurate information is lacking, adolescents can be confused about the causes and symptoms of the disease. Comprehensive education focused on facts can be useful in guiding the right preventative approaches and how to care for people with cancer. For instance, if adolescents think skin cancer is contagious, some may avoid people with skin cancer. However, if informed that skin cancer is not a contagious disease, they may feel more comfortable to associate closely with people with the disease.

In addition, engaging parents, teachers, and policy makers could create opportunities for collaborative ground-up approaches to cancer prevention. In the future, the development and testing of meaningful health promotion interventions and school education programs that teach about healthy lifestyles may help to reduce the risk for cancer among Kenyan adolescents. The development of these programs can only be achieved if the programs are grounded in the voices of targeted populations and involve parents, teachers and policy makers from the outset. Therefore, this research lays the critical foundation for....

Recommendations for Research

This study provides information about Kenyan adolescents' understanding of cancer, cancer risk, and cancer prevention which is useful groundwork for the development and implementation of cancer prevention and health promotion strategies for this population. However, additional research is needed. Research is needed to examine Kenyan teachers' and parents' conceptualization of cancer, cancer risk, and cancer prevention. In the present study, adolescents learned about cancer, cancer risk, and cancer prevention from their social worlds. Parents and teachers played important roles in directing adolescents' awareness. However, their views were not examined. Also, views from parents

and teachers about challenges and opportunities around cancer prevention could provide useful insights. At a time when cancer prevention programs are hampered by insufficiency of funds, limited health care resources, and low levels of cancer awareness, this research is warranted and may encourage the development of effective cancer prevention programs in Kenya. Parents and teachers' perspectives coupled with adolescents' perspectives can be useful for effective health education and health promotion programming.

Understanding cancer, cancer risk, and cancer prevention appeared to direct behaviour but adolescents' behaviour over time was not examined. In particular, adolescents' behaviour may be affected by other factors that were not voiced in the interviews and focus group discussions. Examining adolescents' behaviour over time could shed light on opportunities to engage adolescents about cancer prevention efforts and suggest ways to engage and influence adolescents with health risk behaviour to practice preventive behaviour.

Some risk behaviours such as smoking were not allowed in schools. Adolescents who smoked or were involved with drinking alcohol were perceived as 'bad' people and suspended from school. On the contrary, adults appeared to smoke or consume alcohol without any restrictions. The fact that teenage smoking and consuming alcohol was not tolerated raises questions about availability of support for adolescents who use these substances. Is there stigma around smoking and alcohol consumption? How do adolescents who smoke and consume alcohol feel about the behaviour and how their peers treat them? Whereas setting limits can discourage adolescents from starting to smoke or consume alcohol, it is important to support those who are addicted. Adolescents who abuse drugs may experience other challenges that include mental illness if rehabilitation and support is lacking.

Recommendations for Policy

This research on Kenyan adolescents' conceptualization of cancer, cancer risk, and cancer prevention provide useful findings for policy considerations in Kenya.

The study findings suggest that the development of health promotion and education within both the school and the community are important. Most of the participants were not aware of cancer prevention programs or felt none existed at their schools. For effective preventative efforts, parents, teachers and schools could

1. Enact policies that encourage health promotion activities (e.g., through physical activities, cancer education clubs).
2. Work with the education ministry to promote cancer awareness and health promotion through the school curriculum.
3. Revisit policies around drug abuse in schools. Involve parents in discussions on preventing drug use at school and at home while at the same offer opportunities to rehabilitate adolescents who abuse drugs.

The findings also suggest that more needs to be done by the government towards cancer, cancer risk, and cancer prevention efforts. The following are suggestions for policy around this area.

1. The government could work with school institutions, the media, and community organization to promote cancer, cancer risk, and cancer prevention awareness. Information can be added to the educational curriculums at the primary, high school, and tertiary levels. Media and community organizations can be encouraged to present factual information about cancer, cancer risk, and cancer prevention to the public.
2. The government can support cancer prevention efforts through future research. More research that examines Kenyans' conceptualizations of cancer are needed to inform useful disease prevention and health promotion efforts.
3. Adolescents expressed concerns over a lack of resources to support cancer prevention and management. In their discourses, cancer was like a death sentence because of scarcity of cancer treatment resources. The government made policy revisions where for the first time the

national health insurance pays for cancer screening and treatment. While this policy change is welcome, more needs to be done to educate the public about the change.

Conclusion

This work has generated knowledge about Kenyan adolescents' conceptualization of cancer, cancer risk, and cancer prevention. In the wake of increasing cancer incidence and mortality in Kenya and continued involvement by some adolescents in risk taking behaviour, the study findings are important. Adolescents from Nairobi (urban) and OlKeri Mixed Secondary (rural) schools provided rich data on adolescents' perspectives along different socio-demographic factors. Adolescents described cancer as a unique disease that was different from others and used different metaphors to present their descriptions. Kenyan adolescents described cancer risk as lifestyle factors and talked about the processes of risk perception. Focus was placed on avoiding cancer risk factors, avoiding peers to take part in 'risky' behaviour, and being healthy. Importantly, Kenyan adolescents shared their perspectives of present cancer preventive efforts and offered suggestions on how to improve the cancer prevention plans. This study was the first of its kind to be conducted in Kenya and the findings will be useful for future research, health promotion and cancer prevention plans in Kenya and other parts of Africa. Importantly, study findings offer a glimpse of Kenyan adolescents understanding of cancer which can be used to design other cancer prevention studies involving other Kenyan or African youth. For instance, studies that examine youth knowledge or awareness of cancer could examine the use of metaphors in their descriptions. Health promotion and cancer prevention plans could provide information on cancer, cancer risk, and cancer prevention to present adolescents to improve their understanding.

References

- Aamodt, A. M. (1982). Examining Ethnography for Nurse Researchers. *Western Journal of Nursing Research*, 4(2), 209-221. doi:10.1177/019394598200400207
- Abda, N., El Rhazi, K., Obtel, M., Bendahhou, K., Zidouh, A., Bennani, M., . . . Nejjari, C. (2012). Determinants of self-reported sun protection practices among Moroccan population. *Preventive Medicine*, 54(6), 422-424. doi:10.1016/j.ypmed.2012.03.011
- Adami, M. F., & Kiger, A. (2005). The use of triangulation for completeness purposes. *Nurse Researcher*, 12(4), 19-29.
- Adamo, K. B., Sheel, A. W., Onywera, V., Waudu, J., Boit, M., & Tremblay, M. S. (2011). Child obesity and fitness levels among Kenyan and Canadian children from urban and rural environments: a KIDS-CAN Research Alliance Study. *International Journal of Pediatric Obesity*, 6(2-2), e225-232. doi:10.3109/17477166.2010.543683
- Agurto, I., Arrossi, S., White, S., Coffey, P., Dzuba, I., Bingham, A., . . . Lewis, R. (2005). Involving the community in cervical cancer prevention programs. *International Journal of Gynaecology and Obstetrics*, 89 Suppl 2, S38-45. doi:10.1016/j.ijgo.2005.01.015
- Aitken, J. F., Elwood, M., Baade, P. D., Youl, P., & English, D. (2010). Clinical whole-body skin examination reduces the incidence of thick melanomas. *International Journal of Cancer. Journal International Du Cancer*, 126(2), 450-458. doi:10.1002/ijc.24747
- Albert, D., & Steinberg, L. (2011). Judgment and Decision Making in Adolescence. *Journal of Research on Adolescence* 21(1), 211-224. doi:10.1111/j.1532-7795.2010.00724.x
- Albrow, R., Blomberg, K., Kitchener, H., Brabin, L., Patnick, J., Tishelman, C., . . . Widmark, C. (2014). Interventions to improve cervical cancer screening uptake amongst young women: a systematic review. *Acta Oncologica*, 53(4), 445-451. doi:10.3109/0284186x.2013.869618

- Allen, M. L., Garcia-Huidobro, D., Porta, C., Curran, D., Patel, R., Miller, J., & Borowsky, I. (2016). Effective Parenting Interventions to Reduce Youth Substance Use: A Systematic Review. *Pediatrics*, *138*(2). doi:10.1542/peds.2015-4425
- Anorlu, R. I. (2008). Cervical cancer: the Sub-Saharan African perspective. *Reproductive Health Matters*, *16*(32), 41-49. doi:10.1016/s0968-8080(08)32415-x
- Arbyn, M., Raifu, A. O., Weiderpass, E., Bray, F., & Anttila, A. (2009). Trends of cervical cancer mortality in the member states of the European Union. *European Journal of Cancer (Oxford, England : 1990)*, *45*(15), 2640-2648. doi:10.1016/j.ejca.2009.07.018
- Armitage, C. J., & Conner, M. (2000). Social cognition models and health behaviour: A structured review. *Psychology & Health*, *15*(2), 173-189. doi:10.1080/08870440008400299
- Armstrong, B. K., & Krickler, A. (2001). The epidemiology of UV induced skin cancer. *Journal of Photochemistry and Photobiology.*, *63*(1-3), 8-18.
- Arnett, J. J. (2000). Emerging adulthood. A theory of development from the late teens through the twenties. *American Psychologist*, *55*(5), 469-480.
- Aune, D., Greenwood, D. C., Chan, D. S., Vieira, R., Vieira, A. R., Navarro Rosenblatt, D. A., . . . Norat, T. (2012). Body mass index, abdominal fatness and pancreatic cancer risk: a systematic review and non-linear dose-response meta-analysis of prospective studies. *Annals of Oncology : Official Journal of the European Society for Medical Oncology / ESMO*, *23*(4), 843-852. doi:10.1093/annonc/mdr398
- Awatef, M., Olfa, G., Rim, C., Asma, K., Kacem, M., Makram, H., . . . Slim, B. A. (2011). Physical activity reduces breast cancer risk: a case-control study in Tunisia. *Cancer Epidemiology*, *35*(6), 540-544. doi:10.1016/j.canep.2011.02.011
- Baan, R., Straif, K., Grosse, Y., Secretan, B., El Ghissassi, F., Bouvard, V., . . . Coglianò, V. (2007). Carcinogenicity of alcoholic beverages. *The Lancet Oncology*, *8*(4), 292-293.

- Bagnardi, V., Blangiardo, M., La Vecchia, C., & Corrao, G. (2001). A meta-analysis of alcohol drinking and cancer risk. *British Journal of Cancer*, 85, 1700-1705. doi:10.1054/bjoc.2001.2140
- Bah, E., Carrieri, M. P., Hainaut, P., Bah, Y., Nyan, O., & Taal, M. (2013). 20-years of population-based cancer registration in hepatitis B and liver cancer prevention in the Gambia, West Africa. *PloS One*, 8(9), e75775. doi:10.1371/journal.pone.0075775
- Barbour, R. (2008). *Introducing qualitative research: A student guide to the craft of doing qualitative research*. Los Angeles, CA: Sage Publications.
- Barry, M. M., Clarke, A. M., Jenkins, R., & Patel, V. (2013). A systematic review of the effectiveness of mental health promotion interventions for young people in low and middle income countries. *BMC Public Health*, 13, 835. doi:10.1186/1471-2458-13-835
- Bastani, R., Glenn, B. A., Taylor, V. M., Chen, M. S., Nguyen, T. T., Stewart, S. L., & Maxwell, A. E. (2010). Integrating Theory into Community Interventions to Reduce Liver Cancer Disparities: The Health Behaviour Framework. *Preventive Medicine*, 50(1-2), 63-67. doi:10.1016/j.ypmed.2009.08.010
- Bauman, K. E., Ennett, S. T., Foshee, V. A., Pemberton, M., King, T. S., & Koch, G. G. (2002). Influence of a family program on adolescent smoking and drinking prevalence. *Prevention Science*, 3(1), 35-42.
- Beaudin, C. L., & Pelletier, L. R. (1996). Consumer-based research: using focus groups as a method for evaluating quality of care. *Journal of Nursing Care Quality*, 10(3), 28-33.
- Becker-Dreps, S., Otieno, W. A., Brewer, N. T., Agot, K., & Smith, J. S. (2010). HPV vaccine acceptability among Kenyan women. *Vaccine*, 28(31), 4864-4867. doi:10.1016/j.vaccine.2010.05.034

- Becker, M. H., Drachman, R. H., & Kirscht, J. P. (1974). A new approach to explaining sick-role behaviour in low-income populations. *American Journal of Public Health*, 64(3), 205-216.
- Ben- Ari, A., & Or- Chen, K. (2009). Integrating competing conceptions of risk: A call for future direction of research. *Journal of Risk Research*, 12(6), 865-877. doi:10.1080/13669870902899674
- Benatar, S. R., & Fleischer, T. E. (2007). Ethical issues in research in low-income countries. *International Journal of Tuberculosis and Lung Disease*, 11(6), 617-623.
- Benatar, S. R., & Singer, P. A. (2010). Responsibilities in international research: a new look revisited. *Journal of Medical Ethics*, 36(4), 194-197. doi:10.1136/jme.2009.032672
- Bender, J. L., Yue, R. Y., To, M. J., Deacken, L., & Jadad, A. R. (2013). A lot of action, but not in the right direction: systematic review and content analysis of smartphone applications for the prevention, detection, and management of cancer. *Journal of Medical Internet Research*, 15(12), e287. doi:10.2196/jmir.2661
- Berg, L. B. (2007). *Qualitative research methods for the social sciences* (6th ed.). Boston, MA: Pearson/Allyn and Bacon.
- Berg, L. B., & Lune, H. (2012). *Qualitative Research Methods for the Social Sciences* (8th ed.). Toronto: Pearson.
- Binagwaho, A., Ngabo, F., Wagner, C. M., Mugeni, C., Gatera, M., Nutt, C. T., & Nsanzimana, S. (2013). Integration of comprehensive women's health programmes into health systems: Cervical cancer prevention, care and control in Rwanda. *Bulletin of the World Health Organization*, 91(9), 697-703.
- Binagwaho, A., Wagner, C. M., Gatera, M., Karema, C., Nutt, C. T., & Ngabo, F. (2012). Achieving high coverage in Rwanda's national human papillomavirus vaccination programme. *Bulletin of the World Health Organization*, 90(8), 623-628. doi:10.2471/blt.11.097253

- Blackburn, E. H. (2010). Highlighting the Science of Cancer Prevention. *Cancer Prevention Research*, 3(4), 393-393. doi:10.1158/1940-6207.capr-10-0034
- Blanks, R. G., Moss, S. M., McGahan, C. E., Quinn, M. J., & Babb, P. J. (2000). Effect of NHS breast screening programme on mortality from breast cancer in England and Wales, 1990-8: comparison of observed with predicted mortality. *BMJ (Clinical research ed.)*, 321(7262), 665-669.
- Bleich, S. N., Segal, J., Wu, Y., Wilson, R., & Wang, Y. (2013). Systematic review of community-based childhood obesity prevention studies. *Pediatrics*, 132(1), e201-210. doi:10.1542/peds.2013-0886
- Blum, R. W., McNeely, C., & Nonnemaker, J. (2002). Vulnerability, risk, and protection. *Journal of Adolescent Health*, 31(1, Supplement 1), 28-39. doi:https://doi.org/10.1016/S1054-139X(02)00411-1
- Blumer, H. (1969). *Symbolic Interactionism: Perspective and Method*. Prentice Hall: Englewood Cliffs.
- Boffetta, P., & Hashibe, M. (2006). Alcohol and cancer. *The Lancet. Oncology*, 7(2), 149-156. doi:10.1016/s1470-2045(06)70577-0
- Bottorff, J. L., Struik, L. L., Bissell, L. J. L., Graham, R., Stevens, J., & Richardson, C. G. (2014). A social media approach to inform youth about breast cancer and smoking: An exploratory descriptive study. *Collegian*, 21(2), 159-168. doi:https://doi.org/10.1016/j.colegn.2014.04.002
- Bray, F. (2014). Transitions in human development and the global cancer burden. In Wild CP & Stewart B (Eds.), *World cancer report 2014*. Lyon: International Agency for Research on Cancer.
- Brewer, N. T., & Fazekas, K. I. (2007). Predictors of HPV vaccine acceptability: a theory-informed, systematic review. *Preventive Medicine*, 45(2-3), 107-114. doi:10.1016/j.ypmed.2007.05.013

- Busolo, D. S., & Woodgate, R. L. (2014). Cancer prevention in Africa: a review of the literature. *Global Health Promotion*. doi:10.1177/1757975914537094
- Butt, F. M., Guthua, S. W., Awange, D. A., Dimba, E. A., & Macigo, F. G. (2012). The pattern and occurrence of ameloblastoma in adolescents treated at a university teaching hospital, in Kenya: a 13-year study. *Journal of Cranio-Maxillo-Facial Surgery*, 40(2), e39-45. doi:10.1016/j.jcms.2011.03.011
- Byrnes, J. P. (2003). Changing views on the nature and prevention of adolescent risk taking. In D. Romer (Ed.), *Reducing adolescent risk: Towards an integrated approach* (pp. 11-17). Thousand Oaks, CA: Sage Publications.
- Canadian Cancer Society. (2017a). Screening. Retrieved on June 20, 2017 from <http://www.cancer.ca/en/prevention-and-screening/early-detection-and-screening/screening/?region=on>
- Canadian Cancer Society. (2017b). What is a risk factor? Retrieved on June 20, 2017 from <http://www.cancer.ca/en/cancer-information/cancer-101/what-is-a-risk-factor/?region=on>
- Canadian Society for Exercise Physiology (CSEP). (2016). 24-Hour Movement Guidelines for Children and Youth. Retrieved on June 20, 2017 from <http://www.csep.ca/en/guidelines/canadian-24-hour-movement-guidelines>
- Carpenter, C. J. (2010). A meta-analysis of the effectiveness of health belief model variables in predicting behaviour. *Health Communication*, 25(8), 661-669. doi:10.1080/10410236.2010.521906
- Catalano, R. F., Fagan, A. A., Gavin, L. E., Greenberg, M. T., Irwin Jr, C. E., Ross, D. A., & Shek, D. T. L. (2012). Worldwide application of prevention science in adolescent health. *The Lancet*, 379(9826), 1653-1664. doi:[http://dx.doi.org/10.1016/S0140-6736\(12\)60238-4](http://dx.doi.org/10.1016/S0140-6736(12)60238-4)

- Centers for Disease Control and Prevention. (2015). Human Papillomavirus (HPV). Retrieved on June 20, 2017 from <http://www.cdc.gov/hpv/vaccine.html>
- Champion, V. L., & Skinner, C. S. (2008). Health Belief Model. In K. Glanz, B. K. Rimer, & K. Viswanath (Eds.), *Health behaviour and health education: Theory, research and practice* (4th ed., pp. 45-65). San Francisco, CA: Jossey-Bass.
- Chebukaka, R. N. (2014). Drug Abuse Among Students in Public Secondary Schools in Kenya, The Case of Vihiga County. *International Journal of Social Sciences and Education*, 4(3).
- Chinn, P. L., & Kramer, M. K. (2011). Description and Critical Reflection of Empiric Theory *Integrated Theory and Knowledge Development in Nursing* (8 ed.). St. Louis, MO: Mosby.
- Christian, B. J., Pearce, P. F., Roberson, A. J., & Rothwell, E. (2010). It's a small, small world: data collection strategies for research with children and adolescents. *Journal of Pediatric Nursing*, 25, 202-214. doi:10.1016/j.pedn.2009.01.003
- Conner, M., & Norman, P. (2005). Predicting Health Behaviour. In M. Conner & P Norman (Eds.), *Predicting Health Behaviour* (2nd ed., pp. 1-27). Glasgow, UK: Bell & Bain Lts.,
- Conroy, A. A. (2014). 'It means there is doubt in the house': perceptions and experiences of HIV testing in rural Malawi. *Culture, Health & Sexuality*, 16(4), 397-411.
doi:10.1080/13691058.2014.883645
- Consedine, N. S., Adjei, B. A., Ramirez, P. M., & McKiernan, J. M. (2008). An Object Lesson: Source Determines the Relations That Trait Anxiety, Prostate Cancer Worry, and Screening Fear Hold with Prostate Screening Frequency. *Cancer Epidemiology Biomarkers & Prevention*, 17(7), 1631-1639. doi:10.1158/1055-9965.epi-07-2538
- Consedine, N. S., Magai, C., Krivoshekova, Y. S., Ryzewicz, L., & Neugut, A. I. (2004). Fear, Anxiety, Worry, and Breast Cancer Screening Behaviour: A Critical Review. *Cancer Epidemiology Biomarkers & Prevention*, 13(4), 501.

- Coomber, K., Toumbourou, J. W., Miller, P., Staiger, P. K., Hemphill, S. A., & Catalano, R. F. (2011). Rural Adolescent Alcohol, Tobacco, and Illicit Drug Use: A Comparison of Students in Victoria, Australia, and Washington State, United States. *The Journal of Rural Health, 27*(4), 409-415. doi:10.1111/j.1748-0361.2010.00360.x
- Cooper, M. L., Wood, P. K., Orcutt, H. K., & Albino, A. (2003). Personality and the predisposition to engage in risky or problem behaviours during adolescence. *Journal of Personality and Social Psychology, 84*(2), 390-410. doi:10.1037/0022-3514.84.2.390
- Cope, D. G. (2014). Methods and meanings: credibility and trustworthiness of qualitative research. *Oncology Nursing Forum, 41*, 89-91. doi:10.1188/14.ONF.89-91
- Corwin, Z. B., & Randall, C. F. (2012). Analysing fieldnotes: a practical guide. In Sara Delamont (Ed.), *Handbook of Qualitative Research in Education* (pp. 489-502). Northampton, MA: Edward Elgar.
- Crane-Okada, R. (2007). A compass for the cancer journey: scientific, spiritual, and practical directives. *Oncology Nursing Forum, 34*(5), 945-955. doi:10.1188/07.onf.945-955
- Croteau, K., Schofield, G., Towle, G., & Suresh, V. (2011). Pedometer-determined physical activity of Western Kenyan children. *Journal of Physical Activity & Health, 8*(6), 824-828.
- Cunningham, M. S., Davison, C., & Aronson, K. J. (2014). HPV vaccine acceptability in Africa: a systematic review. *Preventive Medicine, 69*, 274-279. doi:10.1016/j.ypmed.2014.08.035
- Czechmeister, C. A. (1994). Metaphor in illness and nursing: a two-edged sword. A discussion of the social use of metaphor in everyday language, and implications of nursing and nursing education. *Journal of Advanced Nursing, 19*(6), 1226-1233.
- Danaei, G., Vander Hoorn, S., Lopez, A. D., Murray, C. J. L., & Ezzati, M. (2005). Causes of cancer in the world: comparative risk assessment of nine behavioural and environmental risk factors. *The Lancet, 366*(9499), 1784-1793. doi:10.1016/S0140-6736(05)67725-2

- Davis, K., Dickman, E. D., Ferris, D., & Dias, J. K. (2004). Human papillomavirus vaccine acceptability among parents of 10- to 15-year-old adolescents. *Journal of Lower Genital Tract Disease*, 8(3), 188-194.
- de-Graft Aikins, A., Unwin, N., Agyemang, C., Allotey, P., Campbell, C., & Arhinful, D. (2010). Tackling Africa's chronic disease burden: from the local to the global. *Globalization and Health*, 6, 5. doi:10.1186/1744-8603-6-5
- de Menezes, R. F., Bergmann, A., & Thuler, L. C. S. (2013). Alcohol Consumption and Risk of Cancer: a Systematic Literature Review. *Asian Pacific Journal of Cancer Prevention*, 14(9), 4965-4972.
- Decker, K., Demers, A., Chateau, D., Musto, G., Nugent, Z., Lotocki, R., & Harrison, M. (2009). Papanicolaou test utilization and frequency of screening opportunities among women diagnosed with cervical cancer. *Open Medicine*, 3(3), e140-147.
- Del Castillo, A., Godoy-Izquierdo, D., Vázquez, M., & Godoy, J. (2011). Illness Beliefs About Cancer Among Healthy Adults Who have and have not Lived with Cancer Patients. *International Journal of Behavioural Medicine*, 18(4), 342-351. doi:10.1007/s12529-010-9141-6
- Demers, A. A., Decker, K. M., Kliewer, E. V., Musto, G., Shu, E., & Biswanger, N. (2015). Mammography Rates for Breast Cancer Screening: A Comparison of First Nations Women and All Other Women Living in Manitoba, Canada, 1999-2008. *Preventing Chronic Disease*, 12, E82. doi:10.5888/pcd12.140571
- Denny, L., Kuhn, L., De Souza, M., Pollack, A. E., Dupree, W., & Wright, T. C., Jr. (2005). Screen-and-treat approaches for cervical cancer prevention in low-resource settings: a randomized controlled trial. *JAMA*, 294(17), 2173-2181. doi:10.1001/jama.294.17.2173
- Denny, L., Quinn, M., & Sankaranarayanan, R. (2006). Chapter 8: Screening for cervical cancer in developing countries. *Vaccine*, 24 Suppl 3, S3/71-77. doi:10.1016/j.vaccine.2006.05.121

- Department of Health, Public Health England, & NHS England. (2014). *Improving Outcomes: A Strategy for Cancer – Fourth Annual Report*. Retrieved from
- Devi, A., Surender, R., & Rayner, M. (2010). Improving the food environment in UK schools: policy opportunities and challenges. *Journal of Public Health Policy*, 31(2), 212-226. doi:10.1057/jphp.2010.9
- Doody, O., Slevin, E., & Taggart, L. (2013). Focus group interviews in nursing research: part 1. *British Journal of Nursing*, 22(1), 16-19. doi:10.12968/bjon.2013.22.1.16
- Downing, J., Jones, L., Bates, G., Sumnall, H., & Bellis, M. A. (2011). A systematic review of parent and family-based intervention effectiveness on sexual outcomes in young people. *Health Education Research*, 26(5), 808-833. doi:10.1093/her/cyr019
- Duffy, S. W., Tabar, L., Chen, H. H., Holmqvist, M., Yen, M. F., Abdsalah, S., . . . Holmberg, L. (2002). The impact of organized mammography service screening on breast carcinoma mortality in seven Swedish counties. *Cancer*, 95(3), 458-469. doi:10.1002/cncr.10765
- Duggleby, W. (2005). What about focus group interaction data? *Qualitative Health Research*, 15(6), 832-840. doi:10.1177/1049732304273916
- Dunn, B. K., & Greenwald, P. (2010). Cancer prevention I: introduction. *Seminars in Oncology*, 37(3), 190-201. doi:10.1053/j.seminoncol.2010.06.011
- Duron, V., Bii, J., Mutai, R., Ngetich, J., Harrington, D., Parker, R., & White, R. (2013). Esophageal cancer awareness in Bomet district, Kenya. *African Health Sciences*, 13(1), 122 - 128. doi:http://dx.doi.org/10.4314/ahs.v13i1.17
- Eaton, D. K., Kann, L., Kinchen, S., Shanklin, S., Flint, K. H., Hawkins, J., . . . Wechsler, H. (2012). Youth risk behaviour surveillance - United States, 2011. *MMWR: Surveillance Summaries*, 61(4), 1-162.

- Elwood, J. M. (1992). Melanoma and sun exposure: contrasts between intermittent and chronic exposure. *World Journal of Surgery, 16*(2), 157-165.
- Emerson, R. M., Fretz, R. I., & Shaw, L. L. (1995). *Writing Ethnographic Field Notes*. Chicago, IL: University of Chicago Press.
- Ersin, F., & Bahar, Z. (2011). Effect of health belief model and health promotion model on breast cancer early diagnosis behaviour: a systematic review. *Asian Pacific Journal of Cancer Prevention, 12*(10), 2555-2562.
- Escoffery, C., Rodgers, K. C., Kegler, M. C., Ayala, M., Pinsker, E., & Haardorfer, R. (2014). A grey literature review of special events for promoting cancer screenings. *BMC Cancer, 14*, 454. doi:10.1186/1471-2407-14-454
- Faggiano, F., Minozzi, S., Versino, E., & Buscemi, D. (2014). Universal school-based prevention for illicit drug use. *Cochrane Database of Systematic Reviews, 12*, CD003020. doi:10.1002/14651858.CD003020.pub3
- Fedirko, V., Tramacere, I., Bagnardi, V., Rota, M., Scotti, L., Islami, F., . . . Jenab, M. (2011). Alcohol drinking and colorectal cancer risk: an overall and dose-response meta-analysis of published studies. *Annals of Oncology, 22*(9), 1958-1972. doi:10.1093/annonc/mdq653
- Fergusson, D., & Horwood, L. (2003). Resilience to childhood adversity: Results of a 21 year study. In Suniya S Luthar (Ed.), *Resilience and Vulnerability: Adaptation in the Context of Childhood Adversities* (pp. 130-155): Cambridge University Press.
- Ferlay, J., Soerjomataram, I., Dikshit, R., Eser, S., Mathers, C., Rebelo, M., . . . Bray, F. (2015). Cancer incidence and mortality worldwide: sources, methods and major patterns in GLOBOCAN 2012. *International Journal of Cancer, 136*(5), E359-386. doi:10.1002/ijc.29210
- Fetterman, D. M. (2010). *Ethnography: Step-by-step*. Los Angeles: Sage.

- Fielding, N. (1994). Varieties of research interviews. *Nurse Researcher*, 1(3), 4-13.
doi:10.7748/nr.1.3.4.s2
- Finocchiaro-Kessler, S., Wexler, C., Maloba, M., Mabachi, N., Ndikum-Moffor, F., & Bukusi, E. (2016). Cervical cancer prevention and treatment research in Africa: a systematic review from a public health perspective. *BMC Women's Health*, 16, 29. doi:10.1186/s12905-016-0306-6
- Fischer, C. T. (2009). Bracketing in qualitative research: Conceptual and practical matters. *Psychotherapy Research*, 19(4-5), 583-590. doi:10.1080/10503300902798375
- Flay, B. R., Graumlich, S., Segawa, E., Burns, J. L., & Holliday, M. Y. (2004). Effects of 2 prevention programs on high-risk behaviours among African American youth: a randomized trial. *Archives of Pediatrics and Adolescent Medicine*, 158(4), 377-384. doi:10.1001/archpedi.158.4.377
- Freeman, T. (2006). 'Best practice' in focus group research: making sense of different views. *Journal of Advanced Nursing*, 56(5), 491-497. doi:10.1111/j.1365-2648.2006.04043.x
- Friedman, A. L., Oruko, K. O., Habel, M. A., Ford, J., Kinsey, J., Odhiambo, F., . . . Dunne, E. F. (2014). Preparing for human papillomavirus vaccine introduction in Kenya: implications from focus-group and interview discussions with caregivers and opinion leaders in Western Kenya. *BMC Public Health*, 14, 855. doi:10.1186/1471-2458-14-855
- Fu, L. Y., Bonhomme, L. A., Cooper, S. C., Joseph, J. G., & Zimet, G. D. (2014). Educational interventions to increase HPV vaccination acceptance: a systematic review. *Vaccine*, 32(17), 1901-1920. doi:10.1016/j.vaccine.2014.01.091
- Galanti, M. R., Coppo, A., Jonsson, E., Bremberg, S., & Faggiano, F. (2014). Anti-tobacco policy in schools: upcoming preventive strategy or prevention myth? A review of 31 studies. *Tobacco Control*, 23(4), 295-301. doi:10.1136/tobaccocontrol-2012-050846
- Gale, J. A., Lenardson, J. D., Lambert, D., & Hartley, D. (2012). *Adolescent Alcohol Use: Do Risk and Protective Factors Explain Rural-Urban Differences?* Retrieved from

- Gallagher, R. P., Hill, G. B., Bajdik, C. D., Fincham, S., Coldman, A. J., McLean, D. I., & Threlfall, W. J. (1995). Sunlight exposure, pigmentary factors, and risk of nonmelanocytic skin cancer. I. Basal cell carcinoma. *Archives of Dermatology*, *131*(2), 157-163.
- Gandini, S., Botteri, E., Iodice, S., Boniol, M., Lowenfels, A. B., Maisonneuve, P., & Boyle, P. (2008). Tobacco smoking and cancer: a meta-analysis. *International Journal of Cancer*, *122*(1), 155-164. doi:10.1002/ijc.23033
- Gandini, S., Sera, F., Cattaruzza, M. S., Pasquini, P., Picconi, O., Boyle, P., & Melchi, C. F. (2005). Meta-analysis of risk factors for cutaneous melanoma: II. Sun exposure. *European Journal of Cancer*, *41*(1), 45-60. doi:10.1016/j.ejca.2004.10.016
- GAVI. (2013). Kenya first country to protect girls against cervical cancer with GAVI support - 2013 - Press releases - News - Library - Gavi, the Vaccine Alliance. *Gavi, the Vaccine Alliance*.
- GAVI. (2014). 206,000 more girls to benefit from HPV vaccine with GAVI Alliance support. Retrieved on March 15, 2016 from <http://www.gavi.org/library/news/press-releases/2014/206-000-more-girls-to-benefit-from-hpv-vaccine-with-gavi-alliance-support/>
- GBD 2013 Mortality and Causes of Death Collaborators. (2015). Global, regional, and national age-sex specific all-cause and cause-specific mortality for 240 causes of death, 1990-2013: a systematic analysis for the Global Burden of Disease Study 2013. *Lancet*, *385*(9963), 117-171. doi:10.1016/s0140-6736(14)61682-2
- Geertz, C. (1973). Thick description: toward an interpretive theory of culture *The interpretation of culture: Selected Essays*. New York: Basic Books.
- Gfroerer, J. C., Larson, S. L., & Colliver, J. D. (2007). Drug Use Patterns and Trends in Rural Communities. *The Journal of Rural Health*, *23*, 10-15. doi:10.1111/j.1748-0361.2007.00118.x

- Gibbons, F. X., Kingsbury, J. H., & Gerrard, M. (2012). Social-Psychological Theories and Adolescent Health Risk Behaviour. *Social and Personality Psychology Compass*, 6(2), 170-183. doi:10.1111/j.1751-9004.2011.00412.x
- Gikonyo, C., Bejon, P., Marsh, V., & Molyneux, S. (2008). Taking social relationships seriously: Lessons learned from the informed consent practices of a vaccine trial on the Kenyan Coast. *Social Science & Medicine* (1982), 67, 708-720. doi:10.1016/j.socscimed.2008.02.003
- Giovannucci, E. L., Liu, Y., Leitzmann, M. F., Stampfer, M. J., & Willett, W. C. (2005). A prospective study of physical activity and incident and fatal prostate cancer. *Archives of Internal Medicine*, 165(9), 1005-1010. doi:10.1001/archinte.165.9.1005
- Glanz, K., & Bishop, D. B. (2010). The role of behavioural science theory in development and implementation of public health interventions. *Annual Review of Public Health*, 31, 399-418. doi:10.1146/annurev.publhealth.012809.103604
- Glanz, K., Rimer, B. K., & National Cancer Institute (US). (1997). *Theory at A Glance: A Guide to Health Promotion Practice*, . Retrieved on March 15, 2016 from Bethesda, MD.:
- Glanz, K., Rimer, B. K., & Viswanath, K. (2008). *Health behaviour and health education: theory, research, and practice*. San Francisco, CA: Jossey-Bass.
- GLOBOCAN. (2012). Estimated Cancer Incidence, Mortality and Prevalence Worldwide in 2012. Retrieved from http://globocan.iarc.fr/Pages/fact_sheets_cancer.aspx
- Goesling, B., Colman, S., Trenholm, C., Terzian, M., & Moore, K. (2014). Programs to reduce teen pregnancy, sexually transmitted infections, and associated sexual risk behaviours: a systematic review. *Journal of Adolescent Health*, 54(5), 499-507. doi:10.1016/j.jadohealth.2013.12.004
- Goldberg, J. H., Halpern-Felsher, B. L., & Millstein, S. G. (2002). Beyond invulnerability: the importance of benefits in adolescents' decision to drink alcohol. *Health Psychology*, 21(5), 477-484.

- Gonzalez-Suarez, C., Worley, A., Grimmer-Somers, K., & Dones, V. (2009). School-based interventions on childhood obesity: a meta-analysis. *American Journal of Preventive Medicine*, 37(5), 418-427. doi:10.1016/j.amepre.2009.07.012
- Gore, F. M., Bloem, P. J., Patton, G. C., Ferguson, J., Joseph, V., Coffey, C., . . . Mathers, C. D. (2011). Global burden of disease in young people aged 10-24 years: a systematic analysis. *Lancet*, 377(9783), 2093-2102. doi:10.1016/s0140-6736(11)60512-6
- Government of Canada. (2013). Canadian Tobacco Use Monitoring Survey (CTUMS) 2012. Retrieved on June 20, 2017 from <https://www.canada.ca/en/health-canada/services/publications/healthy-living/canadian-tobacco-use-monitoring-survey-ctums-2012.html#details-panel6>
- Graneheim, U. H., & Lundman, B. (2004). Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness. *Nurse Education Today*, 24(2), 105-112. doi:10.1016/j.nedt.2003.10.001
- Grossmann, I., & Na, J. (2014). Research in culture and psychology: past lessons and future challenges. *Wiley Interdisciplinary Reviews: Cognitive Science*, 5(1), 1-14. doi:10.1002/wcs.1267
- Gullone, E., & Moore, S. (2000). Adolescent risk-taking and the five-factor model of personality. *Journal of Adolescence*, 23(4), 393-407. doi:10.1006/jado.2000.0327
- Halcomb, E. J., Gholizadeh, L., DiGiacomo, M., Phillips, J., & Davidson, P. M. (2007). Literature review: considerations in undertaking focus group research with culturally and linguistically diverse groups. *Journal of Clinical Nursing*, 16(6), 1000-1011. doi:10.1111/j.1365-2702.2006.01760.x
- Hale, D. R., Fitzgerald-Yau, N., & Viner, R. M. (2014a). A Systematic Review of Effective Interventions for Reducing Multiple Health Risk Behaviours in Adolescence. *American Journal of Public Health*, 104(5), e19-e41. doi:10.2105/AJPH.2014.301874

- Halpern-Felsher, B. L., Millstein, S. G., Ellen, J. M., Adler, N. E., Tschann, J. M., & Biehl, M. (2001). The role of behavioural experience in judging risks. *Health Psychology, 20*(2), 120-126.
- Hamel, L. M., Robbins, L. B., & Wilbur, J. (2011). Computer- and web-based interventions to increase preadolescent and adolescent physical activity: a systematic review. *Journal of Advanced Nursing, 67*(2), 251-268. doi:10.1111/j.1365-2648.2010.05493.x
- Hannon, P. A., Maxwell, A. E., Escoffery, C., Vu, T., Kohn, M., Leeman, J., . . . DeGroff, A. (2013). Colorectal Cancer Control Program Grantees' Use of Evidence-Based Interventions. *American Journal of Preventive Medicine, 45*(5), 644-648.
doi:http://dx.doi.org/10.1016/j.amepre.2013.06.010
- Harrell, J. S., Bangdiwala, S. I., Deng, S., Webb, J. P., & Bradley, C. (1998). Smoking initiation in youth: The roles of gender, race, socioeconomic, and developmental status. *Journal of Adolescent Health, 23*(5), 271-279. doi:http://dx.doi.org/10.1016/S1054-139X(98)00078-0
- Harrington, K. J. (2012). The use of metaphor in discourse about cancer: a review of the literature. *Clinical Journal of Oncology Nursing, 16*(4), 408-412.
- Harrison, J. A., Mullen, P. D., & Green, L. W. (1992). A meta-analysis of studies of the Health Belief Model with adults. *Health Education Research, 7*(1), 107-116.
- Hart, K. M., & Demarco, R. F. (2008). Primary prevention of skin cancer in children and adolescents: a review of the literature. *Journal of Pediatric Oncology Nursing, 25*(2), 67-78.
doi:10.1177/1043454208314499
- Hauser, D. J., & Schwarz, N. (2015). The War on Prevention: Bellicose Cancer Metaphors Hurt (Some) Prevention Intentions. *Personality & Social Psychology Bulletin, 41*(1), 66-77.
doi:10.1177/0146167214557006

- Hayes, E. R., & Plowfield, L. A. (2007). Smoking too young: students' decisions about tobacco use. *MCN: American Journal of Maternal Child Nursing*, 32(2), 112-116. doi:10.1097/01.NMC.0000264292.72221.ef
- Hill, K., Thomas, K., AbouZahr, C., Walker, N., Say, L., Inoue, M., & Suzuki, E. (2007). Estimates of maternal mortality worldwide between 1990 and 2005: an assessment of available data. *The Lancet*, 370(9595), 1311-1319. doi:https://doi.org/10.1016/S0140-6736(07)61572-4
- Holman, D. M., Fox, K. A., Glenn, J. D., Guy Jr, G. P., Watson, M., Baker, K., . . . Geller, A. C. (2013). Strategies to Reduce Indoor Tanning: Current Research Gaps and Future Opportunities for Prevention. *American Journal of Preventive Medicine*, 44(6), 672-681. doi:http://dx.doi.org/10.1016/j.amepre.2013.02.014
- Hopkins, D., & Mandic, S. (2017). Perceptions of cycling among high school students and their parents. *International Journal of Sustainable Transportation*, 11(5), 342-356. doi:10.1080/15568318.2016.1253803
- Hoque, M. E. (2013). Awareness of cervical cancer, Papanicolau's smear and its utilization among female, final year undergraduates in Durban, South Africa. *Journal of Cancer Research and Therapeutics*, 9, 25-28. doi:10.4103/0973-1482.110350
- Houghton, C., Casey, D., Shaw, D., & Murphy, K. (2013). Rigour in qualitative case-study research. *Nurse Researcher*, 20, 12-17.
- Huchko, M. J., Bukusi, E. A., & Cohen, C. R. (2011). Building capacity for cervical cancer screening in outpatient HIV clinics in the Nyanza province of western Kenya. *International Journal of Gynaecology and Obstetrics: The Official Organ of the International Federation of Gynaecology and Obstetrics*, 114, 106-110. doi:10.1016/j.ijgo.2011.02.009
- Huchko, M. J., Sneden, J., Leslie, H. H., Abdulrahim, N., Maloba, M., Bukusi, E., & Cohen, C. R. (2014). A comparison of two visual inspection methods for cervical cancer screening among

- HIV-infected women in Kenya. *Bulletin of the World Health Organization*, 92(3), 195-203.
doi:10.2471/blt.13.122051
- Huo, D., Adebamowo, C. A., Ogundiran, T. O., Akang, E. E., Campbell, O., Adenipekun, A., . . . Olopade, O. I. (2008). Parity and breastfeeding are protective against breast cancer in Nigerian women. *British Journal of Cancer*, 98, 992-996. doi:10.1038/sj.bjc.6604275
- Hyde, A., Howlett, E., Brady, D., & Drennan, J. (2005). The focus group method: Insights from focus group interviews on sexual health with adolescents. *Social Science & Medicine*, 61(12), 2588-2599. doi:http://dx.doi.org/10.1016/j.socscimed.2005.04.040
- IBM Corp. (2013). IBM SPSS Statistics. *SPSS Statistics*.
- International Agency for Research on Cancer. (2012). *IARC monographs on the evaluation of carcinogenic risks to humans. A review of human carcinogens. Part D: Radiation*. (Volume 100D.). Retrieved from Lyon, France:
- Ito, Y., Ioka, A., Tanaka, M., Nakayama, T., & Tsukuma, H. (2009). Trends in cancer incidence and mortality in Osaka, Japan: evaluation of cancer control activities. *Cancer Science*, 100(12), 2390-2395. doi:10.1111/j.1349-7006.2009.01311.x
- Jackson, C., Geddes, R., Haw, S., & Frank, J. (2012). Interventions to prevent substance use and risky sexual behaviour in young people: a systematic review. *Addiction*, 107(4), 733-747. doi:10.1111/j.1360-0443.2011.03751.x
- Janz, N. K., & Becker, M. H. (1984). The Health Belief Model: a decade later. *Health Education Quarterly*, 11(1), 1-47.
- Jemal, A., Ward, E., & Thun, M. (2010). Declining death rates reflect progress against cancer. *PLoS One*, 5(3), e9584. doi:10.1371/journal.pone.0009584

- Jessor, R. (1991). Risk behaviour in adolescence: A psychosocial framework for understanding and action. *Journal of Adolescent Health, 12*(8), 597-605. doi:http://dx.doi.org/10.1016/1054-139X(91)90007-K
- Johnston, V., Westphal, D. W., Earnshaw, C., & Thomas, D. P. (2012). Starting to smoke: a qualitative study of the experiences of Australian indigenous youth. *BMC Public Health, 12*, 963. doi:10.1186/1471-2458-12-963
- Jordan, L., Malerich, S., Moon, S., & Spencer, J. (2014). Review and assessment of global and domestic ultraviolet light protection programs. *Journal of Drugs in Dermatology, 13*, 1099+.
- Juma, M., Askew, I., Alaii, J., Bartholomew, L. K., & van den Borne, B. (2014). Cultural practices and sexual risk behaviour among adolescent orphans and non-orphans: a qualitative study on perceptions from a community in Western Kenya. *BMC Public Health, 14*, 84. doi:10.1186/1471-2458-14-84
- Kabiru, C. W., Beguy, D., Undie, C. C., Zulu, E. M., & Ezeh, A. C. (2010). Transition into first sex among adolescents in slum and non-slum communities in Nairobi, Kenya. *Journal of Youth Studies, 13*(4), 453-471. doi:10.1080/13676261003801754
- Kabiru, C. W., & Orpinas, P. (2009a). Correlates of condom use among male high school students in Nairobi, Kenya. *Journal of School Health, 79*(9), 425-432. doi:10.1111/j.1746-1561.2009.00430.x
- Kabiru, C. W., & Orpinas, P. (2009b). Factors associated with sexual activity among high-school students in Nairobi, Kenya. *Journal of Adolescence, 32*(4), 1023-1039. doi:10.1016/j.adolescence.2008.08.001
- Kamau, J. W., Wanderi, M. P., Njororai, W. W. S., & Wamukoya, E. K. (2011). Prevalence of overweight and obesity among primary school children in Nairobi province, Kenya. *African*

Journal for Physical, Health Education, Recreation and Dance, 17(2).

doi:doi.org/10.4314/ajpherd.v17i2.67668

Kapambwe, S., Parham, G., Mwanahamuntu, M., Chirwa, S., Mwanza, J., & Amuyunzu-Nyamongo, M. (2013). Innovative approaches to promoting cervical health and raising cervical cancer awareness by use of existing cultural structures in resource-limited countries: experiences with traditional marriage counseling in Zambia. *Global Health Promotion*, 20(4 Suppl), 57-64.

doi:10.1177/1757975913502689

Kassebaum, N., Kyu, H. H., Zoeckler, L., Olsen, H. E., Thomas, K., Pinho, C., . . . Vos, T. (2017).

Child and Adolescent Health From 1990 to 2015: Findings From the Global Burden of Diseases, Injuries, and Risk Factors 2015 Study. *JAMA Pediatrics*.

doi:10.1001/jamapediatrics.2017.0250

Katz, D. L., O'Connell, M., Njike, V. Y., Yeh, M. C., & Nawaz, H. (2008). Strategies for the prevention and control of obesity in the school setting: systematic review and meta-analysis.

International Journal of Obesity (2005), 32(12), 1780-1789. doi:10.1038/ijo.2008.158

Keeler, H. J., & Kaiser, M. M. (2010). An integrative model of adolescent health risk behaviour.

Journal of Pediatric Nursing, 25(2), 126-137. doi:10.1016/j.pedn.2009.01.005

Kelly, S. A., Melnyk, B. M., Jacobson, D. L., & O'Haver, J. A. (2011). Correlates among healthy lifestyle cognitive beliefs, healthy lifestyle choices, social support, and healthy behaviours in adolescents: implications for behavioural change strategies and future research. *Journal of Pediatric Health Care*, 25(4), 216-223. doi:10.1016/j.pedhc.2010.03.002

Kepka, D., Coronado, G. D., Rodriguez, H. P., & Thompson, B. (2011). Evaluation of a radionovela to promote HPV vaccine awareness and knowledge among Hispanic parents. *Journal of Community Health*, 36(6), 957-965. doi:10.1007/s10900-011-9395-1

- Kinyanjui, M., David. (2006). Cancer Pain Management in Kenya in the Context of World Health Organization Guidelines. *UICC World Cancer Congress*.
- Kirk, S. (2007). Methodological and ethical issues in conducting qualitative research with children and young people: A literature review. *International Journal of Nursing Studies*, 44, 1250-1260. doi:10.1016/j.ijnurstu.2006.08.015
- Kitzinger, J. (1995). Introducing Focus Groups. *BMJ: British Medical Journal*, 311(7000), 299-302. doi:10.2307/29728251
- Kivuti-Bitok, L. W., Pokhariyal, G. P., Abdul, R., & McDonnell, G. (2013). An exploration of opportunities and challenges facing cervical cancer managers in Kenya. *BMC Research Notes*, 6, 136. doi:10.1186/1756-0500-6-136
- Knighting, K., Rowa-Dewar, N., Malcolm, C., Kearney, N., & Gibson, F. (2011). Children's understanding of cancer and views on health-related behaviour: a 'draw and write' study. *Child: Care, Health and Development*, 37(2), 289-299.
- Kobus, K. (2003). Peers and adolescent smoking. *Addiction*, 98, 37-55. doi:10.1046/j.1360-0443.98.s1.4.x
- Korgen, K., & White, J. M. (2008). *Engaged sociologist: connecting the classroom to the community*. Thousand Oaks, CA: Pine Forge Press.
- Korir, A., Okerosi, N., Ronoh, V., Mutuma, G., & Parkin, M. (2015). Incidence of cancer in Nairobi, Kenya (2004-2008). *International Journal of Cancer*, 137(9), 2053-2059. doi:10.1002/ijc.29674
- Koss, L. G. (1989). The Papanicolaou test for cervical cancer detection. A triumph and a tragedy. *JAMA*, 261(5), 737-743.

- Kralikova, E., Kmetova, A., Zvolaska, K., Blaha, M., & Bortlicek, Z. (2013). Czech adolescent smokers: unhappy to smoke but unable to quit. *International Journal of Tuberculosis and Lung Disease*, *17*(6), 842-846. doi:10.5588/ijtld.12.0753
- Kricker, A., Armstrong, B. K., English, D. R., & Heenan, P. J. (1995). Does intermittent sun exposure cause basal cell carcinoma? a case-control study in Western Australia. *International Journal of Cancer*, *60*(4), 489-494.
- Krueger, R. A., & Casey, M. A. (2015). *Focus groups: A practical guide for applied Research* (5th ed.). Thousand Oaks, CA: Sage Publications.
- Kulbok, P. A., Rhee, H., Botchwey, N., Hinton, I., Bovbjerg, V., & Anderson, N. L. R. (2008). Factors Influencing Adolescents' Decision Not to Smoke. *Public Health Nursing*, *25*(6), 505-515. doi:10.1111/j.1525-1446.2008.00737.x
- Kulie, T., Slattengren, A., Redmer, J., Counts, H., Eglash, A., & Schragger, S. (2011). Obesity and women's health: an evidence-based review. *Journal of the American Board of Family Medicine*, *24*(1), 75-85. doi:10.3122/jabfm.2011.01.100076
- Kushi, L. H., Doyle, C., McCullough, M., Rock, C. L., Demark-Wahnefried, W., Bandera, E. V., . . . Gansler, T. (2012). American Cancer Society Guidelines on nutrition and physical activity for cancer prevention: reducing the risk of cancer with healthy food choices and physical activity. *CA: A Cancer Journal for Clinicians*, *62*(1), 30-67. doi:10.3322/caac.20140
- Kvale, Steinar. (2007). *Doing Interviews* (Flick Uwe Ed.). Thousand Oaks, California: SAGE Publications, Inc.
- Kwan, T. T., Tam, K. F., Lee, P. W., Chan, K. K., & Ngan, H. Y. (2011). The effect of school-based cervical cancer education on perceptions towards human papillomavirus vaccination among Hong Kong Chinese adolescent girls. *Patient Education and Counseling*, *84*(1), 118-122. doi:10.1016/j.pec.2010.06.018

- Ladner, J., Besson, M. H., Hampshire, R., Tapert, L., Chirenje, M., & Saba, J. (2012). Assessment of eight HPV vaccination programs implemented in lowest income countries. *BMC Public Health, 12*, 370. doi:10.1186/1471-2458-12-370
- Lake, J. R., Thomson, C. S., Twelves, C. J., & Davies, E. A. (2014). A qualitative investigation of the motivations, experiences and views of female sunbed users under the age of 18 in England. *Journal of Public Health (Oxf), 36*(1), 56-64. doi:10.1093/pubmed/fds107
- Lambert, D., Gale, J. A., & Hartley, D. (2008). Substance abuse by youth and young adults in rural America. *Journal of Rural Health, 24*(3), 221-228. doi:10.1111/j.1748-0361.2008.00162.x
- LaMontagne, D. S., Barge, S., Le, N. T., Mugisha, E., Penny, M. E., Gandhi, S., . . . Jumaan, A. O. (2011). Human papillomavirus vaccine delivery strategies that achieved high coverage in low- and middle-income countries. *Bulletin of the World Health Organization, 89*(11), 821-830b. doi:10.2471/blt.11.089862
- Larson, N. I., Story, M. T., & Nelson, M. C. (2009). Neighborhood environments: disparities in access to healthy foods in the U.S. *American Journal of Preventive Medicine, 36*(1), 74-81. doi:10.1016/j.amepre.2008.09.025
- LeCompte, M. (2000). Analyzing Qualitative Data. *Theory Into Practice, 39*(3), 146-154. doi:10.1207/s15430421tip3903_5
- LeCompte, M., & Schensul, J. (2010). *Designing and Conducting Ethnographic Research: An Introduction* (2nd ed. ed.). Toronto: AltaMira Press.
- Lehoux, P., Poland, B., & Daudelin, G. (2006). Focus group research and "the patient's view". *Social Science and Medicine, 63*(8), 2091-2104. doi:10.1016/j.socscimed.2006.05.016
- Leifman, H., Sundelin, M., & Raninen, A. (2013). *General recommendations on community based alcohol and drug prevention: Generic ADPY report 2013*. Retrieved from
- Lincoln, Y., & Guba, E. (1985). *Naturalistic inquiry*. Beverley Hills, CA: Sage.

- Lindor, N. M., McMaster, M. L., Lindor, C. J., Greene, M. H., & National Cancer Institute, D. o. C. P., Community Oncology and Prevention Trials Research Group. (2008). Concise handbook of familial cancer susceptibility syndromes - second edition. *Journal of the National Cancer Institute. Monographs*, 1-93. doi:10.1093/jncimonographs/lgn001
- Lipworth, W. L., Davey, H. M., Carter, S. M., Hooker, C., & Hu, W. (2010). Beliefs and beyond: what can we learn from qualitative studies of lay people's understandings of cancer risk? *Health Expectations*, 13(2), 113-124. doi:10.1111/j.1369-7625.2010.00601.x
- Loman, D. G. (2008). Promoting physical activity in teen girls: insight from focus groups. *MCN. The American Journal of Maternal Child Nursing*, 33, 294-299; quiz 300-301. doi:10.1097/01.NMC.0000334896.91720.86
- Lonsdale, C., Rosenkranz, R. R., Peralta, L. R., Bennie, A., Fahey, P., & Lubans, D. R. (2013). A systematic review and meta-analysis of interventions designed to increase moderate-to-vigorous physical activity in school physical education lessons. *Preventive Medicine*, 56(2), 152-161. doi:10.1016/j.ypmed.2012.12.004
- Looney, S. M., & Raynor, H. A. (2011). Impact of portion size and energy density on snack intake in preschool-aged children. *Journal of American Dietetic Association*, 111(3), 414-418. doi:10.1016/j.jada.2010.11.016
- Maina, W. K., Nato, J. N., Okoth, M. A., Kiptui, D. J., & Ogwel, A. O. (2013). Prevalence of smoking and other tobacco use related behaviours: Report of the Global Youth Tobacco Survey in Kenya in 2007. *Public Health Research*, 3(3), 43-49.
- Maree, J. E., & Wright, S. C. (2011). Cervical cancer: does our message promote screening? A pilot study in a South African context. *European Journal of Oncology Nursing*, 15(2), 118-123. doi:10.1016/j.ejon.2010.06.008

- Markowitz, L. E., Tsu, V., Deeks, S. L., Cubie, H., Wang, S. A., Vicari, A. S., & Brotherton, J. M. (2012). Human papillomavirus vaccine introduction--the first five years. *Vaccine, 30 Suppl 5*, F139-148. doi:10.1016/j.vaccine.2012.05.039
- Masika, M. M., Ogembo, J. G., Chabeda, S. V., Wamai, R. G., & Mugo, N. (2015). Knowledge on HPV Vaccine and Cervical Cancer Facilitates Vaccine Acceptability among School Teachers in Kitui County, Kenya. *PloS One, 10*(8), e0135563. doi:10.1371/journal.pone.0135563
- McClure, C. A., MacSwain, M.-A., Morrison, H., & Sanford, C. J. (2015). Human papillomavirus vaccine uptake in boys and girls in a school-based vaccine delivery program in Prince Edward Island, Canada. *Vaccine, 33*(15), 1786-1790. doi:https://doi.org/10.1016/j.vaccine.2015.02.047
- McDonald, J. A., Goyal, A., & Terry, M. B. (2013). Alcohol Intake and Breast Cancer Risk: Weighing the Overall Evidence. *Current Breast Cancer Reports, 5*(3), 10.1007/s12609-12013-10114-z. doi:10.1007/s12609-013-0114-z
- McEwen, M. (2011). Overview of Theory in Nursing. In M. McEwen & E. Willis (Eds.), *Theoretical Basis for Nursing* (3rd ed., pp. 21-45). Philadelphia, PA: Wolters Kluwer Health/Lippincott Williams & Wilkins.
- McTiernan, A., Tworoger, S. S., Rajan, K. B., Yasui, Y., Sorenson, B., Ulrich, C. M., . . . Schwartz, R. S. (2004). Effect of exercise on serum androgens in postmenopausal women: a 12-month randomized clinical trial. *Cancer Epidemiology Biomarkers & Prevention, 13*(7), 1099-1105.
- Mena, M., Wiafe-Addai, B., Sauvaget, C., Ali, I. A., Wiafe, S. A., Dabis, F., . . . Sasco, A. J. (2014). Evaluation of the impact of a breast cancer awareness program in rural Ghana: a cross-sectional survey. *International Journal of Cancer, 134*(4), 913-924. doi:10.1002/ijc.28412
- Meziane, M., Ahid, S., Azendour, H., Ismaili, N., Marcil, T., Afifi, Y., . . . Belgnaoui, F. Z. (2010). Results of a public awareness campaign in Morocco regarding the sun's deleterious effects.

Journal of the European Academy of Dermatology and Venereology, 24(4), 388-394.

doi:10.1111/j.1468-3083.2008.03028.x

Michaelson, V., McKerron, M., & Davison, C. (2015). Forming ideas about health: A qualitative study of Ontario adolescents. *International Journal of Qualitative Studies on Health & Well-Being*, 10, 1-12. doi:10.3402/qhw.v10.27506

Miller, D., Okolo, C. A., Mirabal, Y., Guillaud, M., Arulogun, O. S., Oladepo, O., . . . Adewole, I. F. (2007). Knowledge dissemination and evaluation in a cervical cancer screening implementation program in Nigeria. *Gynecologic Oncology*, 107(1 Suppl 1), S196-207. doi:10.1016/j.ygyno.2007.07.014

Millstein, S. G., & Halpern-Felsher, B. L. (2002a). Perceptions of risk and vulnerability. *Journal of Adolescent Health*, 31(1, Supplement 1), 10-27. doi:http://dx.doi.org/10.1016/S1054-139X(02)00412-3

Millstein, S. G., & Halpern-Felsher, B. L. (2002b). Judgments about Risk and Perceived Invulnerability in Adolescents and Young Adults. *Journal of Research on Adolescence* 12(4), 399-422. doi:10.1111/1532-7795.00039

Ministry of Public Health and Sanitation and Ministry of Medical Services. (2011). *National cancer control strategy, 2011 - 2016*. Retrieved on March 12, 2014 from Nairobi, Kenya:

Moehrle, M. (2008). Outdoor sports and skin cancer. *Clinics in Dermatology*, 26(1), 12-15. doi:10.1016/j.clindermatol.2007.10.001

Moodley, I., Tathiah, N., Mubaiwa, V., & Denny, L. (2013). High uptake of Gardasil vaccine among 9 - 12-year-old schoolgirls participating in an HPV vaccination demonstration project in KwaZulu-Natal, South Africa. *South African Medical Journal*, 103(5), 318-321.

- Moreland, J. J., Raup-Krieger, J. L., Hecht, M. L., & Miller-Day, M. M. (2013). The conceptualization and communication of risk among rural appalachian adolescents. *Journal of Health Communication, 18*(6), 668-685. doi:10.1080/10810730.2012.743620
- Morse, J., & Field, P. (1995). *Qualitative research methods for health professionals* (2nd ed.). Thousand Oaks, CA: Sage.
- Mosavel, M., Simon, C., & Ahmed, R. (2010). Cancer perceptions of South African mothers and daughters: implications for health promotion programs. *Health Care for Women International, 31*(9), 784-800. doi:10.1080/07399331003611442
- Mouallif, M., Bowyer, H. L., Festali, S., Albert, A., Filali-Zegzouti, Y., Guenin, S., . . . Ennaji, M. M. (2014). Cervical cancer and HPV: Awareness and vaccine acceptability among parents in Morocco. *Vaccine, 32*(3), 409-416. doi:10.1016/j.vaccine.2013.10.069
- Mulemi, B. A. (2008). Patients' perspectives on hospitalisation: Experiences from a cancer ward in Kenya. *Anthropology & Medicine, 15*(2), 117-131. doi:10.1080/13648470802122032
- Muthoni, A., & Miller, A. N. (2010). An exploration of rural and urban Kenyan women's knowledge and attitudes regarding breast cancer and breast cancer early detection measures. *Health Care for Women International, 31*(9), 801-816. doi:10.1080/07399331003628453
- Muthuri, S. K. (2014). *Prevalence and correlates of overweight/obesity, physical activity, and sedentary behaviour among school-aged children in Kenya*. (PhD), University of Ottawa, Ottawa.
- Muthuri, S. K., Francis, C. E., Wachira, L. J., Leblanc, A. G., Sampson, M., Onywera, V. O., & Tremblay, M. S. (2014). Evidence of an overweight/obesity transition among school-aged children and youth in Sub-Saharan Africa: a systematic review. *PloS One, 9*(3), e92846. doi:10.1371/journal.pone.0092846

- Muthuri, S. K., Wachira, L. J., Leblanc, A. G., Francis, C. E., Sampson, M., Onywera, V. O., & Tremblay, M. S. (2014). Temporal trends and correlates of physical activity, sedentary behaviour, and physical fitness among school-aged children in Sub-Saharan Africa: a systematic review. *International Journal of Environmental Research and Public Health*, *11*(3), 3327-3359. doi:10.3390/ijerph110303327
- Muthuri, S. K., Wachira, L. J., Onywera, V. O., & Tremblay, M. S. (2014). Correlates of objectively measured overweight/obesity and physical activity in Kenyan school children: results from ISCOLE-Kenya. *BMC Public Health*, *14*, 436. doi:10.1186/1471-2458-14-436
- Mwanahamuntu, M. H., Sahasrabuddhe, V. V., Blevins, M., Kapambwe, S., Shepherd, B. E., Chibwasha, C., . . . Parham, G. P. (2013). Utilization of cervical cancer screening services and trends in screening positivity rates in a 'screen-and-treat' program integrated with HIV/AIDS care in Zambia. *PLoS One*, *8*(9), e74607. doi:10.1371/journal.pone.0074607
- Nagata, C., Mizoue, T., Tanaka, K., Tsuji, I., Tamakoshi, A., Wakai, K., . . . Tsugane, S. (2012). Breastfeeding and breast cancer risk: an evaluation based on a systematic review of epidemiologic evidence among the Japanese population. *Japanese Journal of Clinical Oncology*, *42*(2), 124-130. doi:10.1093/jjco/hyr182
- National Cancer Institute. (2014). Cancer Screening Overview (PDQ®). Retrieved March 15, 2016, from <http://www.cancer.gov/cancertopics/pdq/screening/overview/HealthProfessional>
- National Cancer Institute. (2015). What Is Cancer? Retrieved March 15, 2016, from <https://www.cancer.gov/about-cancer/understanding/what-is-cancer>
- National Cancer Institute. (2017). NCI Dictionary of Cancer Terms: Prevention. Retrieved March 15, 2016, from <https://www.cancer.gov/publications/dictionaries/cancer-terms?cdrid=439419>
- National Cancer Institute (NCI). (2017a). Infectious Agents. Retrieved March 15, 2016, from <https://www.cancer.gov/about-cancer/causes-prevention/risk/infectious-agents>

- National Cancer Institute (NCI). (2017b). NCI Dictionary of Cancer Terms: Cancer. Retrieved March 15, 2016, from <https://www.cancer.gov/publications/dictionaries/cancer-terms?cdrid=45333>
- National Research Council (US), & Institute of Medicine (US) Committee on Adolescent Health Care Services and Models of Care for Treatment, P., and Healthy Development. (2009). Adolescent Health Services: Missing Opportunities. In Lawrence RS, Appleton Gootman J, & Sim LJ (Eds.). Washington (DC): National Academies Press (US).
- Ndetei, D. M., Khasakhala, L. I., Mutiso, V., Ongecha-Owuor, F. A., & Kokonya, D. A. (2009). Patterns of drug abuse in public secondary schools in Kenya. *Substance Abuse, 30*(1), 69-78. doi:10.1080/08897070802606436
- Ngoma, T. (2006). World Health Organization cancer priorities in developing countries. *Annals of Oncology, 17 Suppl 8*, viii9-viii14. doi:10.1093/annonc/mdl982
- Ngugi, C. W., Boga, H., Muigai, A. W. T., Wanzala, P., & Mbithi, J. N. (2012). Factors affecting uptake of cervical cancer early detection measures among women in Thika, Kenya. *Health Care for Women International, 33*, 595-613. doi:10.1080/07399332.2011.646367
- Niemeier, B. S., Hektner, J. M., & Enger, K. B. (2012). Parent participation in weight-related health interventions for children and adolescents: a systematic review and meta-analysis. *Preventive Medicine, 55*(1), 3-13. doi:10.1016/j.ypmed.2012.04.021
- Nieminen, M. T., Novak-Frazer, L., Collins, R., Dawsey, S. P., Dawsey, S. M., Abnet, C. C., . . . Rautemaa, R. (2013). Alcohol and acetaldehyde in African fermented milk mursik--a possible etiologic factor for high incidence of esophageal cancer in western Kenya. *Cancer Epidemiology, Biomarkers & Prevention: A Publication of the American Association for Cancer Research, Cosponsored by the American Society of Preventive Oncology, 22*, 69-75. doi:10.1158/1055-9965.EPI-12-0908

- Nilsson, M., & Emmelin, M. (2010). "Immortal but frightened"-smoking adolescents' perceptions on smoking uptake and prevention. *BMC Public Health*, *10*, 776. doi:10.1186/1471-2458-10-776
- Norat, T., Chan, D., Lau, R., Aune, D., & Vieira, R. (2010). *The associations between food, nutrition and physical activity and the risk of colorectal cancer. WCRF/AICR systematic literature review continuous update project report*. Retrieved March 15, 2016, from London: www.wcrf.org/sites/default/files/SLR_colorectal_cancer_2010.pdf
- Nwogu, C., Mahoney, M., George, S., Dy, G., Hartman, H., Animashaun, M., . . . Michalek, A. (2014). Promoting cancer control training in resource limited environments: Lagos, nigeria. *Journal of Cancer Education*, *29*(1), 14-18.
- Oakley, A., Bendelow, G., Barnes, J., Buchanan, M., & Husain, O. A. (1995). Health and cancer prevention: knowledge and beliefs of children and young people. *BMJ*, *310*(6986), 1029-1033.
- Odafe, S., Torpey, K., Khamofu, H., Oladele, E., Adedokun, O., Chabikuli, O., . . . Okoye, M. (2013). Integrating cervical cancer screening with HIV care in a district hospital in Abuja, Nigeria. *Nigerian Medical Journal*, *54*(3), 176-184. doi:10.4103/0300-1652.114590
- Ogembo, J. G., Manga, S., Nulah, K., Foglabenchi, L. H., Perlman, S., Wamai, R. G., . . . Tih, P. (2014). Achieving high uptake of human papillomavirus vaccine in Cameroon: lessons learned in overcoming challenges. *Vaccine*, *32*(35), 4399-4403. doi:10.1016/j.vaccine.2014.06.064
- Ojiambo, R. M., Easton, C., Casajus, J. A., Konstabel, K., Reilly, J. J., & Pitsiladis, Y. (2012). Effect of urbanization on objectively measured physical activity levels, sedentary time, and indices of adiposity in Kenyan adolescents. *Journal of Physical Activity & Health*, *9*(1), 115-123.
- Olson, A. L., Gaffney, C. A., Starr, P., & Dietrich, A. J. (2008). The impact of an appearance-based educational intervention on adolescent intention to use sunscreen. *Health Education Research*, *23*(5), 763-769. doi:10.1093/her/cym005

- Olsson, M., Jarfelt, M., Pergert, P., & Enskar, K. (2015). Experiences of teenagers and young adults treated for cancer in Sweden. *European Journal of Oncology Nursing*, *19*(5), 575-581. doi:10.1016/j.ejon.2015.03.003
- Oluwole, D., & Kraemer, J. (2013). Innovative public-private partnership: A diagonal approach to combating women's cancers in Africa. *Bulletin of the World Health Organization*, *91*(9), 691-696.
- Onywera, V. O., Adamo, K. B., Sheel, A. W., Waudu, J. N., Boit, M. K., & Tremblay, M. (2012). Emerging evidence of the physical activity transition in Kenya. *Journal of Physical Activity & Health*, *9*(4), 554-562.
- Oscarsson, M. G., Hannerfors, A.-K., & Tydén, T. (2012). Young women's decision-making process for HPV vaccination. *Sexual & Reproductive Health care: Official Journal of the Swedish Association of Midwives*, *3*, 141-146. doi:10.1016/j.srhc.2012.10.002
- Otto, S. J., Fracheboud, J., Looman, C. W., Broeders, M. J., Boer, R., Hendriks, J. H., . . . de Koning, H. J. (2003). Initiation of population-based mammography screening in Dutch municipalities and effect on breast-cancer mortality: a systematic review. *Lancet*, *361*(9367), 1411-1417. doi:10.1016/s0140-6736(03)13132-7
- Oxford University Press. (Ed.) (2016a) *Fear* (2nd ed.). Northamptonshire, UK: Oxford University Press.
- Oxford University Press. (Ed.) (2016b) *Metaphor* (2nd ed.). Northamptonshire, UK: Oxford University Press.
- Park, S., Kim, Y., Shin, H. R., Lee, B., Shin, A., Jung, K. W., . . . Boffetta, P. (2014). Population-attributable causes of cancer in Korea: obesity and physical inactivity. *PloS One*, *9*(4), e90871. doi:10.1371/journal.pone.0090871
- Parliament of Kenya. (2011). *Policy brief on the situational analysis of cancer in Kenya*.

- Patel, A. V., Rodriguez, C., Bernstein, L., Chao, A., Thun, M. J., & Calle, E. E. (2005). Obesity, recreational physical activity, and risk of pancreatic cancer in a large U.S. Cohort. *Cancer Epidemiology, Biomarkers and Prevention*, *14*(2), 459-466. doi:10.1158/1055-9965.epi-04-0583
- Patton, G. C., Coffey, C., Cappa, C., Currie, D., Riley, L., Gore, F., . . . Ferguson, J. (2012). Health of the world's adolescents: a synthesis of internationally comparable data. *Lancet*, *379*(9826), 1665-1675. doi:10.1016/s0140-6736(12)60203-7
- Patton, G. C., Coffey, C., Sawyer, S. M., Viner, R. M., Haller, D. M., Bose, K., . . . Mathers, C. D. (2009). Global patterns of mortality in young people: a systematic analysis of population health data. *Lancet*, *374*(9693), 881-892. doi:10.1016/s0140-6736(09)60741-8
- Perlman, S., Wamai, R. G., Bain, P. A., Welty, T., Welty, E., & Ogembo, J. G. (2014). Knowledge and awareness of HPV vaccine and acceptability to vaccinate in sub-Saharan Africa: a systematic review. *PloS One*, *9*(3), e90912. doi:10.1371/journal.pone.0090912
- Peterson-Sweeney, K. (2005). The use of focus groups in pediatric and adolescent research. *Journal of Pediatric Health Care*, *19*(2), 104-110. doi:http://dx.doi.org/10.1016/j.pedhc.2004.08.006
- Peto, T. J., Mendy, M. E., Lowe, Y., Webb, E. L., Whittle, H. C., & Hall, A. J. (2014). Efficacy and effectiveness of infant vaccination against chronic hepatitis B in the Gambia Hepatitis Intervention Study (1986-90) and in the nationwide immunisation program. *BMC Infectious Diseases*, *14*, 7. doi:10.1186/1471-2334-14-7
- Pfaendler, K. S., Mwanahamuntu, M. H., Sahasrabudde, V. V., Mudenda, V., Stringer, J. S., & Parham, G. P. (2008). Management of cryotherapy-ineligible women in a "screen-and-treat" cervical cancer prevention program targeting HIV-infected women in Zambia: lessons from the field. *Gynecologic Oncology*, *110*(3), 402-407. doi:10.1016/j.ygyno.2008.04.031

- Poland, B., Frohlich, K., Haines, R. J., Mykhalovskiy, E., Rock, M., & Sparks, R. (2006). The social context of smoking: the next frontier in tobacco control? *Tobacco Control*, *15*(1), 59-63. doi:10.1136/tc.2004.009886
- Polit, D., F., & Beck, C., Tatano. (2012). *Nursing Research: Generating and assessing Evidence for Nursing Practice* (9th ed.). Philadelphia, PA: Wolters Kluwer Health/Lippincott Williams & Wilkins.
- Public Health Agency of Canada. (2008). What is health? Retrieved March 15, 2016, from <http://www.phac-aspc.gc.ca/ph-sp/approach-approche/qa-qr5-eng.php>
- Puffer, E. S., Meade, C. S., Drabkin, A. S., Broverman, S. A., Ogwang-Odhiambo, R. A., & Sikkema, K. J. (2011). Individual- and family-level psychosocial correlates of HIV risk behaviour among youth in rural Kenya. *AIDS and Behaviour*, *15*, 1264-1274. doi:10.1007/s10461-010-9823-8
- Radisic, G., Chapman, J., Flight, I., & Wilson, C. (2017). Factors associated with parents' attitudes to the HPV vaccination of their adolescent sons : A systematic review. *Preventive Medicine*, *95*(Supplement C), 26-37. doi:<https://doi.org/10.1016/j.ypmed.2016.11.019>
- Radtke, T., Scholz, U., Keller, R., & Hornung, R. (2012). Smoking is ok as long as I eat healthily: Compensatory Health Beliefs and their role for intentions and smoking within the Health Action Process Approach. *Psychology & Health*, *27* Suppl 2, 91-107. doi:10.1080/08870446.2011.603422
- Ragucci, A. T. (1972). The ethnographic approach and nursing research. *Nursing Research*, *21*, 485-490.
- Ramogola-Masire, D., de Klerk, R., Monare, B., Ratshaa, B., Friedman, H. M., & Zetola, N. M. (2012). Cervical cancer prevention in HIV-infected women using the "see and treat" approach in

- Botswana. *Journal of Acquired Immune Deficiency Syndromes*, 59(3), 308-313.
doi:10.1097/QAI.0b013e3182426227
- Ramstedt, M., Leifman, H., Muller, D., Sundin, E., & Norstrom, T. (2013). Reducing youth violence related to student parties: Findings from a community intervention project in Stockholm. *Drug and Alcohol Review*, 32(6), 561-565. doi:10.1111/dar.12069
- Redman-MacLaren, M. L., Api, U. K., Darius, M., Tommbe, R., Mafilejo, T. A., & MacLaren, D. J. (2014). Co-interviewing across gender and culture: expanding qualitative research methods in Melanesia. *BMC Public Health*, 14, 922. doi:10.1186/1471-2458-14-922
- Reeves, G. K., Pirie, K., Beral, V., Green, J., Spencer, E., & Bull, D. (2007). Cancer incidence and mortality in relation to body mass index in the Million Women Study: cohort study. *BMJ*, 335(7630), 1134. doi:10.1136/bmj.39367.495995.AE
- Reid, J. L., Hammond, D., Rynard, V. L., & Burkhalter, R. (2015). *Tobacco Use in Canada: Patterns and Trends, 2015 Edition*. Retrieved April 12, 2017, from Waterloo, ON: www.tobaccoreport.ca
- Rew, L., Taylor-Seehafer, M., Thomas, N. Y., & Yockey, R. D. (2001). Correlates of Resilience in Homeless Adolescents. *Journal of Nursing Scholarship*, 33(1), 33-40. doi:10.1111/j.1547-5069.2001.00033.x
- Ritchie, J., Lewis, J., McNaughton Nicholls, C., & Ormston, R. (2014). *Qualitative research practice: A guide for social science students and researchers* (2nd ed.). London: Sage Publications.
- Robles, S. C., White, F., & Peruga, A. (1996). Trends in cervical cancer mortality in the Americas. *Bulletin of the Pan American Health Organization*, 30(4), 290-301.
- Rodham, K., Brewer, H., Mistral, W., & Stallard, P. (2006). Adolescents' perception of risk and challenge: a qualitative study. *Journal of Adolescence*, 29(2), 261-272. doi:10.1016/j.adolescence.2005.05.012

- Rosenstock, I. M. (1966). Why people use health services. *Milbank Memorial Fund Quarterly*, 44(3), 94-127.
- Rosenstock, I. M., Strecher, V. J., & Becker, M. H. (1988). Social learning theory and the Health Belief Model. *Health Educ Q*, 15(2), 175-183.
- Rositch, A. F., Gatuguta, A., Choi, R. Y., Guthrie, B. L., Mackelprang, R. D., Bosire, R., . . . Farquhar, C. (2012). Knowledge and Acceptability of Pap Smears, Self-Sampling and HPV Vaccination among Adult Women in Kenya. *PloS One*, 7(7), e40766. doi:10.1371/journal.pone.0040766
- Ruff, C. C., Alexander, I. M., & McKie, C. (2005). The use of focus group methodology in health disparities research. *Nursing Outlook*, 53(3), 134-140.
doi:http://dx.doi.org/10.1016/j.outlook.2005.03.010
- Rwamugira, J., & Maree, J. E. (2012). The findings of a nurse-lead intervention for detection and prevention of oral cancer. A pilot study. *European Journal of Cancer Care*, 21(2), 266-273.
doi:10.1111/j.1365-2354.2011.01310.x
- Saldana, J. (2009). *The Coding Manual for Qualitative Researchers*. Thousands Oaks, CA: Sage.
- Sandelowski, M. (2002). Reembodying qualitative inquiry. *Qualitative Health Research*, 12(1), 104-115. doi:10.1177/1049732302012001008
- Sandhu, P. K., Elder, R., Patel, M., Saraiya, M., Holman, D. M., Perna, F., . . . Glanz, K. (2016). Community-wide Interventions to Prevent Skin Cancer: Two Community Guide Systematic Reviews. *American Journal of Preventive Medicine*, 51(4), 531-539.
doi:http://dx.doi.org/10.1016/j.amepre.2016.03.020
- Saraiya, M., Glanz, K., Briss, P. A., Nichols, P., White, C., Das, D., . . . Rochester, P. (2004). Interventions to prevent skin cancer by reducing exposure to ultraviolet radiation: A systematic review. *American Journal of Preventive Medicine*, 27(5), 422-466.
doi:http://dx.doi.org/10.1016/j.amepre.2004.08.009

- Sartorius, N. (2006). The Meanings of Health and its Promotion. *Croatian Medical Journal*, 47(4), 662-664.
- Schinke, S. P., Fang, L., & Cole, K. C. (2009). Computer-delivered, parent-involvement intervention to prevent substance use among adolescent girls. *Preventive Medicine*, 49(5), 429-435. doi:10.1016/j.ypmed.2009.08.001
- Schneider, J. S., Moore, D. H., 2nd, & Mendelsohn, M. L. (2008). Screening program reduced melanoma mortality at the Lawrence Livermore National Laboratory, 1984 to 1996. *Journal of the American Academy of Dermatology*, 58(5), 741-749. doi:10.1016/j.jaad.2007.10.648
- Schwinn, T. M., Schinke, S. P., & Di Noia, J. (2010). Preventing drug abuse among adolescent girls: outcome data from an internet-based intervention. *Prevention Science*, 11(1), 24-32. doi:10.1007/s11121-009-0146-9
- Sener, S. F., & Grey, N. (2005). The global burden of cancer. *Journal of Surgical Oncology*, 92(1), 1-3. doi:10.1002/jso.20335
- Seo, D.-C., & Huang, Y. (2012). Systematic review of social network analysis in adolescent cigarette smoking behaviour . *Journal of School Health*, 82(1), 21-27. doi:10.1111/j.1746-1561.2011.00663.x
- Sharma, M. (2011). Health Belief Model: Need for More Utilization in Alcohol and Drug Education. *Journal of Alcohol & Drug Education*, 55(1), 3-6.
- Sherman, M. E., Wang, S. S., Carreon, J., & Devesa, S. S. (2005). Mortality trends for cervical squamous and adenocarcinoma in the United States. Relation to incidence and survival. *Cancer*, 103(6), 1258-1264. doi:10.1002/cncr.20877
- Simons-Morton, B. G., & Farhat, T. (2010). Recent findings on peer group influences on adolescent smoking. *Journal of Primary Prevention*, 31(4), 191-208. doi:10.1007/s10935-010-0220-x

- Slovic, P. (2010). *The Feeling of Risk. New Perspectives of Risk Perception*. New York, NY: Routledge.
- Smetana, K., Jr., Lacina, L., Szabo, P., Dvorankova, B., Broz, P., & Sedo, A. (2016). Ageing as an Important Risk Factor for Cancer. *Anticancer Research*, 36(10), 5009-5017. doi:10.21873/anticancerres.11069
- Smith, E. A., Palen, L. A., Caldwell, L. L., Flisher, A. J., Graham, J. W., Mathews, C., . . . Vergnani, T. (2008). Substance use and sexual risk prevention in Cape Town, South Africa: an evaluation of the HealthWise program. *Prevention Science*, 9(4), 311-321. doi:10.1007/s11121-008-0103-z
- Sobol-Goldberg, S., Rabinowitz, J., & Gross, R. (2013). School-based obesity prevention programs: a meta-analysis of randomized controlled trials. *Obesity (Silver Spring)*, 21(12), 2422-2428. doi:10.1002/oby.20515
- Spradley, J. (1979). *The Ethnographic Interview*. New York: Holt, Rinehart, and Winston.
- Stalker, K. (2003). Managing Risk and Uncertainty in Social Work. *Journal of Social Work*, 3(2), 211-233. doi:doi:10.1177/14680173030032006
- Steinberg, L. (2004). Risk Taking in Adolescence: What Changes, and Why? *Annals of the New York Academy of Sciences*, 1021(1), 51-58. doi:10.1196/annals.1308.005
- Steinberg, L., & Monahan, K. C. (2007). Age Differences in Resistance to Peer Influence. *Developmental Psychology*, 43(6), 1531-1543. doi:10.1037/0012-1649.43.6.1531
- Sterling, K. L., Fryer, C. S., & Fagan, P. (2016). The Most Natural Tobacco Used: A Qualitative Investigation of Young Adult Smokers' Risk Perceptions of Flavored Little Cigars and Cigarillos. *Nicotine & Tobacco Research*, 18(5), 827-833. doi:10.1093/ntr/ntv151
- Stevens, C. A. (2006). Being healthy: voices of adolescent women who are parenting. *Journal for Specialists in Pediatric Nursing*, 11(1), 28-40. doi:10.1111/j.1744-6155.2006.00041.x

- Stewart, D. W., Shamdasani, P. N., & Rook, D. W. (2007). *Focus groups: Theory and practice*, (2nd ed.). Thousand Oaks, CA: : SAGE Publications.
- Strother, R. M., Asirwa, F. C., Busakhala, N. B., Njiru, E., Orang'o, E., Njuguna, F., . . . Loehrer, P. J. (2013). The evolution of comprehensive cancer care in Western Kenya. *Journal of Cancer Policy, 1*(1–2), e25-e30. doi:<http://dx.doi.org/10.1016/j.jcpo.2013.04.001>
- Sudenga, S. L., Rositch, A. F., Otieno, W. A., & Smith, J. S. (2013). Knowledge, attitudes, practices, and perceived risk of cervical cancer among Kenyan women: brief report. *International Journal of Gynecological Cancer: Official Journal of the International Gynecological Cancer Society, 23*, 895-899. doi:10.1097/IGC.0b013e31828e425c
- Tamvakas, I., & Amos, A. (2010). 'These things don't happen in Greece': a qualitative study of Greek young people's attitudes to smoking, secondhand smoke and the smokefree legislation. *Health Education Research, 25*(6), 955-964. doi:10.1093/her/cyq048
- Tavrow, P., Karei, E. M., Obbuyi, A., & Omollo, V. (2012). Community norms about youth condom use in Western Kenya: is transition occurring? *African Journal of Reproductive Health, 16*, 241-252.
- Taylor, J. P., Evers, S., & McKenna, M. (2005). Determinants of healthy eating in children and youth. *Canadian Journal of Public Health. Revue Canadienne de Santé Publique, 96 Suppl 3*, S20-26, s22-29.
- Taylor, R. J., Morrell, S. L., Mamoon, H. A., & Wain, G. V. (2001). Effects of screening on cervical cancer incidence and mortality in New South Wales implied by influences of period of diagnosis and birth cohort. *Journal of Epidemiology and Community Health, 55*(11), 782-788.
- Tenge, C. N., Kuremu, R. T., Buziba, N. G., Patel, K., & Were, P. A. (2009). Burden and pattern of cancer in Western Kenya. *East African Medical Journal, 86*(1), 7-10.

- Then, K. L., Rankin, J. A., & Ali, E. (2014). Focus group research: what is it and how can it be used? *Canadian Journal of Cardiovascular Nursing, 24*(1), 16-22.
- Thomas, R. E., McLellan, J., & Perera, R. (2013). School-based programmes for preventing smoking. *Cochrane Database Systematic Reviews, 4*, CD001293. doi:10.1002/14651858.CD001293.pub3
- Tobin, G. A., & Begley, C. M. (2004). Methodological rigour within a qualitative framework. *Journal of Advanced Nursing, 48*, 388-396. doi:10.1111/j.1365-2648.2004.03207.x
- Tramacere, I., Pelucchi, C., Bonifazi, M., Bagnardi, V., Rota, M., Bellocco, R., . . . Negri, E. (2012). Alcohol drinking and non-Hodgkin lymphoma risk: a systematic review and a meta-analysis. *Annals of Oncology, 23*(11), 2791-2798. doi:10.1093/annonc/mds013
- Tufford, L., & Newman, P. (2012). Bracketing in Qualitative Research. *Qualitative Social Work, 11*(1), 80-96. doi:10.1177/1473325010368316
- Turati, F., Galeone, C., Rota, M., Pelucchi, C., Negri, E., Bagnardi, V., . . . La Vecchia, C. (2014). Alcohol and liver cancer: a systematic review and meta-analysis of prospective studies. *Annals of Oncology, 25*(8), 1526-1535. doi:10.1093/annonc/mdu020
- Tusaie, K., Puskar, K., & Sereika, S. M. (2007). A predictive and moderating model of psychosocial resilience in adolescents. *Journal of Nursing Scholarship, 39*(1), 54-60. doi:10.1111/j.1547-5069.2007.00143.x
- US Department of Health and Human Services. (2008). *Physical Activity Guidelines for Americans*. Retrieved from Washington, DC:
- US Department of Health and Human Services US Department of Agriculture. (2005). *Dietary Guidelines for Americans, 2005*. Retrieved from Washington, DC:
- Valle, C. G., Tate, D. F., Mayer, D. K., Allicock, M., & Cai, J. (2013). A randomized trial of a Facebook-based physical activity intervention for young adult cancer survivors. *Journal of Cancer Survivorship, 7*(3), 355-368. doi:10.1007/s11764-013-0279-5

- Varkula, L. C., Resler, R. M., Schulze, P. A., & McCue, K. (2010). Pre-school children's understanding of cancer: the impact of parental teaching and life experience. *Journal of Child Health Care, 14*(1), 24-34. doi:10.1177/1367493509347115
- Vasques, C., Magalhaes, P., Cortinhas, A., Mota, P., Leitao, J., & Lopes, V. P. (2014). Effects of intervention programs on child and adolescent BMI: A meta-analysis study. *Journal of Physical Activity & Health, 11*(2), 426-444. doi:10.1123/jpah.2012-0035
- Vastag, B. (2006). Developing Countries Face Growing Cancer Burden. *Journal of the National Cancer Institute, 98*(16), 1106-1107.
- Viner, R. M., Coffey, C., Mathers, C., Bloem, P., Costello, A., Santelli, J., & Patton, G. C. (2011). 50-year mortality trends in children and young people: a study of 50 low-income, middle-income, and high-income countries. *The Lancet, 377*(9772), 1162-1174. doi:10.1016/S0140-6736(11)60106-2
- Viviani, S., Carrieri, P., Bah, E., Hall, A. J., Kirk, G. D., Mendy, M., . . . Hainaut, P. (2008). 20 years into the Gambia Hepatitis Intervention Study: assessment of initial hypotheses and prospects for evaluation of protective effectiveness against liver cancer. *Cancer Epidemiology, Biomarkers and Prevention, 17*(11), 3216-3223. doi:10.1158/1055-9965.epi-08-0303
- Wakabi, W. (2008). Kenya and Uganda grapple with Burkitt lymphoma. *Lancet Oncology, 9*(4), 319.
- Wall, E., & Olofsson, A. (2008). Young people making sense of risk. *Young, 16*(4), 431-448. doi:doi:10.1177/110330880801600405
- Walton, J. (1976). Cervical cancer screening programs. II. Screening for carcinoma of the cervix. *CMAJ: Canadian Medical Association Journal, 114*.
- Wamai, R. G., Ayissi, C. A., Oduwo, G. O., Perlman, S., Welty, E., Manga, S., & Ogembo, J. G. (2012). Assessing the effectiveness of a community-based sensitization strategy in creating

- awareness about HPV, cervical cancer and HPV vaccine among parents in North West Cameroon. *Journal of Community Health*, 37(5), 917-926. doi:10.1007/s10900-012-9540-5
- Warren, J. C., Smalley, K. B., & Barefoot, K. N. (2017). Recent Alcohol, Tobacco, and Substance Use Variations Between Rural and Urban Middle and High School Students. *Journal of Child & Adolescent Substance Abuse*, 26(1), 60-65. doi:10.1080/1067828X.2016.1210550
- Watson-Jones, D., Baisley, K., Ponsiano, R., Lemme, F., Remes, P., Ross, D., . . . Hayes, R. (2012). Human papillomavirus vaccination in Tanzanian schoolgirls: cluster-randomized trial comparing 2 vaccine-delivery strategies. *Journal of Infectious Diseases*, 206(5), 678-686. doi:10.1093/infdis/jis407
- Watson, R. (2010). Symbolic interactionism. In Jürgen Jaspers, Jan-Ola Östman, & Jef Verschueren (Eds.), *Society and Language Use* (pp. 304-313). Amsterdam/Philadelphia: John Benjamins Publishing Company.
- Weiderpass, E. (2010). Lifestyle and cancer risk. *Journal of Preventive Medicine and Public Health. Yebang Uihakhoe Chi*, 43(6), 459-471. doi:10.3961/jpmph.2010.43.6.459
- Were, E., Nyaberi, Z., & Buziba, N. (2011). Perceptions of risk and barriers to cervical cancer screening at Moi Teaching and Referral Hospital (MTRH), Eldoret, Kenya. *African Health Sciences*, 11(1), 58-64.
- Westerdahl, J., Olsson, H., & Ingvar, C. (1994). At what age do sunburn episodes play a crucial role for the development of malignant melanoma. *European Journal of Cancer*, 30a(11), 1647-1654.
- White, K., Sterniczuk, M., Ramsay, G., & Warner, A. (2007). *Talking back to grownups: Healthy children, healthy communities. A report on the social determinants of health and middle childhood in Canada*. Retrieved from Ottawa, ON, Canada:

- Whiteman, D. C., Whiteman, C. A., & Green, A. C. (2001). Childhood sun exposure as a risk factor for melanoma: a systematic review of epidemiologic studies. *Cancer Causes and Control*, *12*(1), 69-82.
- Wolf, Z. (2013). Ethnography the method. . In Patricia L. Munhall (Ed.), *Nursing Research: A qualitative perspective* (5th ed., pp. 285-338.). Mississauga, Ontario: Jones & Bartlett Learning LLC.
- Wolfe, D. A., Crooks, C., Jaffe, P., Chiodo, D., Hughes, R., Ellis, W., . . . Donner, A. (2009). A school-based program to prevent adolescent dating violence: a cluster randomized trial. *Archives of Pediatrics and Adolescent Medicine*, *163*(8), 692-699. doi:10.1001/archpediatrics.2009.69
- Wolff, J. L. (2012). *Adolescent Decision Making and Risk Behaviour : A Neurobiological Approach*. (PhD), University of Nebraska-Lincoln, Lincoln, Nebraska.
- Woodgate, R. L., & Busolo, D. S. (2015). A qualitative study on Canadian youth's perspectives of peers who smoke: an opportunity for health promotion. *BMC Public Health*, *15*. doi.org/10.1186/s12889-015-2683-4
- Woodgate, R. L., & Busolo, D. S. (2017). Healthy Canadian adolescents' perspectives of cancer using metaphors: a qualitative study. *BMJ Open*, *7*(1), dx.doi.org/10.1136/bmjopen-2016-013958
- Woodgate, R. L., & Kreklewetz, C. M. (2012). Youth's narratives about family members smoking: parenting the parent- it's not fair! *BMC Public Health*, *12*, 965. doi:10.1186/1471-2458-12-965
- Woodgate, R. L., & Leach, J. (2010). Youth's perspectives on the determinants of health. *Qualitative Health Research*, *20*(9), 1173-1182. doi:10.1177/1049732310370213
- Woodgate, R. L., Safipour, J., & Taylor, K. (2014). Canadian adolescents' perspectives of cancer risk: a qualitative study. *Health Promotion International*. doi:10.1093/heapro/dau011

- Woodgate, R. L., & Sigurdson, M. C. (2015). Building school-based cardiovascular health promotion capacity in youth: a mixed methods study. *BMC Public Health*, 15(4). doi:doi:10.1186/s12889-015-1759-5
- World Cancer Research Fund / American Institute for Cancer Research. (2010). *Continuous Update Project Report. Food, Nutrition, Physical Activity, and the Prevention of Breast Cancer*. Retrieved from London:
- World Cancer Research Fund/American Institute for Cancer Research. (2007). *Food, Nutrition, Physical Activity, and the Prevention of Cancer: a Global Perspective*. . Retrieved from Washington DC:
- World Health Organization. (1948). Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference, New York, 19-22 June, 1946; signed on 22 July 1946 by the representatives of 61 States (Official Records of the World Health Organization, no. 2, p. 100) and entered into force on 7 April 1948. Retrieved June 2, 2015 from <http://www.who.int/about/definition/en/print.html>
- World Health Organization. (2009). *WHO report on the global tobacco epidemic, 2009: Implementing smoke-free environments*. Retrieved June 2, 2015, from Geneva, Switzerland
- World Health Organization. (2012). *Joint national capacity assessment on the implementation of effective tobacco control policies in Kenya*. Retrieved June 2, 2015, from http://apps.who.int/iris/bitstream/10665/76700/1/9789241504393_eng.pdf?ua=1
- World Health Organization. (2013). *WHO Report on the global tobacco epidemic, 2013: Enforcing bans on tobacco advertising, promotion and sponsorship*. Retrieved June 2, 2015, from http://apps.who.int/iris/bitstream/10665/85380/1/9789241505871_eng.pdf?ua=1
- World Health Organization. (2014a). *Global status report on alcohol and health 2014*. Retrieved June 2, 2015, from http://apps.who.int/iris/bitstream/10665/112736/1/9789240692763_eng.pdf

- World Health Organization. (2014b). Hepatitis B. Retrieved May 16, 2016, from <http://www.who.int/mediacentre/factsheets/fs204/en/>
- World Health Organization. (2015a). Cancer: Cancer prevention Retrieved May 16, 2016, from <http://www.who.int/cancer/prevention/en/>
- World Health Organization. (2015b). School and youth health. Retrieved January 8, 2016, from http://www.who.int/school_youth_health/facts/en/
- World Health Organization. (2017a). Cancer. Retrieved June 20, 2017 from <http://www.who.int/topics/cancer/en/>
- World Health Organization. (2017b). Mortality, morbidity and disability in adolescence. Retrieved June 20, 2017, from <http://apps.who.int/adolescent/second-decade/section3/page2/mortality.html>
- World Health Organization, & Food and Agriculture Organization of the United Nation (WHO/FAO). (2003). *Diet, Nutrition and the Prevention of Chronic Diseases: Report of a Joint WHO/FAO Expert Consultation, Geneva, 28 January-1 February 2002. WHO Technical Report Series 916.* Retrieved May 16, 2013 from http://apps.who.int/iris/bitstream/10665/42665/1/WHO_TRS_916.pdf
- Wright, K. O., Kuyinu, Y. A., & Faduyile, F. A. (2010). Community education on cervical cancer amongst market women in an urban area of Lagos, Nigeria. *Asian Pacific Journal of Cancer Prevention, 11*(1), 137-140.
- Yamada, R., Sasagawa, T., Kirumbi, L. W., Kingoro, A., Karanja, D. K., Kiptoo, M., . . . Inoue, M. (2008). Human papillomavirus infection and cervical abnormalities in Nairobi, Kenya, an area with a high prevalence of human immunodeficiency virus infection. *Journal of Medical Virology, 80*(5), 847-855.

Youngblood. (2013). GAVI injects new life into HPV vaccine rollout. *Lancet*, 381(9879), 1688.

doi:10.1016/s0140-6736(13)61058-2

Zimmerman, R., S., & Vernberg, D. (1994). Models of Preventive Health Behaviour : Comparison, critique and metaanalysis. *Advances in Medical Sociology*, 4, 45-67.

Appendices

Appendix A: Study's timeline and activities

Appendix B: Health Belief Model

Appendix C: Recruitment Poster

Appendix D: Adolescent Letter of Invitation

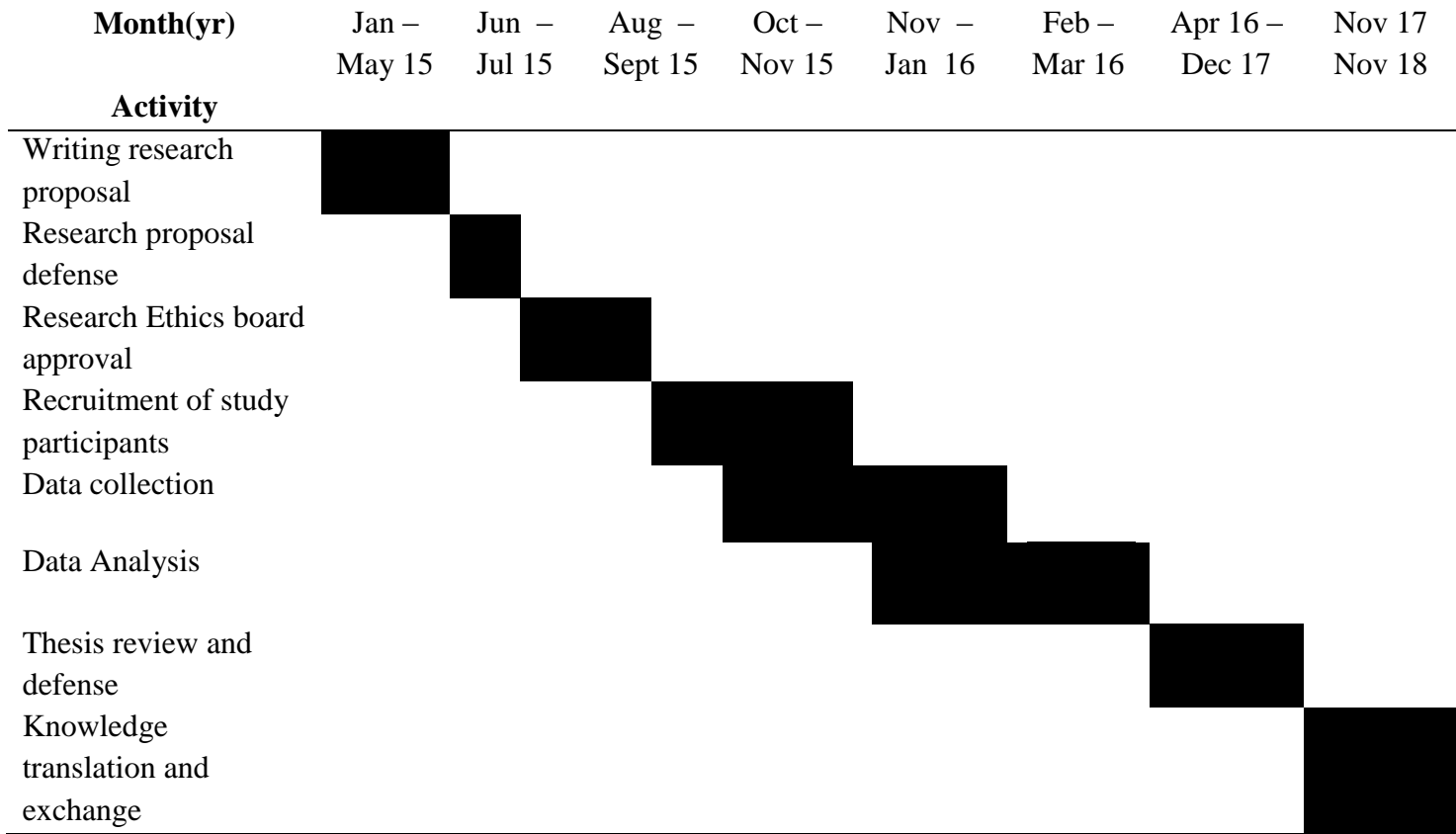
Appendix E: Consent and Assent Forms

Appendix F: Demographic Form

Appendix G: Data Collection Guides

Appendix H: Letters of Support

A: Study's timeline and activities



B. Health Belief Model

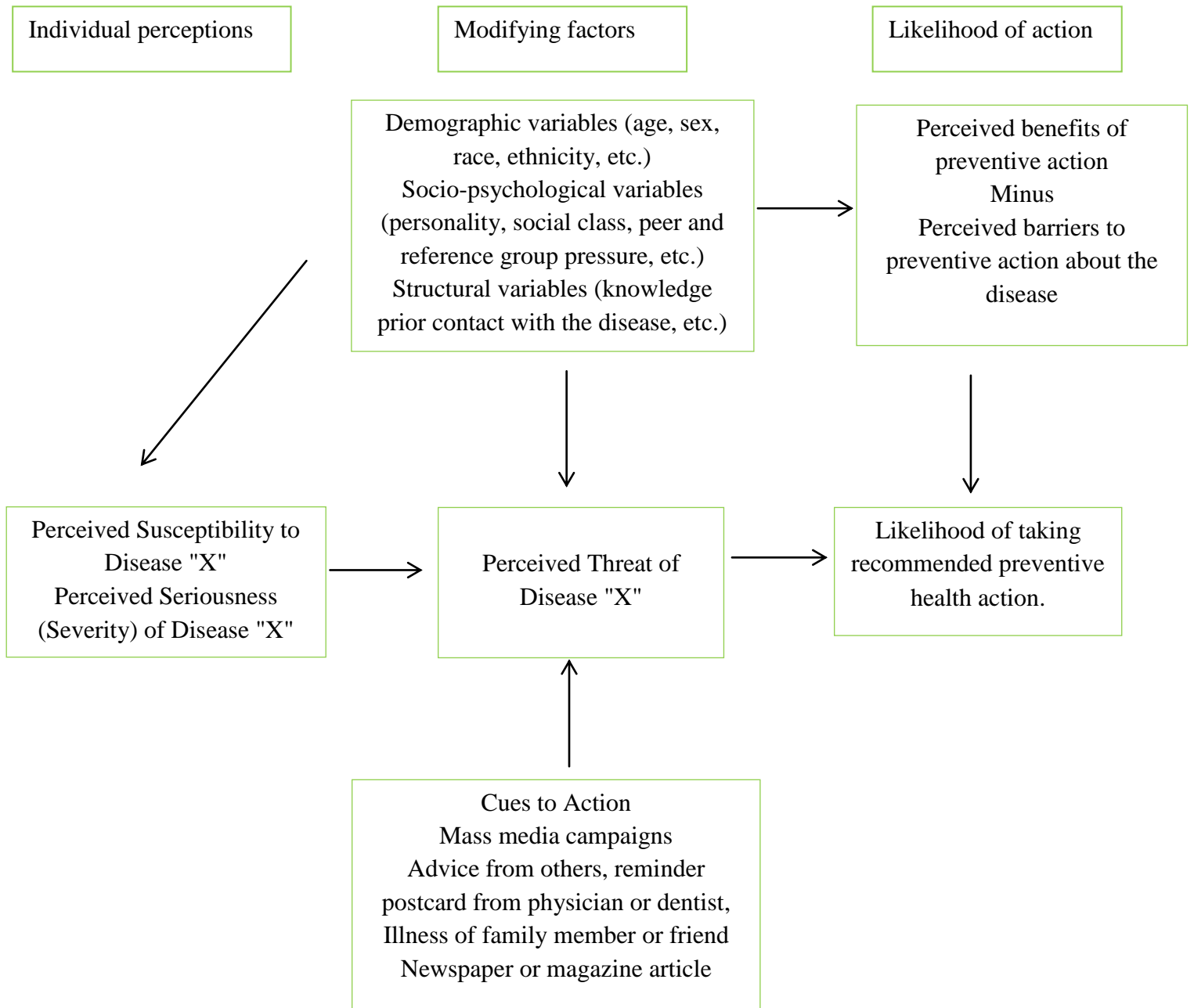


Figure 1. The Original Formulation of the Health Belief Model. Rosenstock, (1966)

D: Adolescent Letter of Invitation

Dear youth,

Thank you for agreeing to participate in this study entitled: *“An Ethnographic study on Kenyan Adolescents' Understanding of Cancer and Cancer Prevention.”* This study is part of my training as a PhD student in Cancer Control program at The University of Manitoba. I am conducting this study under the supervision of Dr. Roberta Woodgate. In this study, I would like to find out from you and other young students about what you understand cancer and cancer prevention to be. I would like to know how you describe cancer and what it means to you and others. To find out this information, I am inviting you to choose to take part in either an individual interview and or a focus group discussion. In the interview discussion, I will be asking you questions about what you know and think about cancer and cancer prevention. This interview will be between me and you. In a focus group discussion, you will join a group of between five and seven students whose age is close to your age. In the focus group, I will be asking you and other students what you know and think about cancer and cancer prevention. In the discussions I will be interested in finding out what you understand cancer to be and what it means to you.

Before taking part in either the interview or focus group discussion, you will be asked to provide consent (permission) to participate. I will read or let you read the consent (permission) form and answer questions about the study after which you will freely give or refuse to give permission to participate. Your choice to participate or not to participate will not in any way affect your schooling or grades. This study has been approved by the Education and Nursing Research Ethics Board (ENREB) and the University of Nairobi Research Ethics that have found it safe for you and other students to take part. Your name and any information that can identify you will be kept secret and will only be known to me or my supervisor. Feel free to contact me at XXXXXXXX or busolod@myumanitoba.ca. You may also contact my supervisor Dr. Roberta Woodgate at XXXXXXXX or Roberta.Woodgate@umanitoba.ca. Thank you again for agreeing to participate in this useful study.

Yours Sincerely,

David Busolo, RN, MPH PhD (c).

College of Nursing, Faculty of Health Sciences



UNIVERSITY OF MANITOBA | Faculty of Health Sciences

444-89 Curry Place

Winnipeg, Manitoba R3T 2N2: Tel XXXXXXXX: Email: busolod@myumanitoba.ca

E: Consent and Assent Forms

Consent form for adolescent participants

Research Study Title: An Ethnographic study on Kenyan Adolescents' Understanding of Cancer and Cancer Prevention.

Research student: Mr. David Busolo, College of Nursing, Faculty of Health Sciences, University of Manitoba

Research Committee members:

Supervisor: Dr. Roberta Woodgate, College of Nursing, Faculty of Health Sciences,
University of Manitoba

Member: Dr. Tom Hack, College of Nursing, Faculty of Health Sciences, University of
Manitoba

Member: Dr. Kathleen Decker, Department of Community Health, College of Medicine,
Faculty of Health Sciences, University of Manitoba

This consent form has two parts:

1. Study information part. In this section, we talk about the study. Also, we talk about your role.
2. Consent certificate part. Here, we ask you to decide to participate or not. If you agree to participate in the study, you will write your name, sign and date on this section. I, the research student will sign after your name.

Part 1: Research Information

Thank you for your interest to participate in our research. The research is called An Ethnographic study on Kenyan Adolescents' Understanding of Cancer and Cancer Prevention. It is part of my studies as a PhD student. I am learning about Cancer Control at The University of Manitoba. This form has information about our research. You can read on your own or I can read it aloud for you. In this form I

will tell you about our research. Also I will tell you what we would like you to do. You will only do what we request you if you decide to participate. You are free to ask any questions. You can also ask for more information about the study. Feel free to think about your decision. You may talk to your parent, teacher, or guardian before you decide. After you agree and sign on this form, you will be given a copy to keep.

Why we are doing this research

- Cancer is affecting many people in Kenya including children.
- To learn what you know about cancer
- To learn what you think about cancer.
- To learn from you, what causes cancer
- To hear from you how to prevent cancer.
- To listen to your thoughts about what cancer is in your own words
- To listen to your thoughts about how to prevent cancer.
- If you have not heard about cancer, we would like to know.
- It is important to know what you understand cancer to be. Also it is important hearing what you think about cancer. This understanding can help us and other people know how best to work with adolescents like you to prevent cancer.

What type of research is this?

- This is a personal research. You will participate in either an interview and or a group discussion.

Why have I been chosen to participate?

- You have been chosen because your experience as an adolescent is important. You can help us know what teenagers understand cancer to be. We would like about 20 adolescents to participate in this study. Therefore, we believe that you can be one of them. We invite

adolescents between ages 12 and 19 years. Whether you have suffered from cancer or not.

Whether your family member suffers from cancer or not we would like you to participate.

What will we ask you to do?

- We would like you to sit in one of the chosen rooms in school. In that room I will discuss with you about our research. I will ask you questions about cancer and cancer prevention. Our discussion will be digitally-recorded using a recorder. This interview will take about 60 to 90 minutes.
- All information will be shared with you in English. This is because you are taught in English.
- After the interview, I will take what we record. I will listen and type it out. I will type exactly the way we talk. We respect your privacy. Therefore, I will keep all that we talk about in a safe place. Also, your information will not be connected to your name. Your information will not be connected to your school ID number. What you answer in the interview will be private. It will not affect your academic work or grade now or in future.
- In this interview, I will ask you some questions about you. I will then ask questions on cancer and cancer prevention. There will be both general questions and specific ones. The questions will ask about what you know and think.
- Being part of this study is your choice. You can change your mind and stop taking part in the study at any time. This includes stopping to take part in the interview.
- You can answer only the questions you want to answer. If you do not want to answer some questions you can tell me during the interview and I will skip those questions. Also, you may take a break at any time during the interview.
- You will receive a gift of thanks called an honorarium in the form of a Ksh. 1000.00 school shopping gift card at the start of the interview. You will receive this gift card right away and you can keep it. You will get to keep it whether you finish the interview or choose to answer

only part or none of the interview questions.

What are the benefits and risks of taking part in this study?

- What we learn from this study may help people in the school. It may help people in the government and other research people. What we find out may help us understand better how adolescents understand cancer. Also what we learn may help us understand how to work with adolescents to prevent cancer.
- No risks are expected in this study. However, for some people, talking about cancer is not easy. It may remind them of experiences that can make them feel upset. Also it may make them think of hard times. If you feel upset during or after the interview please let us know. If you would like to talk to someone at that time, I will help you. I will direct you to the school counsellor that you can talk to.

How will the information that you provide us be used?

- What we learn from this study will be written out as a report. This report is called a thesis. What we learn may also be presented at a conference. It will also be written and published in a professional journal.
- We will not share anything you tell us in a way that others will know who you are. We will keep your identity private at all times.

Who will have access to your identity and information?

- Though we are asking that you don't mention your name during the interview. If in any case you provide us with your name for instance on this consent form. Only me and my committee will know your names.

- Your names will be replaced by a number to identify different interviews.
- Your privacy will be kept. The only time we cannot keep your privacy is when the law requires us to share your identity. For example in situations of abuse to report to the police.
- All information from this study will be stored in a locked cabinet. It will also be stored on a computer that has a password. The password will only be known to me: Mr. Busolo. The computer and cabinet will be in a locked office.
- All information from the study will be destroyed after the study is finished.
- If you would like, we can give you a copy of the study report. The report will be about what we find out at the end of the study.

Part 2: Consent Certificate

I have read or listened to the information above. I have thought about it. I have asked questions. I have discussed or chosen not to discuss the information with someone else. Questions that I have asked have been answered to my satisfaction. My signature on this form indicates that I have understood the information. It also indicates that I am satisfied with the information about how I will be involved in the research project.

This signature does not waive my legal rights. It does not release the researchers, or those involved institutions from their legal and professional responsibilities.

I freely choose to participate. Also, I am free to leave the study at any time. I know that I will only answer the questions that I want to answer. If I choose not to answer any question at any time it is okay for me and the research student. Also, if I choose to leave the interview for any reason at any time it is okay. I understand that is okay for me and for the research student.

I understand that I should always know what is happening. I can ask questions about what is happening at any time. I can ask a question about anything at any time while I am a part of this study.

I understand this research has been approved by the two Research Ethics Boards. One at the University of Manitoba and another at Nairobi University.

The University of Manitoba Research Ethics Board(s) and a representative (s) of the University of Manitoba Research Quality Management/Assurance office may also require access to your research records for safety and quality assurance purposes.

If I have any concerns or complaints about this research I may contact Mr. Busolo at (XXXXXXX) or Dr. Roberta Woodgate at XXXXXXXX (Roberta.Woodgate@umanitoba.ca). I may also contact the Human Ethics Secretariat at XXXXXXXX

A copy of this consent form has been given to me. The copy is for me to keep for my records and reference.

I agree to participate in this study: Yes ___ No ___

Name of participant: _____

Signature of participant: _____

Date: _____

Day/Month/Year

Statement of person obtaining consent

I have accurately read out or allowed the participant to read the information above and to the best of my ability made sure that the participant understands what has been promised will be done:

Name of person obtaining consent _____

Signature _____

Assent form for adolescent participants

Research Study Title: An Ethnographic study on Kenyan Adolescents' Understanding of Cancer and Cancer Prevention.

Research student: Mr. David Busolo, College of Nursing, Faculty of Health Sciences, University of Manitoba

Research Committee members:

Supervisor: Dr. Roberta Woodgate, College of Nursing, University of Manitoba

Member: Dr. Tom Hack, College of Nursing, University of Manitoba

Member: Dr. Kathleen Decker, Department of Community Health, University of Manitoba

This assent form has two parts:

1. Study information part. In this section, we talk about the study. Also, we talk about your role.
2. Assent certificate part. Here, we ask you to decide to participate or not. If you agree to participate in the study, you will write your name, sign and date on this section. The research student will sign after your name.

Part 1: Research Information

Thank you for your interest to participate in our research. The research is called An Ethnographic study on Kenyan Adolescents' Understanding of Cancer and Cancer Prevention. It is part of my studies as a PhD student. I am learning about Cancer Control at The University of Manitoba. This form has information about our research. You can read on your own or I can read it aloud for you. In this form I will tell you about our research. Also I will tell you what we would like you to do. You will only do what we request you if you decide to participate. You are free to ask any questions. You can also ask for more information about the study. Feel free to think about your decision. You may talk to your

parent, teacher, or guardian before you decide. After you agree and sign on this form, you will be given a copy to keep.

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- Cancer is affecting many people in Kenya including children.
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- To learn from you, what causes cancer
- To hear from you how to prevent cancer.
- To listen to your thoughts about what cancer is in your own words
- To listen to your thoughts about how to prevent cancer.
- If you have not heard about cancer, we would like to know.
- It is important to know what you understand cancer to be. Also it is important hearing what you think about cancer. This understanding can help us and other people know how best to work with adolescents like you to prevent cancer.

What type of research is this?

- This is a personal research. You will participate in either an interview and or a group discussion.

Why have I been chosen to participate?

- You have been chosen because your experience as an adolescent is important. You can help us know what teenagers understand cancer to be. We would like about 20 adolescents to participate in this study. Therefore, we believe that you can be one of them. We invite adolescents between ages 12 and 19 years. Whether you have suffered from cancer or not. Whether your family member suffers from cancer or not we would like you to participate.

What will we ask you to do?

- We would like you to sit in one of the chosen rooms in school. In that room I will discuss with you about our research. I will ask you questions about cancer and cancer prevention. Our discussion will be digitally-recorded using a recorder. This interview will take about 60 to 90 minutes.
- All information will be shared with you in English. This is because you are taught in English.
- After the interview, I will take what we record. I will listen and type it out. I will type exactly the way we talk. We respect your privacy. Therefore, I will keep all that we talk about in a safe place. Also, your information will not be connected to your name. Your information will not be connected to your school ID number. What you answer in the interview will be private. It will not affect your academic work or grade now or in future.
- In this interview, I will ask you some questions about you. I will then ask questions on cancer and cancer prevention. There will be both general questions and specific ones. The questions will ask about what you know, and think.
- Being part of this study is your choice. You can change your mind and stop taking part in the study at any time. This includes stopping to take part in the interview.
- You can answer only the questions you want to answer. If you do not want to answer some questions you can tell me during the interview and I will skip those questions. Also, you may take a break at any time during the interview.
- You will receive a gift of thanks called an honorarium in the form of a Ksh. 1000.00 school shopping gift card at the start of the interview. You will receive this gift card right away and you can keep it. You will get to keep it whether you finish the interview or choose to answer only part or none of the interview questions.

What are the benefits and risks of taking part in this study?

- What we learn from this study may help people in the school. It may help people in the

government and other research people. What we find out may help us understand better how youths understand cancer. Also what we learn may help us understand how to work with youths to prevent cancer.

- No risks are expected in this study. However, for some people, talking about cancer is not easy. It may remind them of experiences that can make them feel upset. Also it may make them think of hard times. If you feel upset during or after the interview please let us know. If you would like to talk to someone at that time, I will help you. I will direct you to the school counsellor that you can talk to.

How will the information that you provide us be used?

- What we learn from this study will be written out as a report. This report is called a thesis. What we learn may also be presented at a conference. It will also be written and published in a professional journal.
- We will not share anything you tell us in a way that others will know who you are. We will keep your identity private at all times.

Who will have access to your identity and information?

- Though we are asking that you don't mention your name during the interview. If in any case you provide us with your name for instance on this assent form. Only me and my committee will know your names.
- Your names will be replaced by a number to identify different interviews.
- Your privacy will be kept. The only time we cannot keep your privacy is when the law requires us share your identity. For example in situations of abuse to report to the police.
- All information from this study will be stored in a locked cabinet. It will also be stored on a computer that has a password. The password will only be known to me: Mr. Busolo. The computer and cabinet will be in a locked office.

- All information from the study will be destroyed after the study is finished.
- If you would like, we can give you a copy of the study report. The report will be about what we find out at the end of the study.

Part 2: Assent Certificate

I have read or listened to the information above. I have thought about it. I have asked questions. I have discussed or chosen not to discuss the information with someone else. Questions that I have asked have been answered to my satisfaction. My signature on this form indicates that I have understood the information. It also indicates that I am satisfied with the information about how I will be involved in the research project.

This signature does not waive my legal rights. It does not release the researchers, or those involved institutions from their legal and professional responsibilities.

I freely choose to participate. Also, I am free to leave the study at any time. I know that I will only answer the questions that I want to answer. If I choose not to answer any question at any time it is okay for me and the research student. Also, if I choose to leave the interview for any reason at any time it is okay. I understand that is okay for me and for the research student.

I understand that I should always know what is happening. I can ask questions about what is happening at any time. I can ask a question about anything at any time while I am a part of this study.

I understand this research has been approved by the two Research Ethics Boards. One at the University of Manitoba and another at Nairobi University.

The University of Manitoba Research Ethics Board(s) and a representative (s) of the University of Manitoba Research Quality Management/Assurance office may also require access to your research records for safety and quality assurance purposes.

If I have any concerns or complaints about this research I may contact Mr. Busolo at XXXXXXX or Dr.

Roberta Woodgate at XXXXXX (Roberta.Woodgate@umanitoba.ca). I may also contact the Human Ethics Secretariat at (XXXXXX).

A copy of this assent form has been given to me. The copy is for me to keep for my records and reference.

I agree to participate in this study: Yes ___ No ___

Name of participant: _____

Signature of participant: _____

Date: _____

Day/Month/Year

I agree to let my child to participate in this study: Yes ___ No ___

Name of parent/guardian: _____

Signature of parent/guardian: _____

Date: _____

Day/Month/Year

Statement of person obtaining assent

I have accurately read out or allowed the participant to read the information above and to the best of my ability made sure that the participant understands what has been promised will be done:

Name of person obtaining consent _____

Signature _____

F: Demographic Form

Participant identification number: _____

Date _____ (Mm/dd/year)

1. What is your age in years? _____
2. Please indicate if you are male or female _____
3. Which class are you attending? _____
4. Which province have you lived most of your life? _____
5. Do you take part in any activities outside of school?
 - a. Yes _____
 - b. No _____
6. If you do. What activities do you take part in? _____
7. Do you work?
 - a. Yes _____
 - b. No _____
8. If you work, what type of work do you do? _____
9. Where do you live? _____
10. How many people do you live with? _____
11. How would you describe what you know about cancer
 - a. I know a lot _____
 - b. I know just enough _____
 - c. I know a little _____
 - d. I don't know anything _____
12. How common do you think cancer is in Kenya
 - a. Cancer is very common _____
 - b. Cancer is not common _____
 - c. I don't know _____

G: Data Collection Guides

Interview Guide

Interview Preamble

I, Mr. Busolo and my teachers want to learn about what Kenyan adolescents understand cancer and cancer prevention to be. We value what you know and think about cancer and cancer prevention. Sharing information about what you know and think will help them know what Kenyan teenagers know and think about cancer and cancer prevention. What we discuss in this interview will be between me and you. I will not discuss with anyone unless you tell me things that may place you at risk or in danger.

Our discussion will take about 60 to 90 minutes. In our discussion, if there are questions that you don't feel comfortable to answer please let me know. Also, if there are questions that you don't understand let me know. You are free to stop participating in this interview at any time. However, I kindly request that you tell me about it before you stop. Also, if there is a time that you would like to take a break, please let me know.

Notes:

- The interviewer will ask the adolescents to answer the questions on the demographic form before asking questions on the interview guide.
- Probes will be asked as need be to keep the discussion going.
- Interviewer will take notes during and immediately after the interview. However, if taking notes appears to interfere with the interview discussion, the interviewer will write notes immediately after the interview instead.

Interview Questions

1. Please tell me about yourself
 - What class are you in and how is learning going for you?

Cancer knowledge and attitude:

2. When you hear the word "cancer" what comes to your mind?

Probes:

- What does the word cancer mean to you?

- When you hear the word “cancer”, how does it make you feel?
- Is cancer something you have thought about? Please tell me more.
- Where did you hear the word “cancer” from?
- Who was the first person who mentioned the word “cancer” to you?
- When that person mentioned the word “cancer” what did they say it is? What was that person talking about?
- Can you tell me other ways (like in class) or people that have mentioned “cancer” to you? (from classmates, teachers, parents, tv, radio, newspapers)
- Do you know anyone who has had cancer (family member, friend, and neighbour) and if so, would you be comfortable talking about it? Why/why not?
 - Tell me more about that.
- (If there is someone that has had cancer ask: How did the experience of that person having cancer affect you?)
- Please tell me more about what you know about cancer. (Are there different types of cancers? If so, what are they?)

3. How do people get cancer?

Probes:

- Determinants of health (behavioural; environmental; living conditions; individual risk factors (smoking, obesity, etc. in relation to the adolescent’s own life-situations). For every reason that the participants mentions ask: Tell me more about how that makes a person get cancer.
- Do you think some people are more likely to get cancer than others? Please tell more.
- Do you think you can get cancer if someone in your family has it?

4. What do you think are some of the things teenagers do that increase or decrease their chances of getting cancer?

Possible areas to discuss:

- Smoking/Using Tobacco
- Nutrition/Eating unhealthy foods
- Physical Activity
- Drinking alcohol (local brew)
- Risky sex with many partners

- Sunscreen Use
- Using Cell Phones
- HPV Vaccine (for girls only)
- Self-Exams and/or health care screening.

Probe: If an adolescent knows that engaging in a particular activity may increase his/her chance of getting cancer (ie. Smoking) why do you think teenagers might do it anyway? What do you think about engaging in that activity?

5. What do you think are some of the things that other people do that you think can increase or decrease the chances of teenagers getting cancer?

Possible areas to discuss:

- Smoking (at home or in public)
- Pollution (from cars, industries)
- Smoking from cooking with firewood.

6. Is it possible to avoid cancer? How or why not?

Probes:

- How much control do you feel you have in avoiding cancer? Please tell me more.
- What things do you do to reduce your chances of getting cancer?
- How do you think that these activities may reduce your chances of getting cancer?
- Who/what helps you to reduce your chances of getting cancer? Please tell me how that person/thing helps you.
- What kinds of things in your family do you think affect your ability to reduce/increase the chance of getting cancer?
- What kinds of things in your neighborhood/estate/community do you think affect your ability to reduce/increase the chances of getting cancer?
- What kind of things in your school do you think affect your ability to reduce/increase your chances of getting cancer?
- What can governments/parents/teachers/community leaders do to help people reduce their chances of getting cancer?

7. What do you think happens when a person gets cancer?

- What comes to your mind about when you think about a person with cancer? Tell me more.

8. What are some “things” about cancer that you have heard or been told about?

Probes:

- Please give examples of the information given to you by friends, teachers, health professionals, and family.
- Please give me examples about messages, in the media such as TV, billboards, movies, radio, magazines, Internet, in text books, or in class, or other places, that you may have heard about cancer.
 - What is good about them?
 - What is bad about them?
 - What about messages that are meant for teenagers?
 - What do you like the best/least about the messages?
- What do you think about some of the messages? What do the messages mean to you?
- How do these messages affect your health habits, attitudes, and feelings about yourself?

9. **If you were asked to develop your own cancer messages for teenagers, what would you want to tell them?**

Probes:

- Tell me what type of message/information you would want teenagers to be told...how you would get your message across...how often...
- What messages about cancer would you like to hear?
- What kind of information do you think teenagers need to know about cancer?
- What messages about cancer do you think teenagers need to be told?

10. **How can cancer prevention programs be made more meaningful and relevant to teenagers?**

Probes:

- Tell me the types of programs/services you would like to see developed (at home, at school, in your estate/neighbourhood, in the community)?
- How should cancer prevention programs be designed?

- How would you get teenagers interested in such programs?
- What catches your attention?
- What makes you remember something in the radio/tv/newspapers/school?
- How involved should teenagers be in the development of such programs?

11. What type of cancer prevention programs (OR cancer education programs) have you taken part in?

Probes:

- What does your school and or/ community offer to teenagers with respect to cancer prevention programs or materials? What do you think about these programs? (Or cancer education programs)
 - What can your school do to help you and other teenagers prevent cancer?
 - What can your parents do to help you and other teenagers prevent cancer?
 - What can your school clubs do to help you and other teenagers prevent cancer?
 - What can your youth program do to help teenagers prevent cancer?
 - What can your community/neighborhood do to help teenagers prevent cancer?
 - What in your environment can help teenagers prevent cancer?
- How do these programs affect your health habits, attitudes, and feelings about yourself?

12. If you wanted to learn more about cancer, what sort of things would you do?

13. What do you think of when you hear the word(s) - malaria
 - 'heart disease'
 - AIDS

Do you think about these other words in a different way than you think about cancer? Please explain.

As we come close to the end of the interview:

14. Is there anything else that you would like to tell me about cancer, or cancer prevention?

15. Did you think that what we talked about today was what you expected the interview to be?

16. Are there any questions that I should be asking teenagers that I did not ask in this interview?

Focus Group Guide

Interview Preamble

I, Mr. Busolo and my teachers want to learn about what Kenyan adolescents understand cancer and cancer prevention to be. We value what you know and think about cancer and cancer prevention. Sharing information about what you know and think will help them know what Kenyan teenagers know and think about cancer and cancer prevention. What we discuss in this focus group will be between me and the people in this group. I will not discuss with anyone unless you tell me things that may place you or the group at risk or in danger.

Our discussion will take about 90 to 120 minutes. In our discussion, if there are questions that you don't feel comfortable to answer please let me know. Also, if there are questions that you don't understand let me know. You are free to stop participating in this focus group at any time. However, I kindly request that you tell me and the rest of the group about it before you stop. Also, if there is a time that you would like to take a break, please let me know.

I will give you cards to hold. If you would like to speak, please lift your card up and I will choose you to speak. I am doing this so that all of us can have a chance to speak and listen when someone else is speaking. If you don't feel like speaking, that is okay, however I will encourage all of us to talk at some point.

Notes:

- The interviewer will ask new adolescents (who did not participate in interviews) to answer the questions on the demographic form before asking questions on the focus group guide.
- Probes will be asked as need be to keep the discussion going.
- Interviewer will take notes during and immediately after the focus group discussion. However, if taking notes appears to interfere with the focus group discussion, the interviewer will write notes immediately after the focus group instead.
- Questions/comments arising from interviews will be added to this focus group guide for further exploration.

Interview Questions

Icebreaker

1. Let each of us introduce ourselves and name one thing that you like in your life.

- I will go first. My name is David Busolo and I like travelling. It helps me see different parts of the world and how other people live.

Cancer knowledge and attitude:

2. When you hear the word “cancer” what comes to your mind?

Probes:

- What does the word cancer mean to you?
- When you hear the word “cancer”, how does it make you feel?
- Is cancer something you have thought about? Please tell me more.
- Where did you hear the word “cancer” from?
- Who was the first person who mentioned the word “cancer” to you?
- When you that person mentioned the word “cancer” what did they say it is? What was that person talking about?
- Can you tell me other ways (like in class) or people that have mentioned “cancer” to you? (from classmates, teachers, parents, tv, radio, newspapers)
- Do you know anyone who has had cancer (family member, friend, and neighbour) and if so, would you be comfortable talking about it? Why/why not?
 - Tell me more about that.
- (If there is someone that has had cancer ask: How did the experience of that person having cancer affect you?)
- Please tell me more about what you know about cancer. (Are there different types of cancers? If so, what are they?)

3. How do people get cancer?

Probes:

- Determinants of health (behavioural; environmental; living conditions; individual risk factors (smoking, obesity, etc. in relation to the adolescent’s own life-situations). For every reason that the participants mentions ask: Tell me more about how that makes a person get cancer.
- Do you think some people are more likely to get cancer than others? Please tell more.
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Possible areas to discuss:

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- Physical Activity
- Drinking alcohol (local brew)
- Risky sex with many partners
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- HPV Vaccine (for girls only)
- Self-Exams and/or health care screening.

Probe: If an adolescent knows that engaging in a particular activity may increase his/her chance of getting cancer (ie. Smoking) why do you think teenagers might do it anyway? What do you think about engaging in that activity?

5. What do you think are some of the things that other people do that you think can increase or decrease the chances of teenagers getting cancer?

Possible areas to discuss:

- Smoking (at home or in public)
- Pollution (from cars, industries)
- Smoking from cooking with firewood.

6. Is it possible to avoid cancer? How or why not?

Probes:

- How much control do you feel you have in avoiding cancer? Please tell me more.
- What things do you do to reduce your chances of getting cancer?
- How do you think that these activities may reduce your chances of getting cancer?
- Who/what helps you to reduce your chances of getting cancer? Please tell me how that person/thing helps you.

- What kinds of things in your family do you think affect your ability to reduce/increase the chance of getting cancer?
- What kinds of things in your neighborhood/estate/community do you think affect your ability to reduce/increase the chances of getting cancer?
- What kind of things in your school do you think affect your ability to reduce/increase your chances of getting cancer?
- What can governments/parents/teachers/community leaders do to help people reduce their chances of getting cancer?

7. What do you think happens when a person gets cancer?

- What comes to your mind about when you think about a person with cancer? Tell me more.

8. What are some “things” about cancer that you have heard or been told about?

Probes:

- Please give examples of the information given to you by friends, teachers, health professionals, and family.
- Please give me examples about messages, in the media such as TV, billboards, movies, radio, magazines, Internet, in text books, or in class, or other places, that you may have heard about cancer.
 - What is good about them?
 - What is bad about them?
 - What about messages that are meant for teenagers?
 - What do you like the best/least about the messages?
- What do you think about some of the messages? What do the messages mean to you?
- How do these messages affect your health habits, attitudes, and feelings about yourself?

9. **If you were asked to develop your own cancer messages for teenagers, what would you want to tell them?**

Probes:

- Tell me what type of message/information you would want teenagers to be told...how you would get your message across...how often...
- What messages about cancer would you like to hear?
- What kind of information do you think teenagers need to know about cancer?
- What messages about cancer do you think teenagers need to be told?

10. How can cancer prevention programs be made more meaningful and relevant to teenagers?

Probes:

- Tell me the types of programs/services you would like to see developed (at home, at school, in your estate/neighbourhood, in the community)?
- How should cancer prevention programs be designed?
- How would you get teenagers interested in such programs?
- What catches your attention?
- What makes you remember something in the radio/tv/newspapers/school?
- How involved should teenagers be in the development of such programs?

11. What type of cancer prevention programs (OR cancer education programs) have you taken part in?

Probes:

- What does your school and or/ community offer to teenagers with respect to cancer prevention programs or materials? What do you think about these programs? (Or cancer education programs)
 - What can your school do to help you and other teenagers prevent cancer?
 - What can your parents do to help you and other teenagers prevent cancer?
 - What can your school clubs do to help you and other teenagers prevent cancer?
 - What can your youth program do to help teenagers prevent cancer?
 - What can your community/neighborhood do to help teenagers prevent cancer?
 - What in your environment can help teenagers prevent cancer?
- How do these programs affect your health habits, attitudes, and feelings about yourself?

12. If you wanted to learn more about cancer, what sort of things would you do?

13. What do you think of when you hear the word(s) - malaria
- 'heart disease'
- AIDS

Do you think about these other words in a different way than you think about cancer? Please explain.

As we come close to the end of the interview:

14. Is there anything else that you would like to tell me about cancer, or cancer prevention?
15. Did you think that what we talked about today was what you expected the interview to be?
16. Are there any questions that I should be asking teenagers that I did not ask in this interview?

H: Letters of Support

Principal Olkeri Mixed Secondary School

From: francis kagwa [<mailto:>

Sent: Friday, July 04, 2014 10:57 AM

To: Roberta Woodgate

Subject: Re: FYI

Hi D. Busolo,

Hi Roberta,

I, Kagwa F. M, principal of Olkeri Mixed Secondary School do write to confirm that I received a letter from Mr. Busolo requesting to use my school as one of his research stations in his research on the project titled, "An Ethnographic Study of Kenyan Adolescents' Understanding of Cancer, Cancer Risk, and Cancer Prevention".

I confirm that I accept his and grant him access to our institution and carry out his research. The school administration will give him maximum support. Mr. Busolo should feel free to commence the research in our school, any time he is ready.

I further apologise for the delay, caused by our tight routine. However I wish to promise to expedite any further assistance required.

May I take this opportunity to thank you for choosing our institution in this important endeavor.

Yours sincerely,

KAGWA F. M.

PRINCIPAL.

Principal Nairobi Primary School

From: Nairobiprimary School <mailto:>

Sent: Wednesday, May 21, 2014 4:57 AM

To: Roberta Woodgate

Subject: PERMISSION TO CONDUCT RESEARCH

Dear Sir.

I acknowledge receipt of your letter requesting that we grant permission to one of your PhD student at the University of Manitoba David Busolo to conduct a research on An Ethnographic Study of Kenyan Adolescents' Understanding of Cancer, Cancer Risk, and Cancer Prevention in Nairobi Primary School.

I write this email to notify you that, permission has been granted to the said student to conduct his research. We expect maximum cooperation from David.

With kind regards,

Joseph Karuga

"To the heights by hard work"

Principal,

The Nairobi Primary School

P. O. Box 30053 - 00100

Nairobi

Tel:

Email: thenairobiprimaryschool@gmail.com