

**FACTORS ASSOCIATED WITH THE UPTAKE OF
SCREENING SERVICES FOR EARLY DETECTION OF
CANCER AMONG CLIENTS VISITING MASINGA LEVEL
FOUR HOSPITAL OUTPATIENT DEPARTMENT,
MASINGA SUB COUNTY, MACHAKOS COUNTY,
KENYA**

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**Factors Associated with The Uptake of Screening Services for Early
Detection of Cancer Among Clients Visiting Masinga Level Four
Hospital Outpatient Department, Masinga Sub County, Machakos
County, Kenya**

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**A Thesis Submitted in Partial Fulfillment of the Requirements for the
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DECLARATION

This thesis is my original work and has not been presented for a degree in any other university.

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DEDICATION

This work is dedicated to my family for giving me easy time during my studies, to all those who have had positive influence in my life and to the medical team who endure and toil to reduce cancer morbidity and mortality in Kenya.

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I thank the almighty God for His blessings throughout my studies at the university. Special gratitude goes to my supervisors, Prof. Sherry Oluchina and Dr. Serah Kaggia for their great sacrifice, guidance and support without which this piece of work would have not been in its current form. Finally, I would wish to sincerely appreciate the sacrifice, moral and material support from my family who made me reach this far.

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ABBREVIATIONS/ACRONYMS

AAC	American Association for Cancer
ACS	American Cancer Society
AIDS	Acquired Immune Deficiency Syndrome
CCC	Comprehensive care clinic
CWB	Cognitive well-being
EBV	Epstein Bar Virus
Globocan	Global Burden on Cancer
GOK	Government of Kenya
HBM	Health Belief Model
HBV	Hepatitis B Virus
HCV	Hepatitis C Virus
HIV	Human Immunodeficiency Virus
H. PYLORI	Helicobacter pylori
HRIO	Health Records and Information Officer
HPV	Human Papilloma Virus
IARC	International Agency for Research in Cancer
IEC	Information, education and communication
JKUAT	Jomo Kenyatta University of Agriculture and Technology
JOORTH	Jaramogi Oginga Odinga Referral and Teaching Hospital
KNH	Kenyatta National Hospital
LEEP	Loop Electrosurgical Excision Procedure

MCH	Maternal Child Health
MOH	Ministry of Health
MTRH	Moi Teaching and Referral Hospital
NACOSTI	National Commission for Science, Technology and Innovation
NCD	Non-Communicable Diseases
NCCS	National Cancer Control Strategy
NGO	Non-Governmental Organizations
NIH	National Institute of Health
NHIF	National Hospital Insurance Fund
OPD	Outpatient Department
PSA	Prostate Specific Antigen
PSS	Perceived Stress Scale
SDG	Sustainable Development Goal
SDS	Self-Determination Scale
SPSS	Statistical Package for Social Science
SSA	Sub Saharan Africa
SWLS	Satisfaction with Life Scale
UHC	Universal Health Coverage
UN	United Nations
VCT	Voluntary counselling and Testing
VIA	Visual Inspection with Acetic acid
VILI	Visual Inspection with Lugols Iodine

WHO World Health Organization

OPERATIONAL DEFINITION OF TERMS

Behavior	Actions and mannerisms made by individuals, systems or artificial entities in conjunction with themselves or their environment, which includes the other systems or individuals around as well as the (inanimate) physical environment that associate them with the use of cancer preventive and screening services.
Behavioral research	Research that involves the application of behavioral and social sciences to the study of the actions or reactions of persons in response to external or internal stimuli.
Cancer	A term for a group of diseases in which abnormal cells divide without control and can invade nearby tissues and organs, or spread through blood and lymph systems.
Cancer screening	The presumptive identification of unrecognized disease or defects by means of tests, examinations or other procedures that can be applied rapidly.
Early detection	Early diagnosis of cancer when the disease is easiest to treat.
Psychosocial	An aspect that looks at an individual in the context of combined influence that psychological factors and the surrounding social environment have on their physical and mental wellness and their ability to function as regards to uptake of cancer preventive and screening services
Psychological	Individual-level processes and meanings that influence mental states.
Social	Effects of people and groups influencing one another through culture, class groups and family.
Uptake	The action of taking up or making use of cancer screening and preventive services and programs.

ABSTRACT

Cancer screening is known to reduce cancer morbidity and mortality, but this disease still remains to be one of the leading causes of cancer deaths in Kenya because of low screening uptake. This study, therefore, aimed at examining psychological, social and behavioral factors associated with the uptake of cancer screening services in Masinga sub-county, Machakos county, Kenya. Mixed method research design was used: case-control with systematic sampling method for quantitative data; and phenomenological approach with purposive sampling method for qualitative data. Quantitative data was collected using an interviewer-administered questionnaire and analyzed using SPSS version 26.0. Chi square/Fishers exact, Odds Ratios, T test and Mann-Whitney U tests were used to determine significance of the association between outcome and independent variables. Focus group discussions (FGDs) were used to collect qualitative data which was analyzed thematically. The data was presented using frequency polygons, tables and narratives. Confidence level was 95%. Data was gathered from a sample of 42 cases (screened [*male-prostate, esophageal and colorectal; female- breast, cervical and esophageal*]) and 116 controls (never been screened). Health belief model constructs, cognitive well-being, stress, autonomy and general self-efficacy were used as psychological variables. Social variables assessed were social network and social exclusion. Behavioral factors assessed encompassed knowledge on cancer screening (cues to action) and the effect they had on uptake of cancer screening, determinants of health seeking behaviors with regard to screening uptake, facilitators and barriers to screening and knowledge on preventive behaviors to cancer development. Qualitative data from nine FGDs were collected to enrich the quantitative data. Mantel-Haenszel test revealed that uptake of cancer screening is associated with cognitive well-being [OR .440 at 95% C.I .338- .572, $p < 0.001$], autonomy [awareness of self (OR .172 at 95% C.I .049- .602, $p .006$), perceived choice (OR .119 at 95% C.I .048- .300, $p < 0.001$)], general self-efficacy [OR .727 at 95% C.I .638- .828, $p < 0.001$], increased perceived stress [OR .768 at 95% C.I .620- .951, $p .016$], perceived susceptibility (OR 2.758 at 95% C.I 1.155-6.585, $p .022$), perceived severity (OR 5.720 at 95% C.I 1.835-17.832, $p .003$), perceived benefits (OR 2.217 at 95% C.I 1.087-4.520, $p .029$). Also, for social factors, screening uptake was associated with decreased social exclusion [OR 1.785 at 95% C.I 1.390-2.291, $p < 0.001$] and better social network [(Emotional loneliness OR 5.791 at 95% C.I 1.384-24.225, $p .016$) (Social loneliness OR .200 at 95% C.I .114- .351, $p < 0.001$)]. This study established strong association between psychosocial factors and cancer screening uptake. Generally, there was poor knowledge on behaviors that contribute to cancer among the controls compared to cases. Based on the findings, special emphasis should be directed at increasing awareness, perception and dispelling the myths surrounding cancer and cancer screening at all community primary care points through well-designed health education programs.

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Cancer screening is known to reduce cancer morbidity and mortality, but this disease still remains to be one of the leading causes of cancer deaths in Kenya because of low screening uptake (World Health Organization [WHO], 2018). Behavioral processes could cause or prevent cancer and included not only tangible behaviors such as tobacco use but also a range of behavioral processes such as responses to stress, social interaction and group dynamics. Chu *et al.* (2019) cited in his preliminary study of relationship between health behavior and breast cancer, that behavioral risk factors to breast cancer included tobacco exposure, alcohol consumption habits and radiation exposure amongst others. Moreover, interactions among these health behaviors and psychosocial aspects such as stress, chronic depression and lack of social support may be related to cancer progression (WHO, 2018). These health behaviors are intimately linked together by psychological processes such as impulsivity and by social processes such as peer relationships and socioeconomic status (Klein *et al.*, 2014).

Evidence has proved that psychosocial factors could affect uptake of cancer screening. For instance, living with a partner or being married was positively associated with uptake of cervical cancer screening (Al-amro *et al.*, 2020). Similarly, psychosocial variables could also influence hospital attendance through mechanisms such as social norms, self-efficacy and perceived sense of responsibility towards self, family or society (Lagerlund, 2014). Notwithstanding, social networks could offer practical, financial, emotional and social support which would in turn facilitate preventive actions like cancer screening. Peralta *et al.*, (2014) also established that participants who had high self-efficacy, perceived benefits, less barriers to screening and threats to cervical cancer had a significantly greater chance of obtaining a pap smear test every year.

Globally, it is estimated that there were 18.1 million new cancer cases and 9.6 million deaths in 2018; the majority of these cases occurred in low-and middle-income countries (Globocan, 2018; WHO, 2017). In sub-Saharan Africa alone, the proportion of cancer burden was projected to have a greater than 85% increase by 2030 (Bello *et al.*, 2013) and a substantive global increase of 19.3 million new cancer cases per year by 2025, (Globocan, 2012). In Kenya, the International Agency for Research in Cancer (IARC) Globocan report for 2018 estimated 47,887 new cases of cancer annually with mortality of 32,987. Among the cases, the prevalent malignancies in males were prostate, esophageal and colorectal while in females, breast, cervical and esophageal topped the list. Psychosocial factors, in part, had an influence on these documented cancer cases.

According to WHO (2018), between 30-50% of cancer cases are preventable. Prevention of cancer, especially when integrated with the prevention of other related chronic diseases and programs within healthcare such as sexual and reproductive health, offered the greatest public health potential and the most cost-effective long-term method of cancer control (WHO, 2017). Reduction of preventable risk factors provide a significant opportunity to decrease the incidence and burden of the disease.

However, screening tests, as a secondary prevention, offered a chance to detect cancer at an early stage when successful treatment is most likely. Low screening uptake and late treatment contributed to more than 85% of women's death in low and middle-income countries (Wittet *et al.*, 2015) with death rates varying from country to country. This was due to inadequate access and uptake of screening services for prevention and early detection of the disease (Jemal *et al.*, 2012). Holle and Pharm (2017) therefore suggested that patients should be screened for cancer to detect precancerous lesions and their subsequent early removal.

American Cancer Society [ACS] (2019) highlighted that those psychosocial barriers can affect an individual's capability for early cancer screening. In light of this, psychological, social and human behavior aspects are what successful cancer prevention and control

strategies hinge on. Therefore, effective application of what is known about these basics can therefore immensely improve cancer screening uptake.

1.2 Problem Statement

Late-stage presentation when cure is difficult to achieve was a common problem in Kenya as was the case in many low- and middle-income countries (WHO, 2018) where diagnostic and treatment services for patients were far much inadequate or did not exist (WHO, 2017). Such delays in seeking care, making correct diagnosis and commencing treatment added to the lag-time between onset of disease and treatment. Early diagnosis of cancer has an excellent prognosis following treatment. Unfortunately, most patients presented to the cancer centers with late disease (International Agency for Research in Cancer [IARC] Globocan report, 2018).

Notably, 70-80% of the reported cancers were diagnosed at an advanced stage when very little could be achieved with available therapeutic interventions (Ministry of health [MOH], 2018). Similar findings were found among the cases seen at the Moi Teaching and Referral Hospital (MTRH) where more than 95% presented with tumor stage II and above (Were *et al.*, 2011), all of which pointed to late diagnosis of patients with cancer. According to WHO (2018), between 30-50% of cancer cases were preventable. This means that a majority of the cancers diagnosed at advanced stages could be detected at early stages. This explains the existing gap in prevention in which case, screening is part.

Consequently, late diagnosis had a significant negative impact on patients' survival and general wellbeing. At the level of the patient, there could be gross changes in body image and sexuality, physical and physiological effects resulting from the disease itself or drug side effects, financial problems related to cost of treatment and difficulties in accessing practical support secondary to stigma. Tumor progression because of delayed diagnosis also put a lot of financial strain on the families and government as it was more expensive to manage at these stages when cure was not guaranteed. Several hospital admissions

consequently put a lot of pressure on the health system and hospital staff. As a result, there existed reduced productivity at both the family and government level.

Overall, there was low uptake of cancer screening services in Masinga subcounty. For instance, according to the sub county HRIO (Health Records and Information Officer), a low of only 0.85% of women of reproductive age turned up for cervical cancer screening in 2018/2019. Data regarding the rate of screening uptake of other malignancies as well as psychosocial and behavioral factors associated with uptake or non-uptake were missing as there were neither past studies nor cancer registry in Masinga sub county where more information could be extracted. In light of this, it was established by Al-amro *et al.*, (2020) and Lagerlund, (2014) that psychosocial issues as well as health and/or lifestyle behaviors increase the risk of some cancers and could substantially influence cancer screening uptake.

Through timely screening, cancer could be diagnosed at an early stage when cure was highly likely but a number of factors (such as psychological, social and behavioral) could have contributed to underutilization of the available screening services. Addressing the gap between screening uptake and these factors could ultimately improve on timely diagnosis or early detection enabling patients to receive medical treatment in early stages. The overall result was to reduce Kenya's cancer morbidity and mortality burden.

1.3 Justification

Cancer morbidity and mortality, according to American cancer society [ACS] (2019-2020), could be prevented by implementing evidence-based interventions to reduce factors that could contribute to cancer and increase the uptake of cancer screening. Ability to diagnose cancer early is an important strategy to its control and contributes to providing Universal Health Coverage (WHO, 2017). This idea was supported by Kenya National Cancer Control Strategy (2017-2022), pillar 1 which focused on prevention, early detection and cancer screening. This, included malignancies recommended for screening

by the World Health Organization, namely breast, cervical, colorectal, prostate, oral and childhood cancers.

Psychosocial issues and health behaviors increase the risk of some cancers. For instance, many of the cancers caused by infectious organisms such as HPV can be prevented through behavior change; likewise, psychosocial issues such as emotional/informational support and positive social interactions may be positively associated with cancer screening. Therefore, to accelerate a reduction in the cancer burden, Kenya needed to develop effective psychosocial and behavioral interventions to increase the uptake of cancer screening, hence reducing cancer morbidity and mortality across all populations, which formed the basis of this study.

Assessing psychosocial and behavioral factors associated with the uptake of screening services for early detection of cancer was in line with the United Nations sustainable development goal number three, the Kenya's economic blueprint vision 2030 and government top four agenda on health, which emphasized on investing in people to improve the quality of life for all, at all stages of life. Further, it promoted fulfillment of an obligation outlined in the constitution of Kenya article 43, that every person has right to highest attainable standard of health. Good health and wellbeing was one of the United Nations sustainable development goals adopted in 2016.

The relevance was in Masinga sub county where there was generally low uptake of screening services. For instance, according to the sub county HRIO (Health Records and Information Officer), only 0.85% of women of reproductive age turned up for cervical cancer screening in 2018/2019. There were neither past studies nor cancer registry in Masinga sub county and this further explained the need for more studies in this region. This study, therefore, yielded a better understanding of how health behaviors and psychosocial experiences were associated with late presentation of cancer; and informed policymaking personnel on designing effective interventions in both public health and in the healthcare setting to ensure increased uptake of cancer screening. In-depth understanding of factors associated with underutilization of cancer screening services and

prevention was a necessary first step in efforts which aimed at increasing overall cancer screening uptake rates. With appropriate prevention and timely screening, preventable morbidity and mortality due to cancer will largely reduce, hence a reduction of cost incurred by families and the government.

1.4 Research Questions

1. What are the psychological factors associated with the uptake of cancer screening services in Masinga sub-county, Machakos county, Kenya?
2. What are the social factors associated with the uptake of cancer screening services in Masinga sub-county, Machakos county, Kenya?
3. What are the behavioral factors associated with the uptake of cancer screening services in Masinga sub-county, Machakos county, Kenya?

1.5 Broad Objective

To determine factors associated with the uptake of cancer screening services in Masinga sub-county, Machakos county, Kenya.

1.5.1 Specific Objectives

1. To assess the psychological factors associated with the uptake of cancer screening services in Masinga sub-county, Machakos county, Kenya.
2. To determine the social factors associated with the uptake of cancer screening services in Masinga sub-county, Machakos county, Kenya.
3. To assess the behavioral factors associated with the uptake of cancer screening services in Masinga sub-county, Machakos county, Kenya.

1.6 Hypotheses

H₀ 1: There was no significant relationship between psychological factors and the uptake of cancer screening.

H₀ 2: There was no significant relationship between social factors and the uptake of cancer screening.

H₀ 3: There was no significant relationship between behavioral factors and the uptake of cancer screening.

1.7 Limitations

This was a case-control study using an interviewer-administered questionnaire. I, therefore, relied on study participants recalling certain past events. There may have been some recall bias that affected the results of this study. This was overcome by matching the study participants especially in the focus group discussions.

1.8 Theoretical framework: Health Belief Model

The Health Belief Model that was originally developed by Rosenstock (1974) is a psychological model that attempts to explain and predict health behaviors. It focuses on attitudes and beliefs of individuals about health and illness. According to this model, a person's readiness to take a health action is determined by four main factors: the perceived *susceptibility* to the disease, perceived *severity* or seriousness of the disease, perceived *benefits* of the health action, and perceived *barriers* to performing the action. The following appear relevant with regard to HBM operation: modifying variables (culture, education level, past experiences, skill, and motivation, to name a few), cues to action (illness of a family member, media reports, mass media campaigns, advice from others, reminder postcards from a health care provider, or health warning labels on product), and self-efficacy (belief in one's own ability to do something); all affecting human perception of susceptibility, seriousness, benefits, and barriers (Julianawati et al. 2013). This model suggests that a person's decision to take up cancer screening and preventive measures is determined by a number of psychological factors and demographic characteristics like age, race, ethnicity and gender as well as psychosocial variables such as social class,

personality, social pressure and structure variables such as knowledge and prior contact. These factors have an effect on a person's view of the threat associated with cancer.

The model proposes that a person's health related behavior, as in uptake of cancer screening programs, depend on the person's perception of four critical areas such as if they regard themselves susceptible to cancer, if they believe it to have potential serious consequences, if they believe a course of action can reduce cancer susceptibility and seriousness and finally if they believe that the barriers to taking that action/cost of action are outweighed by its benefits.

A core assumption of this model is based on the understanding that a person will take up cancer screening programs if that person feels that cancer itself can be avoided, has a positive expectation that by taking a recommended action he/she will avoid cancer and also believes that he/she can successfully take a recommended health action to reduce chances of getting cancer, or being in a position to seek cancer treatment at an early stage of the disease.

Notably, the components making up this model include perceived susceptibility, which describes how likely an individual is to develop a disease. It refers to a person's belief that a health problem (in this case, cancer) is personally relevant or that a diagnosis of illness is accurate. For instance, does a teenage girl believe she will contract HPV during a single sex encounter? Perceived severity is another component that describes how serious one believes cancer is. It is an individual's perception of seriousness of cancer if left untreated. An example is if a middle-aged woman knows that her grandmother suffered and died of breast cancer. In addition, perceived benefits describe how well the recommended behavior for prevention and cancer screening reduce the risks associated with cancer. It refers to the patients' belief that a given treatment or health program will cure the illness or help prevent it. For example, the aged man with a history of familial adenomatous polyposis (FAP) syndrome recognizes that yearly colonoscopy is effective in reducing deaths from colorectal cancer. Perceived barriers entail the potential negative aspects of participating in cancer screening programs. The perceived impediments to taking action

to improve a health condition. An example is if a man's insurance does not cover the cost of prostate cancer screening. Cues to action as another component talks about factors which causes an individual to change or want to change. An example is if a middle-aged woman learns from public radio advertisement that low-cost mammography is available at a nearby hospital. Lastly, self-efficacy as a component describes one's conviction that one can successfully execute the behavior required to prevent or detect cancer at an early stage. Examples include if the teenage girl decides to postpone sexual intercourse or an aged woman makes an appointment for a fecal occult blood test.

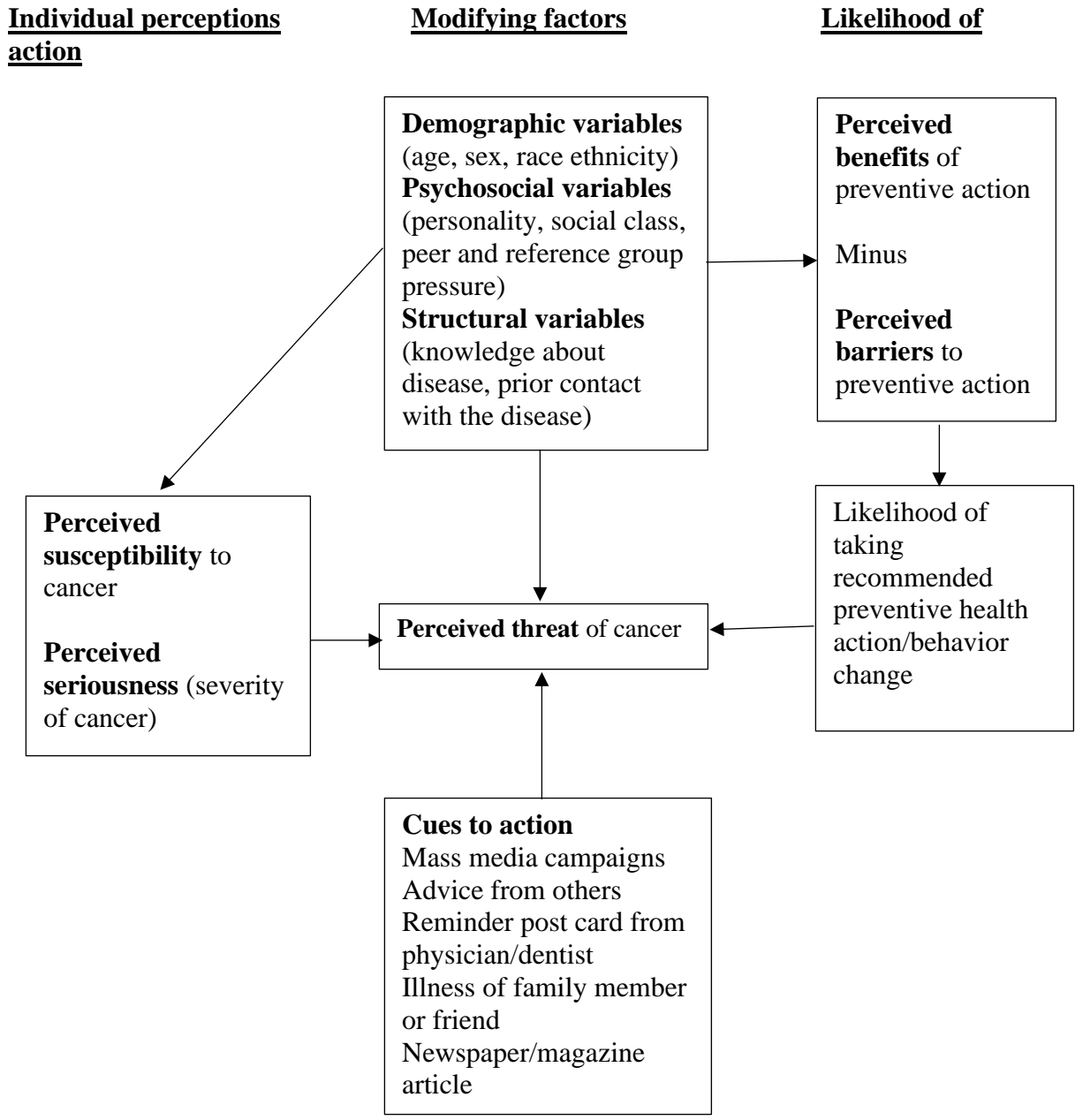


Figure 1.1: Health Belief Model (HBM)

The independent variables for this study were sociodemographic factors; psychological factors; social factors and behavioral factors while the outcome variable was uptake of cancer screening (Figure 1.2). The concepts were applied to obtain data from the consenting respondents.

Independent variables

Dependent variable

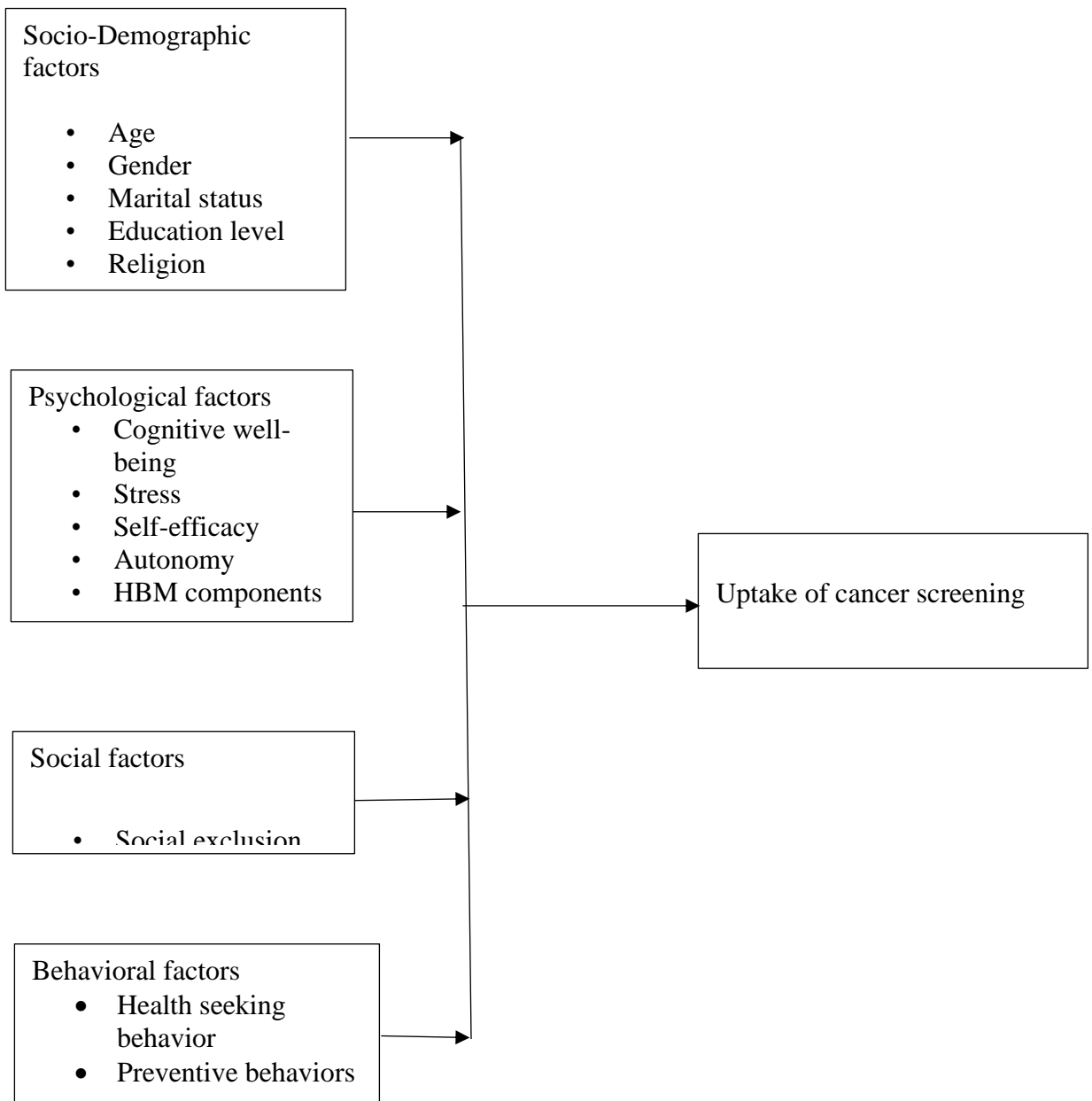


Figure 1.2: Conceptual framework

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

Cancer is a disease in which abnormal cells uncoordinatedly grow without regard to normal rules of cell division (Hejmadi, 2013) and have defining features such as proliferation of abnormal cells in the affected part of the body, ability to grow beyond their usual boundaries, tendency to invade the surrounding tissues and spread to secondary organs or tissues as metastases (WHO, 2012). Cancer generally arises from the transformation of normal cells in a multistage process; in this growth and development continuum, cancer can be prevented or diagnosed early if the right procedures are followed.

Early detection diagnoses malignancies at an early stage when it has high potential for cure; it implies detection of disease at an early and pre-symptomatic stage when a client wouldn't have any reason to seek medical care, a phenomenon referred to as secondary prevention (WHO, 2017). Early detection of cancer through screening reduces deaths from malignancies of the colon and rectum, breast, uterine cervix and lung (ACS, Facts & Figures, 2017-2018).

Early diagnosis is an important public health strategy that can present a great impact in Kenya where most patients present at advanced disease stages. According to WHO (2017) early diagnosis focuses on detection of symptomatic patients as early as possible through the recognition of possible warning signs of cancer so as to take prompt action with an aim of improving treatment outcomes by offering treatment at the earliest possible stage. It can be achieved by increasing awareness of warning signs of cancer among the general public through health education. notably, poor health literacy, stigma, inadequate access to primary care, incorrect clinical assessment and delays in diagnosis were some of the barriers to early diagnosis according to WHO (2017).

Globally, cancer incidence and mortality rates keep rising with an estimated 18.1 million new cases and 9.6 million deaths in 2018; majority of these cases occurring in low-and middle-income countries (Globocan, 2018; WHO, 2017). The number of new cases of cancer was expected to rise by about 70% over the next two decades with the economic costs related to the prevention and treatment globally approximated at \$1.16 trillion in 2010 (WHO, 2017). According to WHO 2017, the most common causes of death in the world are cancers of the lung (1.69 million deaths), liver (788 000 deaths), colorectal (774 000 deaths), stomach (754 000 deaths), and breast (571 000 deaths); it also indicated that nearly one in six deaths globally was due to cancer.

A study done by Bello *et al.*, (2013) on challenges and opportunities in cancer control in Africa revealed that the burden of cancer in sub-Saharan Africa was predicted to have a greater than 85% increase by the year 2030 and a global increase of 19.3 million new cases of cancer per year by 2025 (Globocan, 2012). According to Agodirin *et al.*, (2021) low level of education and not performing breast self-examination (BSE) were all associated with delayed presentation. They also established that lack of breast cancer knowledge as a reason for advanced-stage disease at diagnosis. This, amongst the many studies conducted in Africa to this regard, explained the reasons for late presentation of cancer patients in our hospitals.

In Kenya, new cases of cancer in males included prostate, esophagus, colorectal, kaposi sarcoma and non-hodgkin lymphoma while in females they include breast, cervix, esophagus, colorectal and stomach cancer (WHO, 2018). The International Agency for Research in Cancer (IARC) Globocan report for 2018 estimated 47,887 new cases of cancer every year with a mortality of 32,987 in Kenya (57% females and 43% males). Similarly, cancer was estimated to be the third leading cause of death after infectious and cardiovascular diseases; among the non-communicable disease (NCD) related deaths, cancer was the second leading cause of death representing 7% of overall national mortality after cardiovascular diseases (WHO, 2014). Remarkably, for childhood cancers, low

awareness and stigma amongst parents or guardians and caregivers led to late presentation of patients to cancer treatment centers (Ministry of Health [MOH], 2018). Amongst other factors that contributed to poor outcomes were limited diagnostic facilities with insufficient equipment, personnel and consumables. A study at Kenyatta National Hospital, Kenya, showed that 7.4% of breast cancer cases were diagnosed in stage I, 33.7% in stage II, 29.7% in stage III, and 21% in stage IV (Abinya *et al.*, 2018). This shows how late cancer diagnosis was in Kenya where a majority are diagnosed in stage two and above, and sometimes when very little can be done to warrant cure.

Cancer surveillance and registration in Kenya had all along been suboptimal and a big challenge. Currently, there are only two established regional population-based cancer registries in Eldoret and Nairobi covering only about 10% of the Kenya's population.

2.1 Level of uptake of cancer screening services in Kenya

There is generally low uptake of screening services in Kenya. Uptake of cervical cancer screening, for instance was 16% among women aged 30-49 years, which was incongruent to the awareness on availability of the screening services and programs at 47% among women (Ng'ang'a *et al.*, 2018). Another study to assess the perceptions of risk and barriers to cervical cancer screening at MTRH established that only 12.3% of participants had screened before (Were *et al.*, 2011) further showing low uptake of screening services. Only 0.85% of women of reproductive age turned up for cervical cancer screening in 2018/2019 (Table 2.1). There was no registry for other types of cancers in Masinga sub county. According to 2018/2019 records at Masinga level 4 hospital in particular, only 22 women turned up for the same screening service, with 1 turning positive using VIA/VILI. Not a single man came for screening for prostate and other cancers during this period. This is unfortunate because most of the leading cancers can be detected early through screening before they hit advanced stages.

Table 2.1: Women of childbearing age who came for cervical cancer screening in 2018/2019 financial year. Source: Masinga sub county HRIO.

Number of women screened for cervical cancer in Masinga subcounty in 2018/19	
Women of child bearing age	31,508
Women screened with VIA/VILI	269
Women with positive VIA/VILI	9
Screened for HPV	4
Cancer screening with positive HPV results	0
Pap smear	0

2.2 Psychological factors affecting uptake of cancer screening

Psychological factors have been reported to have an influence on cancer screening uptake. For instance, according to a study conducted in Germany to assess the role of general psychosocial factors for the use of cancer screening by Hajek *et al.*, (2017), it was noted that optimism, self-efficacy, self-esteem and perceived stress were some of the factors used as general psychological factors for the utilization of cancer screening services. Furthermore, when individuals were asked in the same study whether they regularly underwent early cancer screening in the past years, a total of 65.6% of the individuals reported to have been screened for cancer. They positively associated the use of cancer screening with self-efficacy, decreased perceived stress and self-esteem. This study stressed the strong association between general psychological factors and the uptake of cancer screening. These findings are partly supported by Sakhvidi *et al.*, (2015) who noted that self-efficacy was a significant predictor of preventive behaviors.

Gebreegiabher *et al.*, (2014) in his study on factors affecting the practices of cervical cancer screening in Northern Ethiopia demonstrated that women's negative attitudes could deter them from utilizing cervical cancer screening services which could be due to the lack of trust and confidence, where these clients may partially know the service providers; similarly, these findings are also supported by a study done in Sokoto, Nigeria, by Oche *et al.*, (2013) assessing cancer of the cervix and cervical screening current knowledge,

attitude and practices of female health workers. However, a combination of different factors plays a significant role in women, preventing them from cervical cancer screening (Julinawati *et al.* 2013).

Another study by Abdikarim *et al.*, (2017) on associated factors of cervical cancer screening uptake among Somali women in Kenya found that perceived susceptibility to cervical cancer and absent perceived embarrassment were the predictors to pap smear test. As with other studies (as cited in Abdikarim *et al.*, 2017) factors such as embarrassment during screening or fear of the screening, fear of unknown results and other beliefs were described as the major hinderance to cervical screening services. These findings point to a role that psychological issues play in regards to uptake of such services as cancer screening.

2.3 Social factors affecting uptake of cancer screening

Loneliness and perceived social exclusion were social factors that Hajek *et al.*, (2017) used to assess the role of general psychosocial factors for the use of cancer screening in Germany. The respondents in this study positively associated the use of cancer screening with decreased perceived social exclusion and decreased loneliness, suggesting that human social life has an influence on utilization of cancer screening which this study also intended to investigate. The same study also indicated that the respondents preferred to be attended to by a stranger on matters pertaining to their health as opposed to their acquaintances, something which could have made them shy off or stop communicating their health problems. However, in Nigeria, Oche *et al.*, 2013 in their study established that partial acquaintance was a source of shyness to utilize the services such as cancer screening. Similarly, low uptake of breast cancer screening was also attributed to social interaction in a study done by Ondimu *et al.* 2016 in Kenya, indicating that human interactions could positively or negatively impact an individual's health decisions. Additionally, Ng'ang'a *et al.*, (2018) in a study to investigate predictors of cervical cancer screening among Kenyan women found that less screening rates were seen in women with no formal education, the poorest and living in rural areas while self-employed women,

wealthy women, binge drinkers, those involved in high sugar consumption and insufficient physical activity were more likely to be screened.

2.4 Behavioral factors affecting uptake of cancer screening

Health behaviors including tobacco use, sun exposure, poor diet, risky sexual behaviors and a sedentary lifestyle as well as psychosocial experiences such as stress, socioeconomic status and peer relationships increase the risk of some cancers (Klein *et al.*, 2014). Another study done in the US by Krop and Umar (2018) on cancer prevention and screening concluded that the main goal of early detection and prevention of cancer is to reduce, reverse or eliminate the risk of developing and dying of cancer. It further stated that early detection and prevention requires understanding the population and risk-based associations with cancer such as behavior, socioeconomic factors, and epidemiology. Cancer prevention behaviors and lifestyle changes focus on tobacco use, sexual activity, alcohol consumption, exercise, diet/nutrition and sun exposure.

Prevention of risk factors such as infections, tobacco use, and obesity or exposure to cancer-causing agents such as Human Papilloma virus (HPV) or Human Bar virus (HBV) is by far the most feasible and cost-effective approach to cancer control in Africa (Jemal *et al.*, 2012). Infectious agents are responsible for almost 25% of cancer deaths in LMIC and 6% in industrialized countries (WHO, 2012). The document further reported that a number of specific preventive and protective measures to control or avoid carcinogens or risk factors in the environment and the workplace will significantly reduce the incidence of cancers such as those of the lung, bladder and skin.

Kenya National Cancer Screening Guidelines (2018) reports that cancer screening involves applying simple tests or procedures across a healthy population in order to identify unrecognized cancer disease in individuals before they develop any symptoms of the cancer. The document further reports that the goal of screening is to find asymptomatic individuals who have abnormalities that indicate that they could be having a pre-cancerous

condition or a specific cancer and then link them promptly with the appropriate diagnostic care and treatment.

A study done by Meyskens *et al.*, (2015) while assessing obstacles and challenges to cancer prevention suggested that behaviors such as moderate increase in physical exercise, weight loss, decreased caloric consumption, and an improved vegetable-based diet should be integrated into practice and can significantly lead to a healthy lifestyle as part of primary prevention. Cancer-related preventive behaviors are higher among those seeking information on cancer (Wigfall & Friedman, 2016).

Regarding health seeking behaviors, a study done in Cameroon by Donatus *et al.*, (2019) assessing the uptake of cervical cancer screening among women revealed barriers to cervical cancer screening such as inaccessibility of health facilities, lack of information on cervical cancer screening services, costs of the screening service, fear of the painful procedure, individual perceptions such as having no signs and symptoms of the disease, fear of exposing private parts and fear of being detected of having cervical cancer after the test. In Nigeria, a study by Ndikom and Ofi (2012) on awareness, perception and factors affecting utilization of cervical cancer screening services revealed that the respondents were not aware of cervical cancer and were not utilizing the services. In Ethiopia, participants ages, education from health professionals about cervical cancer, positive attitude towards screening, having visited health institution at least once in a year or two, a positive history of sexually transmitted infections and family history of cervical cancer were positively associated with pre-cervical cancer screening uptake (Bante *et al.*, 2017). Another study done in Ethiopia to assess health seeking behavior for cervical cancer established that lack of health seeking behavior for cervical cancer was common due to misconceptions about its cause (Birhanu, 2012).

Barasa *et al.*, (2017) who conducted a study on improving access to cancer testing and treatment in Kenya identified poor health-seeking behaviors among population as one of the barriers. Another study in Kenya by Abdikarim *et al.*, (2017) on factors associated with cervical cancer screening among Somali women reported that a majority would seek

medication if they experience symptoms of cervical cancer. This explains poor health seeking behaviors among this particular group of people. Another study done at Moi Teaching and Referral Hospital (MTRH), Eldoret, Kenya, by Were *et al.*, (2011) to assess perceptions of risk and barriers to cervical cancer screening established that of women interviewed, only 12.3% of them had been screened before. At Jaramogi Oginga Odinga Referral and Teaching Hospital (JOORTH), Kisumu, Kenya, self-reported screening uptake was only 17.5% where a strong association between level of education, age and income levels with the uptake of screening services was established. An important determinant for being screened for cervical cancer was their knowledge level on the signs and symptoms. Furthermore, those who didn't know about the disease or had no perceived susceptibility to it had a higher likelihood of not being screened (Morema *et al.*, 2014).

2.5 Gap in literature review

Most of the local studies did not give due consideration to the nature and extent of behavioral and psychosocial relationships and how these relationships are associated with attempts to access and utilize cancer screening services in our healthcare settings. Moreover, tailored interventions were needed to build on what works there and what is unique to the region with regards to local cultural values and beliefs. Additionally, there were neither past studies nor registry for cancer morbidity and mortality in Masinga sub county and this explained the need for more studies in this particular area.

CHAPTER THREE

METHODOLOGY

3.1 Study area

The study was conducted at the outpatient department of Masinga sub county hospital, Masinga sub-county which is located in Machakos county, Kenya. The hospital serves a catchment population of approximately 140,869 in the five (5) wards. The hospital serves a diverse population mostly the rural. It is one of the oldest hospitals in Machakos county which was recently gazetted as a level 4 facility. With the introduction of devolution, the hospital drastically improved in terms of services offered and patient inflow. Its outpatient department offers maternal and child health care, Voluntary Counselling and Testing (VCT)/Comprehensive Care Clinic (CCC) services, general medical consultation, specialized clinics, laboratory services, pharmacy, family planning services and cancer screening services.

3.2 Study design

This study used a mixed method research design. Quantitative data utilized case-control study design while qualitative data employed phenomenological study design. A mixed study design was used because of its ability to collect rich and comprehensive data that permits a more complete and synergistic data utilization for this particular study. Moreover, the level of information that can be obtained by using qualitative methods can generate data that is more far reaching than what quantitative approaches alone can achieve. Compared to other qualitative traditions of inquiry including grounded theory and case study; the phenomenological approach was deemed the most appropriate method because of its purpose to understand the lived experiences of people as it related to cancer prevention behaviors such as screening uptake. Cases comprised of those who were aware of cancer screening and had been screened while controls comprised of those who were aware and had never been screened. The study lasted for three months.

3.3 Study population

In this study, patients who were 18 years and above seeking for various outpatient (OPD) services at Masinga level 4 hospital were included in the study because this is the legal age for consenting in Kenya. The approximate number of patients attending OPD were about 2000, with a hypothetical proportion of cases and controls being 328 and 1358 respectively [Hypothetical proportion of controls =67.9%; Hypothetical proportion of cases =16.4% (Ng'ang'a *et al.*, 2018)].

3.3.1 Inclusion criteria

Cases:

1. Residents of Masinga sub county.
2. Men and women who were 18 years and above seeking various services at Masinga sub county hospital, outpatient department.
3. Those who had been screened for cancer before (Male- prostate, esophageal and colorectal; Female- Breast, cervical and esophageal).

Controls:

1. Residents of Masinga sub county.
2. Men and women who were 18 years and above seeking various services at Masinga sub county hospital, outpatient department.
3. Those who had never been screened for cancer before (Male- prostate, esophageal and colorectal; Female- Breast, cervical and esophageal).

3.3.2 Exclusion criteria (for both cases and control)

Participants who had major disabling medical or psychiatric conditions and were unable to effectively cooperate during the interview.

3.4 Sample size determination

Being a case-control study, the sample size was determined using Kelsey formula which is a modified Fleiss formula (Kelsey *et al.*, 1996):

$$N_{\text{Kelsey}} = \frac{(Z_{\alpha/2} + Z_{\beta})^2 P(1 - P)(r + 1)}{r(P_0 - P_1)^2}$$

Where,

Standard normal variate for level of significance; $Z_{\alpha/2} = 95\%$ (1.96)

Power- chance of detecting; $Z_{\beta} = 80\%$ (0.84)

Ratio of Controls to Cases= 3:1

P_1 , Hypothetical proportion of controls with exposure (unscreened) = 67.9% (0.679) (Ng'ang'a *et al.*, 2018).

P_0 , Hypothetical proportion of cases with exposure (screened) = 16.4% (0.164) (Ng'ang'a *et al.*, 2018).

$$P = \frac{P_0 + (rP_1)}{r + 1}$$

$$r + 1$$

$$\frac{(0.164 + 3 \times 0.679)}{3 + 1}$$

$$3 + 1$$

$$P = 0.55025$$

Therefore, using Kelsey formula,

$$\frac{(1.96 + 0.84)^2 0.55025 (1-0.55025)}{4}$$

$$3(0.164-0.679)^2$$

$$= 9.75$$

$$n= 10$$

With the attrition of 30%, the sample (cases) n= 13; controls n= 39. Being that the study run for three months, and that the approximate number of those who came for cancer screening every month was 15, it therefore utilized a total sample of 39 cases (13 × 3) and 117 controls (39 × 3).

3.5 Sampling procedure

This study utilized a systematic sampling method. It involved a random start chosen from within the first to the kth patient. Two groups got interviewed: 39 cases (screened) and 117 controls (unscreened). For cases, k was every 9th person (328/39= 9) and for controls, k was every 12th (1358/117= 12). For FGDs, participants were purposively assigned to cases and control groups provided they met the inclusion and exclusion criteria.

3.6 Study tools

A semi-structured questionnaire and focus group discussion (FGD) guide were used. The questionnaire contained open-ended, closed-ended and Likert type of questions capturing the study objectives. It comprised of four (4) sections: sociodemographic data; psychological; social and behavioral factors. Questions were as simple as possible to avoid confusion and were administered through face-to-face interviews by the researcher. The study objectives were used to develop FGD guide. The tools were translated to Swahili.

3.7 Pre-testing

Data collection tools were pretested and suggestions incorporated in the final version questionnaire and FGD guide. Pre testing was done at Matuu sub-county hospital since it had the same characteristics as the area of study. This gave the researcher an opportunity to revise the data collection tools and correct errors in the questionnaire such as questions that respondents may have not understood or misinterpreted, ambiguous questions, questions that combined two or more issues in a single question and questions that made respondents uncomfortable.

3.8 Validity and reliability

Validity: Content validity was determined by pretesting the instrument. This involved the actual data collection on a few respondents from Matuu level 4 hospital which was used to get the feedback on whether or not the instrument would have worked as expected. The questionnaire was examined and appropriate changes were made on content, criterion and construct which were reflected in the final questionnaire.

Reliability: Sixteen respondents [10% of the sample size (four cases and twelve controls)] and two FGDs each comprising of twelve people as deemed appropriate by a study conducted by Muijeen *et al.* (2019), were used to obtain data that was finally analyzed to determine the reliability of the coefficient. Cronbach's coefficient alpha obtained a reliability coefficient of 0.8 that was deemed reliable (Taber, 2017).

3.9 Data collection methods

For quantitative data, the study utilized interviewer-administered semi-structured questionnaires for cases and controls. Data collection was done three days every week for three months. Qualitative data was collected using FGD. The researcher who was the facilitator of FGD did audio-recording of the interview which was discarded after data analysis. A total of three FGDs out of four for cases and six out of nine for controls were conducted; the originally planned number of FGDs were not achieved because of

saturation. Focus group discussions, each consisting of twelve people, were conducted in conference hall of the hospital on Tuesdays and Wednesdays, each lasting 45 to 60 minutes. A number of twelve were considered appropriate according to a study done by Muijeen *et al.* (2019).

3.10 Data analysis

Data was entered in Microsoft excel where cleaning and editing was done and exported to SPSS version 26.0 for analysis. Mantel-Haenszel, Chi-square/Fishers exact, T-test and Man-Whitney U tests were used to determine the statistical significance between the independent and the dependent variable. The level of significance used was 5% (confidence level of 95%). The quantitative data were presented using frequency polygons and tables. Data was described using mean and frequencies. For qualitative data, coding was done where meaningful ideas were associated with the data of interest; then pattern thematic analysis where data was sorted into patterns for thematic analyses; and lastly followed by content analysis through making replicable and valid inference from data to their context.

3.11 Ethical consideration

Research approval was obtained from the Baraton ethics research committee and a research permit from NACOSTI (National Commission for Science, Technology and Innovation). Permission to conduct the study was sought from the Masinga sub county hospital administration. Voluntary and informed consent of the respondents was sought after explaining the aim of the study and the procedures involved. Confidentiality of the information given was emphasized, and participants assured that the information provided was for academic purposes only. The identities of the respondents were protected by using numbers to ensure the principle of anonymity. The principles of beneficence, respect for persons/human dignity and justice were also observed during the study.

CHAPTER FOUR

STUDY FINDINGS

4.0. Introduction

This chapter outline the findings on psychological, social and behavioral factors associated with cancer screening uptake that was conducted over a period of three months.

4.1: Response rate

The response rate was 101% (n=158) from the questionnaires.

4.2. Socio-demographic characteristics of the participants

The study comprised of 26.6% (n=42) cases and 73.4% (n=116) controls. The mean age of cases and controls was 44.3 (± 11.1) and 42.8 (± 14.8) years respectively. Among the cases, majority were female accounting for 69% (n=29) while in controls, males were the majority (59.5% [n=69]). A majority were married among cases and controls accounting for 71.4% (n=30) and 74.1% (n=86) respectively. On education level, 38.1% (n=16) who were the majority of respondents among cases had attained secondary school while among controls were 37.1% (n=43) who attained the same level of education. Majority of the respondents were Christians accounting for 95.2% (n=40) and 89.7% (n=144) among cases and controls respectively while on occupation, majority of respondents among cases and controls were self-employed accounting for 64.3% (n=27) and 47.4% (n=55) respectively (Table 4.1).

Table 4.1: Sociodemographic characteristics of the study participants

Variable	Category	Study arm					
		Case		Control		Total	
		n=42	%	n=116	%	N	%
Gender	Male	13	31.0%	69	59.5%	82	51.9%
	Female	29	69.0%	47	40.5%	76	48.1%
Marital Status	Married	30	71.4%	86	74.1%	116	73.4%
	Single	2	4.8%	11	9.5%	13	8.2%
	Divorced	5	11.9%	6	5.2%	11	7.0%
	Separated	1	2.4%	1	0.9%	2	1.3%
	Widowed	4	9.5%	9	7.8%	13	8.2%
Education Level	None	1	2.4%	6	5.2%	7	4.4%
	Primary school	15	35.7%	32	27.6%	47	29.7%
	Secondary school	16	38.1%	43	37.1%	59	37.3%
	College or University	10	23.8%	35	30.2%	45	28.5%
Religion	Christian	40	95.2%	104	89.7%	144	91.1%
	Muslim	1	2.4%	11	9.5%	12	7.6%
	Other	1	2.4%	1	0.9%	2	1.3%
Occupation	Unemployed	6	14.3%	33	28.4%	39	24.7%
	Self-employed	27	64.3%	55	47.4%	82	51.9%
	Skilled worker	9	21.4%	28	24.1%	37	23.4%

4.3: Association between psychological factors and cancer screening uptake

The areas assessed were Health belief model (HBM), cognitive well-being, stress, autonomy and self-efficacy.

4.3.1: Health belief model (HBM) constructs

This model assessed three constructs namely: perceived susceptibility, severity and benefits. A majority of the respondents in the controls group did not perceive themselves as susceptible to cancer accounting for 90.5% (n=105) as compared to 52.4% (n=22) in cases. Ninety-point five percent (n=38) of respondents among cases and 44.8% (n=52) of respondents in the controls group strongly perceived cancer as a severe disease. Seventy-three-point eight percent (n=31) of respondents among cases strongly agreed that going

for cancer screening was more beneficial as compared to 31% (n=36) of respondents in the controls group. Perceived susceptibility, severity and benefits were significantly different between cases and controls ($p < 0.001$) [Table 4.2].

Table 4.2: Chi square/Fishers exact test for HBM constructs

Variable	Study arm	Rate						Fishers exact (df)	P value
		Do not Agree		Agree		Strongly agree			
		n	%	n	%	n	%		
Perceived susceptibility	Case	22	52.4%	16	38.1%	4	9.5%	32.023(1)	<0.001
	Control	105	90.5%	7	6.0%	2	1.7%		
Perceived severity	Case	0	0.0%	4	9.5%	38	90.5%	25.502(1)	<0.001
	Control	9	7.8%	53	45.7%	52	44.8%		
Perceived benefits	Case	1	2.4%	10	23.8%	31	73.8%	25.670(1)	<0.001
	Control	39	33.6%	38	32.8%	36	31.0%		

Mann-Whitney U test established a higher mean score among cases than controls which was significant ($P < 0.001$). This, therefore, means that cases perceived that they were more susceptible to developing cancer; that cancer was severe disease and that it was beneficial to go for cancer screening (Table 4.3).

Table 4.3: Mann-Whitney U test results for HBM components

Statement	Mean		Mean difference (P value)	Distribution (P value)
	Case	Control		
Perceived susceptibility	1.57	1.1	<0.001	<0.001
Perceived severity	2.9	2.38	<0.001	<0.001
Perceived benefits	2.71	1.97	<0.001	<0.001

To determine the strength of association between HBM constructs and the uptake of screening, a perception that one was susceptible to developing cancer translated to 2.758 times likelihood to go for cancer screening, while perceiving cancer as a severe disease translated to 5.720 times in likelihood of going for cancer screening. Similarly, perceiving cancer screening as of benefit to health meant that the individuals were 2.217 likely to go for cancer screening. These associations were all statistically significant ($p < 0.05$) [Table 4.4].

Table 4.4: Mantel-Haenszel odds ratio (OR) results

Cases/Control	OR	P value	95% Confidence interval
Psychological Factors			
Health Belief Model Constructs (HBM)			
Perceived susceptibility	2.758	.022	1.155-6.585
Perceived severity	5.720	.003	1.835-17.832
Perceived benefits	2.217	.029	1.087-4.520
Cognitive well-being			
Cognitive well-being	.440	<0.001	.338-.572
Stress			
Stress	.768	<0.05	.620-.951
Autonomy			
Awareness of self	.172	.006	.049-.602
Perceived choice	.119	<0.001	.048-.300
Self-efficacy			
Self-efficacy	.727	<0.001	.638-.828
Social Factors			
Social network			
Emotional loneliness	5.791	.016	1.384-24.225
Social loneliness	.200	<0.001	.114-.351
Social exclusion			
Social exclusion	1.785	<0.001	1.390-2.291
Behavioral Factors			
Cues to action (knowledge on cancer screening)			
How they learnt about cancer screening	4.720	0.003	1.735-13.832
Knowledge of anyone who has or died of cancer	.751	0.632	.122-0.978
Type of relationship with cancer victims	0.579	0.135	0.283-1.185
Reasons for screening	0.296	0.034	0.096-0.911
Appropriate time for screening	2.266	0.11	0.832-6.171
Determinants of health seeking behavior regarding uptake of screening			
Cancer screening provides a sense of control	2.037	.300	.531-7.818
It is worth doing cancer screening	8.330	.091	.716-96.977
Cancer screening detects pre-cancerous cells before symptoms	1.514	.412	.562-4.080
Cancer screening is very painful	.771	.682	.222-2.678
It is embarrassing and unpleasant to do cancer screening	.544	.372	.143-2.074
Screening is not necessary if there are no signs and symptoms	.134	.002	.037-.490
Afraid to take screening test	.333	.021	.131-.848
Not free to talk about cancer screening	.642	.385	.236-1.746
Worried of cancer	.612	.255	.262-1.425
Preventive behaviors and uptake of cancer screening			
Cessation of smoking	0.044	0.002	0.006-0.332
Diet e.g., minimal meat consumption, increased consumption of fresh fruits and vegetables, avoiding junk or processed foods	0.163	0.017	0.037-0.719
Avoiding direct exposure to sunlight	0.450	0.045	0.206-0.981
Avoiding environmental pollutants	0.162	0.004	0.047-0.559
Avoiding infections	0.533	0.085	0.261-1.092
Minimal to no stress	0.312	0.005	0.138-0.705
Normal body weight	0.167	<0.001	0.074-0.374
Moderate to no use of alcohol	0.039	0.002	0.005-0.296
Physical activity	0.300	0.008	0.123-0.733
Vaccinations such as HPV vaccine	0.043	<0.001	0.010-0.185
Avoiding risky sexual behavior	0.431	0.022	0.210-0.887

4.3.2: Cognitive well-being

This was measured using Satisfaction with life scale (SWLS) as cited in a study by Potoczny *et al.* (2022) that determined how individuals evaluated their overall life. Majority of respondents in the controls group were extremely dissatisfied with life accounting for 27.6% (n=32) as compared to cases at 9.5% (n=4). Extreme satisfaction with life was higher among cases accounting for 2.4% (n=1) as compared to controls at 0.0% (n=0) (Table 4.5).

Table 4.5: Level of agreement to cognitive well-being item scale

Satisfaction with life	Study arm				Total	
	Case		Control		N=116	%
	n=42	%	n=116	%		
Extremely dissatisfied	4	9.5%	32	27.6%	36	22.8%
Dissatisfied	4	9.5%	52	44.8%	56	35.4%
Slightly dissatisfied	6	14.3%	16	13.8%	22	13.9%
Neutral	1	2.4%	0	0.0%	1	0.6%
Slightly satisfied	14	33.3%	13	11.2%	27	17.1%
Satisfied	12	28.6%	1	0.9%	13	8.2%
Extremely satisfied	1	2.4%	0	0.0%	1	0.6%

There was a significant mean difference between cases and controls (p values<0.05) with the mean of all cognitive wellbeing constructs being higher among cases than in controls (Table 4.6).

Table 4.6: Man-Whitney U test results for cognitive wellbeing

Statement	Mean		Mean difference	p-value	Distribution
	Case	Control			
Life close to ideal	4.38	2.80		<0.001	<0.001
Excellent life conditions	4.00	2.19		<0.001	<0.001
Satisfied with life	4.52	2.54		<0.001	<0.001
Gotten the important things in life.	4.31	2.54		<0.001	<0.001
Changing almost nothing if given another chance to live	3.86	2.44		<0.001	<0.001

To determine the strength of association between satisfaction with life and uptake of cancer screening, it was noted that there was 56% less likelihood of uptake of screening of cancer [OR .440; CI 95% .338-.572; P<0.001] (Table 4.4).

4.3.3: Stress

This was measured using perceived stress scale as used in a study by Rohde *et al.* (2022), which was the degree to which situations in an individual’s life were viewed as stressful, was assessed to establish the association it had with screening uptake. There was significant difference between the mean of perceived stress for cases and controls (t test p value=0.013). The mean score was higher among cases (9.0) than among controls (8.2) [Figures 4.1 and 4.2].

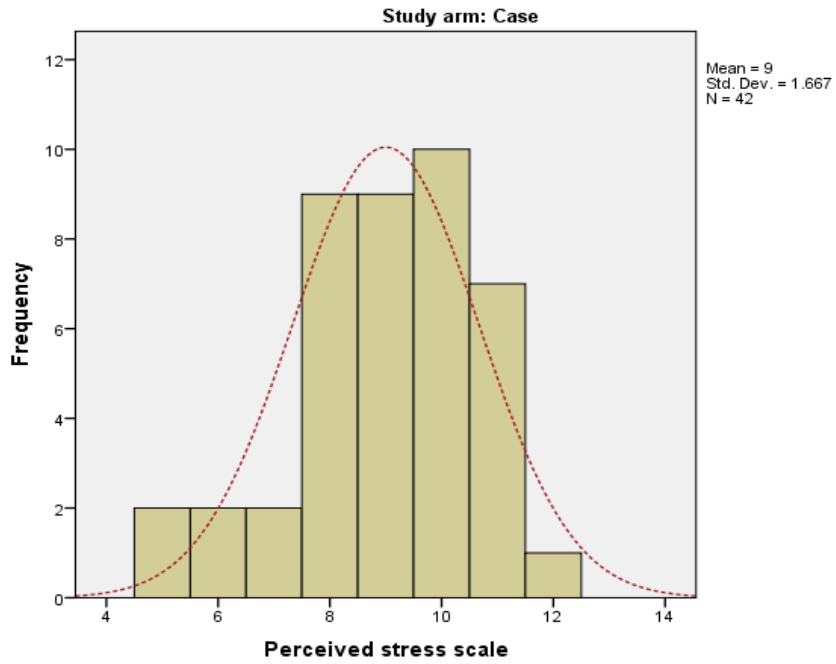


Figure 4.1 Mean of stress among cases

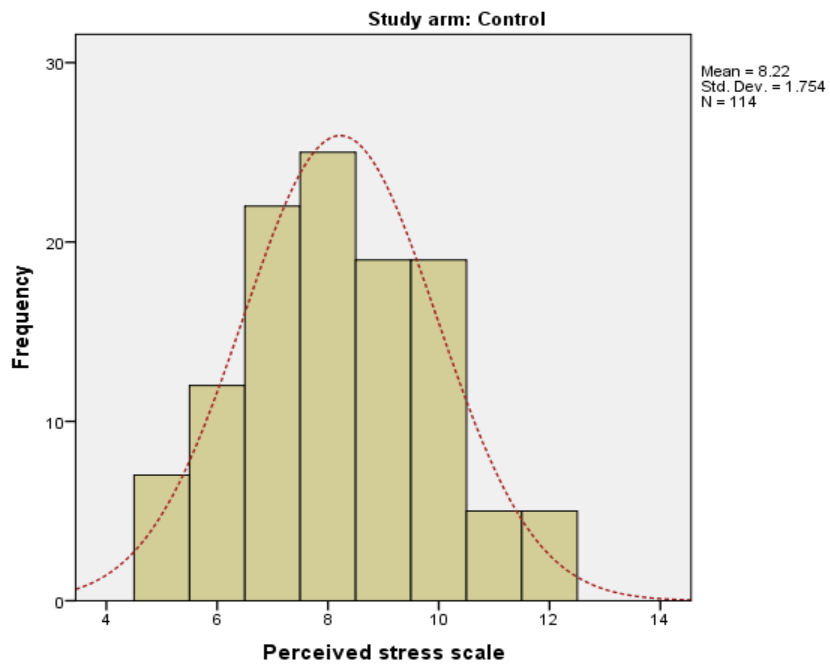


Figure 4.2 Mean of stress among controls

To assess the strength of association that stress had with the uptake of cancer screening, it was noted that there was a 23.2% less likelihood of uptake of cancer screening which was statistically significant between cases and controls (OR .768; 95% CI .620-.951; $p < 0.05$) [Table 4.4].

4.3.4: Autonomy

This was measured using self-determination scale (SDS) as cited in a study done by Kirsch *et al.* (2015). It assessed 'awareness of self' (items 2,4,6,8,10) and 'perceived choice' (items 1,3,5,7,9) as the two constructs of autonomy. Three aspects [*a) when I accomplish something, I often feel it wasn't really me who did it; when I accomplish something, I always feel it's me who did it; b) my body sometimes feels like a stranger to me; my body always feels like me c) sometimes I look into the mirror and see a stranger; when I look into the mirror, I see myself*] of 'awareness of self' were significantly similar between cases and controls ($p > 0.05$), while the rest were significantly different with a p value of < 0.05 . All the constructs of perceived choice were all significantly different between cases and controls, $p < 0.05$ [Table 4.7].

Table 4.7: Mean difference in autonomy among cases and controls

	Statement	Mean		Mean difference	Distribution
		Case	Control	P value	Man-Whitney U Test P value
1.	A. I always feel like I choose the things I do.	1.476	2.106	<0.001	<0.001
	B. I sometimes feel that it's not really me choosing the things I do.				
2.	A. My emotions sometimes seem alien to me.	4.524	4.142	<0.001	<0.001
	B. My emotions always seem to belong to me.				
3.	A. I choose to do what I have to do.	1.81	2.239	0.002	0.001
	B. I do what I have to, but I don't feel like it is really my choice.				
4.	A. I feel that I am rarely myself.	4.381	4.124	0.03	0.028
	B. I feel like I am always completely myself.				
5.	A. I do what I do because it interests me.	1.762	2.438	<0.001	<0.001
	B. I do what I do because I have to.				
6.	A. When I accomplish something, I often feel it wasn't really me who did it.	4.548	4.381	0.189	0.063
	B. When I accomplish something, I always feel it's me who did it.				
7.	A. I am free to do whatever I decide to do.	1.714	2.33	<0.001	<0.001
	B. What I do is often not what I'd choose to do.				
8.	A. My body sometimes feels like a stranger to me.	4.659	4.464	0.059	0.074
	B. My body always feels like me.				
	A. I feel pretty free to do whatever I choose to.	1.714	2.384	<0.001	<0.001
9.	B. I often do things that I don't choose to do.				
10.	A. Sometimes I look into the mirror and see a stranger.	4.833	4.83	0.97	0.916
	B. When I look into the mirror, I see myself.				

Awareness of self: There was significant difference between the mean of ‘awareness of self’ scores between cases and controls (t test p value=0.05). The mean score was higher among cases (4.6) than among controls (4.4) [Figures 4.3 and 4.4].

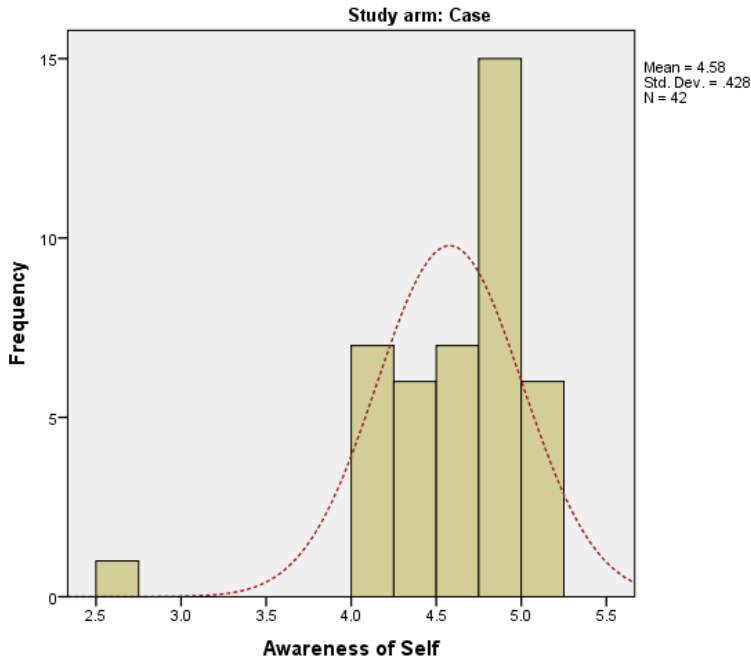


Figure 4.3 Mean of ‘Awareness of self’ scores for cases

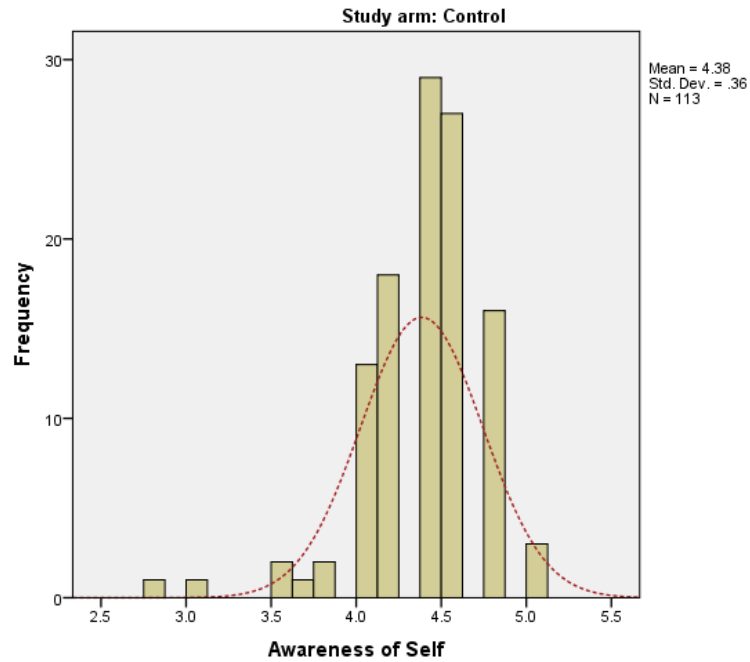


Figure 4.4: Mean of ‘Awareness of self’ scores for controls

Perceived choice: There was significant difference between the mean of ‘Perceived choice’ scores between cases and controls (t test p value<0.001). The mean score was higher among cases (4.3) than among controls (3.7) [Figures 4.5 and 4.6].

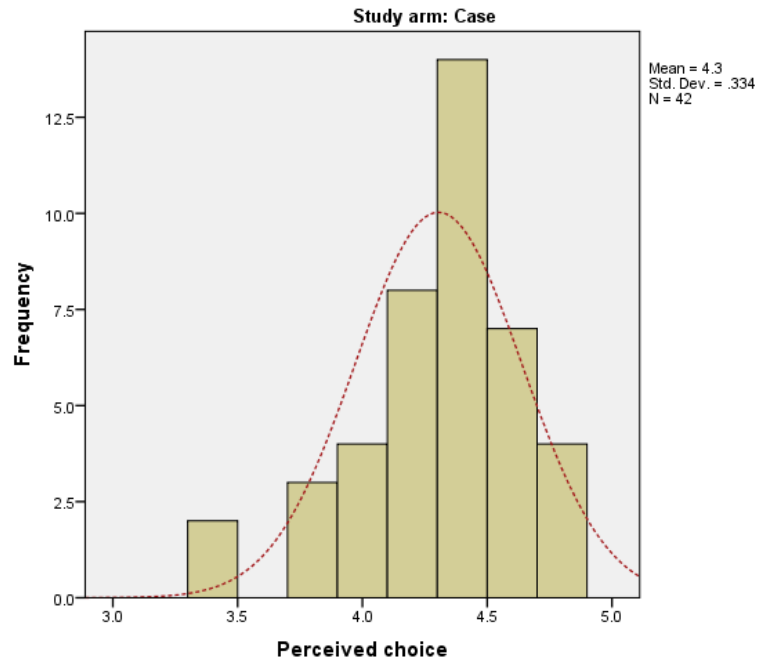


Figure 4.5: Mean of 'Perceived choice' scores among cases

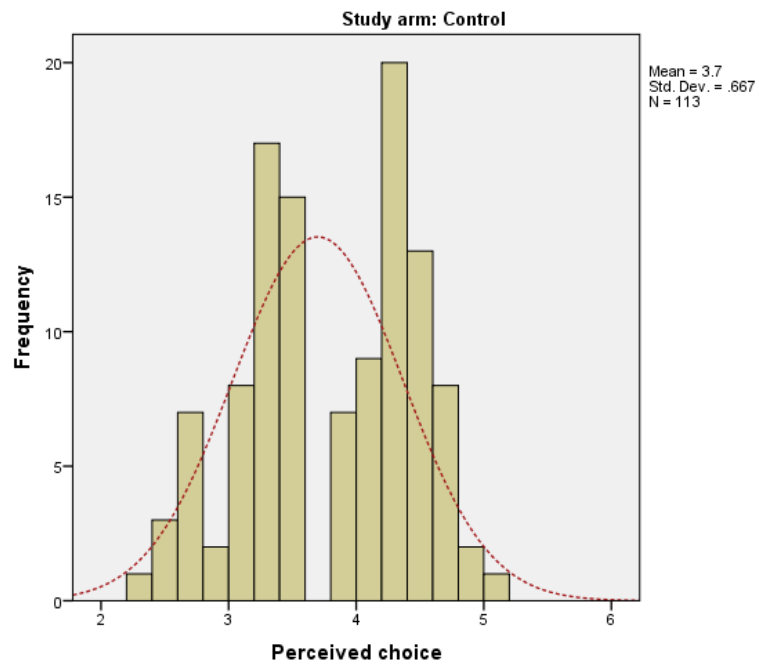


Figure 4.6: Mean of 'Perceived choice' scores among controls

To assess the strength of association between the level of autonomy and the uptake of cancer screening, it was noted that there was 82.8% and 88.1% less likelihood of cancer screening in regards to ‘awareness of self’ and ‘perceived choice’ respectively. The two constructs were all statistically significant [(awareness of self- OR.172; 95% CI .049-.602; p .006) (perceived choice- OR .119; 95% CI .048-.300; p<0.001)] {Table 4.4}.

4.3.5: Self-efficacy

Self-efficacy is the belief in one’s abilities to change. General self-efficacy scale as cited in a study done by Lazić *et al.* (2018), was used to determine the scores. There was statistically significant difference between cases and controls (p values<0.05). Only one item (“*If someone opposes me, I can find the means and ways to get what I want*”) was significantly similar between cases and controls (p values=0.469) [Table 4.8].

Table 4.8: Mann-Whitney U test for self-efficacy items

Statement	Mean		Mean difference	Distribution
	Case	Control	P value	Mann-Whitney U Test P value
I can always manage to solve difficult problems if I try hard enough.	3.76	3.32	<0.001	<0.001
If someone opposes me, I can find the means and ways to get what I want.	2.86	2.8	0.573	0.469
It is easy for me to stick to my aims and accomplish my goals.	3.69	3.32	0.001	0.001
I am confident that I could deal efficiently with unexpected events.	2.86	2.32	<0.001	<0.001
Thanks to my resourcefulness, I know how to handle unforeseen situations.	3.05	2.12	<0.001	<0.001
I can solve most problems if I invest the necessary effort.	3.61	3.37	0.022	0.019
I can remain calm when facing difficulties because I can rely on my coping abilities.	3.36	2.98	0.001	0.001
When I am confronted with a problem, I can usually find several solutions.	2.88	2.56	0.003	0.001
If I am in trouble, I can usually think of a solution.	3.67	3.28	<0.001	<0.001
I can usually handle whatever comes my way.	2.98	2.65	0.004	0.002

There was significant difference between the mean of ‘General Self-Efficacy Scale’ scores between cases and controls (t test p value<0.001). The mean score was higher among cases (32.7) than among controls (28.7) [Figures 4.7 and 4.8].

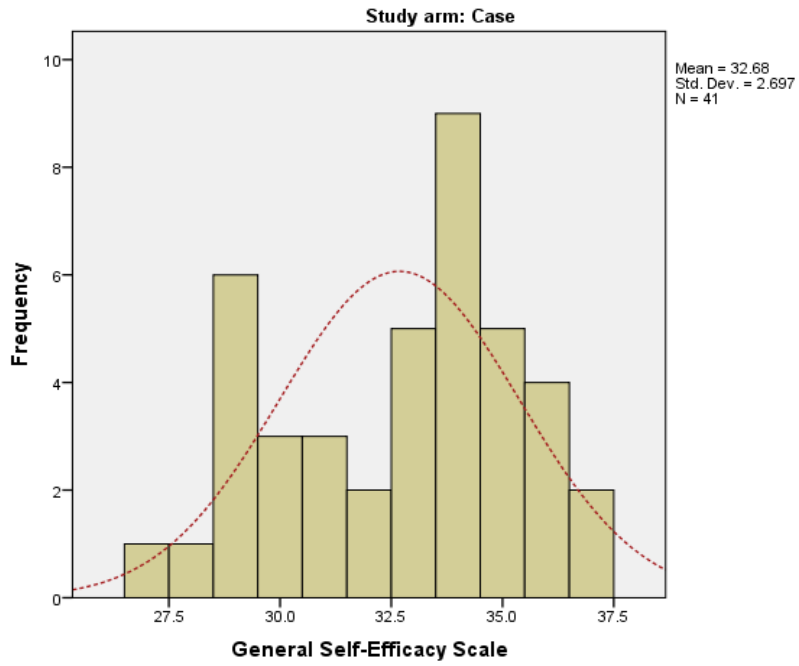


Figure 4.7: Mean among cases for self-efficacy

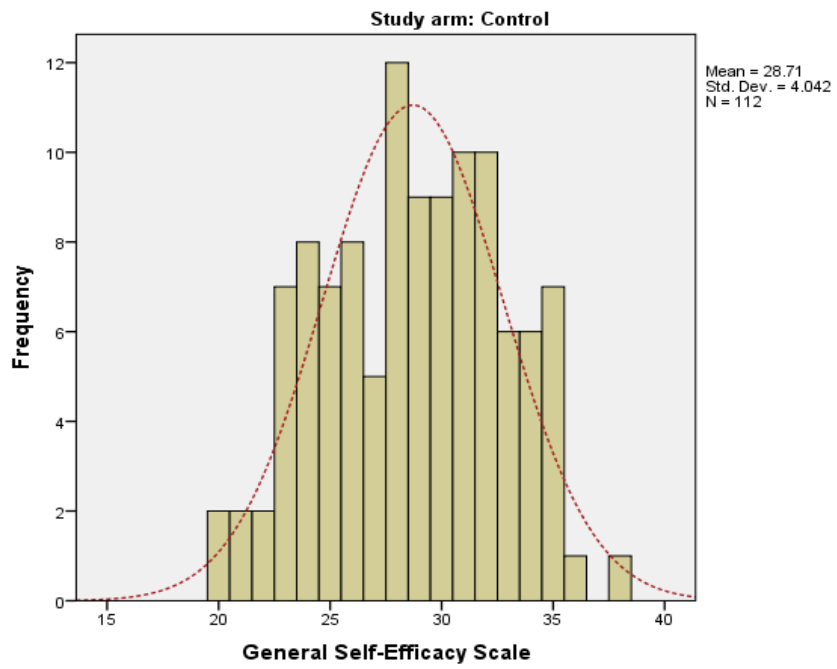


Figure 4.8: Mean among controls for self-efficacy

To assess the strength of association between self-efficacy and the uptake of cancer screening, it was noted that there was a 27.3% less likelihood of cancer screening uptake which was statistically significant (OR .727; 95% CI .638-.828; $p < 0.001$) [Table 4.4].

4.3.6: Value-belief system

The following were the responses by the respondents that hindered the uptake of cancer screening. Two-point-four percent ($n=1$) of cases and 19.0% ($n=22$) controls reported that their value-belief system was a hinderance to cancer screening. Fear of exposing their nakedness, fear of penetrating equipment that enlarge vagina/anus, religion (prayers prevent cancer), cancer being a disease for specific groups, contradicting opinions by family members, eating good food fully preventing cancer and therefore no need for screening, only the sick to be screened, screening did not prevent cancer and fear of being sexually abused by medics during screening were some of the reasons given as hinderances.

4.3.7: Qualitative data on psychological factors influencing cancer screening

On psychological factors influencing cancer screening, two themes were generated: Facilitators to cancer screening among cases and barriers to cancer screening among controls.

Theme 1: Facilitators to cancer screening among cases

On the theme of facilitators to cancer screening among cases, the following subthemes were generated:

Subtheme 1: Anxiety

Majority of participants reported that they were nervous because they had lost a friend or a relative to cancer. Others reiterated that the lifestyle they lived and types of jobs they did could have as well exposed them to cancer. For instance, some of the participants said:

“I remember losing two friends to cancer. This made me so nervous and since then, I do go for screening every three years.” ...participant 9 of FGD 1.

“I have always felt as though I may develop cancer because of my weight and age. I am also a heavy smoker and I heard that smoking is one of the greatest risks to developing cancer. I have been screened twice in the past, for colorectal and prostate cancer. Till today, I feel I made the best choice.” ... participant 3 of FGD 2.

“In the past, I started seeing streaks of blood in my stool. When I visited the hospital, the nurse told me it is good to get screened for colorectal cancer. Initially I ignored, but the thought of having cancer kept coming back and this got me so anxious, so I decided to visit Kenyatta National Hospital where I got help.” ... participant 1 of FGD 3.

Subtheme 2: Past encounters/experiences with cancer

Past encounters/experiences with cancer, which included stress, in this case positively impacted the decision to uptake such services. This type of stress could be due to signs and symptoms of cancer that individuals experienced, cancer in the family, long-term engagement in dangerous behaviors such as smoking. A number of participants reiterated

that stress prompted them to go for screening as evidenced by some of them who reported that:

“My brother is currently suffering from colorectal cancer. This has been stressing me because I’m told cancer run in families.” ...participant 7 of FGD 1.

“My doctor told me that having been cured of breast cancer in the past does not mean I cannot get a different type of cancer or a recurrence of the same type of cancer. This has been so stressful to me and my family. I do yearly mammogram and I am very keen on changes of my menses as I am also at risk of ovarian cancer.” ... participant 6 of FGD 4.

Subtheme 3: Positive perception and attitude

Conscious understanding and the state of mind also played a role in their decision to get cancer screening. From the interviews, this was majorly contributed by the fact that a good number of them understood how fatal cancer is and the economic impact it had on those that were affected. Some of them stated:

“You see in the news daily how cancer kills the ordinary people and the wealthy politicians. I gave it a deep thought and finally I made that decision because after all it is me who will benefit.” ...participant 4 of FGD 1.

“I see no problem fixing cancer screening in one’s yearly resolutions and schedules. For the last four years, this has been part of me. I have been screened against breast and

cervical cancer, besides other chronic illnesses such as diabetes and I am happy all turned negative.” ... participant 5 of FGD 5.

Subtheme 4: Motivation

Willingness of action in regard to cancer screening came out as a facilitator. Most of such stories were contributed by social media, family and friends. A number of motivators could have made the respondents decide to go for screening and some of them stated:

“Motivational stories are common during the world cancer days. This was the source of my inspiration.” ...participant 2 of FGD 2.

“I have a brother who is a clinician. He is our main source of motivation in the family in regards to health issues. He is the reason I went for lung cancer screening when I was still coughing even after completing tuberculosis treatment.” ... participant 7 of FGD 4.

Theme 2: Barriers to cancer screening among controls

Subtheme 1: Negative perception and fear

Feeling unprotected and unsafe showed an attitude of fear among the participants. Myths about the effects of cancer screening that could have prevented the control group from seeking such services coupled with family issues between spouses also came up. Participants gave several explanations for their failure to attend cancer screening. Some were based on past experiences, rumors and fear of opposite gender practitioners. One of the participants reported that:

“I have a friend who once told me that her boyfriend complained of an enlarged vagina after cervical cancer screening. The speculum used allegedly caused all these mess. Since

then I've never liked how cervical cancer screening is being done." ...participant 17 of FGD 6.

"The procedure is so painful and, in most cases, done with unsterilized equipment. These are my greatest fears and I have never wished to go back for the same procedure." ... participant 15 of FGD 6.

Subtheme 2: Negative attitude

Some respondents reported that their acquaintances induced fear in them or scrutinized the exam due to the assumption that receiving a test like Pap smear resulted in physical damage or some kind of alteration in their reproductive system. Similarly, if a woman was found to have cervical cancer, men and women would call or label her as "dirty". Others heard more negative conversations from their friends and relatives. Some of the respondents reported that:

"Well, anybody who is going to be screened especially for cervical cancer is assumed to be engaged in risky sexual behavior which has a negative connotation from the public, so to avoid all these, I resist any attempts to be screened." ...participant 6 of FGD 8.

"I have never liked the issue of being attended to by the doctor of the opposite sex especially if the procedure involves my private parts. I am super shy and this made me dislike undressing before male doctors, as its only my spouse who has the authority over my naked body. You see you have no right in choosing who you'd want to attend to you in most of these public hospitals and this has been a hinderance to most of us who are shy."
... participant 9 of FGD 1.

Subtheme 3: Embarrassment

One common recurring theme was embarrassment. Many women and men were embarrassed of a number of things related to being screened because someone other than the spouse would see their body. The participants reported that:

“A friend once told me how they did prostate cancer screening on him and how embarrassing it was. It is embarrassing for men.” ...participant 11 of FGD 2.

“The procedure is so embarrassing because one has to show her private parts to a strange man who is not her husband” ... participant 10 of FGD 2.

“How do I walk in front of the same person who saw my private parts? Don't you think it is embarrassing? Some of these screening techniques aren't just for anyone who is shy like me.”participant 8 of FGD 2.

4.4: Association between social factors and cancer screening uptake

Two variables were used to assess social factors. They included social network and perceived social exclusion.

4.4.1: Social network

Social network was measured using De Jong Gierveld loneliness scale as cited in a study by Kwiatkowska *et al.* (2017). Emotional and social loneliness were the two aspects of loneliness that were assessed. For emotional loneliness, higher number of controls were more severely lonely (19.8% [n=23]) compared to cases (4.8% [n=2]), while for social loneliness, higher number of cases were more severely lonely (26.2% [n=11]) compared to controls (8.6% [n=10]) [Table 4.9].

Table 4.9: Loneliness scale for social network

Loneliness variables	Category	Study arm				Total	
		Case		Control		N	%
		n=42	%	n=116	%		
Emotional loneliness	Moderately lonely	40	95.2%	86	74.1%	126	79.7%
	Severely lonely	2	4.8%	23	19.8%	25	15.8%
	Very severe loneliness	0	0.0%	5	4.3%	5	3.2%
Social loneliness	Moderately lonely	15	35.7%	99	85.3%	114	72.2%
	Severely lonely	11	26.2%	10	8.6%	21	13.3%
	Very severe loneliness	16	38.1%	5	4.3%	21	13.3%

Mean difference among cases and controls using Mann-Whitney U test showed that there is significant difference between mean scores of responses between cases and controls (p values<0.05) [Table 4.10].

Table 4.10: Mann-Whitney U test for social network

Statement	Mean		Mean difference	Distribution
	Case	Control	P value	Mann-Whitney U Test P value
I experience a general sense of emptiness	1.93	2.45	0.002	0.002
There are plenty of people I can rely on when I have problems	3.17	2.35	<0.001	<0.001
There are many people I can trust completely	3.1	1.82	<0.001	<0.001
I miss having people around me	2.07	2.65	<0.001	<0.001
There are enough people I feel close to	3.33	2.39	<0.001	<0.001
I often feel rejected	1.21	1.72	0.001	0.001

Mann-Whitney U test results for individual social and emotional loneliness found that for emotional loneliness, controls showed a higher mean of 2.27 as compared to 1.24 of cases; while for social loneliness, cases had a higher loneliness mean of 3.20 compared to 2.19 of controls. Mean of social and emotional loneliness levels between cases and controls was significantly different ($p < 0.001$). Distribution of responses between cases and controls in regards to the two constructs of loneliness were also significantly different ($p < 0.001$) {Table 4.10}.

Additionally, the strength of association between loneliness and uptake of cancer screening was analyzed using Mantel-Haenszel test which showed a statistically significant association with a p value of < 0.05 . Lower emotional loneliness translated to 5.791 times more likelihood of uptake of cancer screening. On the other hand, higher social loneliness translated to 80% less likelihood of cancer screening uptake [(Emotional loneliness- OR 5.791, 95% CI 1.384-24.225; P .016) (Social loneliness- OR .200; 95% CI .114-.351; P < 0.001)] {Table 4.4}.

4.4.2: Social exclusion

Social exclusion, the feeling that one does not belong to the society, was measured using a scale cited in a study done by Hajek` and König, (2018). Mann-Whitney U test results showed a mean that was significantly different between cases and controls (p values <0.05). In all the items used in assessing social exclusion, there were higher mean scores among the controls compared to cases (Table 4.11).

Table 4.12: Mann-Whitney U test for social exclusion

Statement	Mean		Mean difference	Distribution
	Case	Control	P value	Man-Whitney U Test P value
I am worried to be left behind	1.52	2.45	<0.001	<0.001
I feel like I do not really belong to society	1.12	2.06	<0.001	<0.001
I feel that I am left out	1.4	2.32	<0.001	<0.001
I feel excluded from society	1.17	1.64	<0.001	<0.001

Strength of association between social exclusion and uptake of cancer screening was determined using Mantel-Haenszel test that established a statistically significant association (p <0.05). Lower social exclusion translated to a 1.785 times likelihood of going for cancer screening (OR 1.785; 95% CI 1.390-2.291; P <0.001) [Table 4.4].

4.4.3: Qualitative data

On social factors, three themes were generated on how social life influenced cancer screening:

Theme 1: Decision maker in the family

As is the case in many African countries and traditions, the head of the family made many decisions for the other family members including decisions regarding healthcare and even its financing. Going against this could be seen as disrespect to the head of the family. As

the participants reported, it clearly showed that this practice was still in many homes and was by far affecting health seeking behaviors. Some of the participants stated:

“My husband would inquire why I’m leaving the house every time, so I wouldn’t want to mention something like cervical cancer screening because then he may suspect that I have been cheating on him.” ...participant 2 of FGD 1.

“My husband pays for all medical bills and he always feels going for such services when one is not sick isn’t a priority.” ...participant 4 of FGD 2.

Theme 2: Influence from family and friends

To explore how cancer screening was perceived and the related conversations within the communities, participants were asked to share what they have heard from their friends and family members concerning cancer screening. Some female participants reported hearing that it was beneficial to women’s health or that they encouraged other women to get the tests. Others heard more negative conversations. Women felt judged by people close to them upon receiving the tests and this was a major hinderance to uptake of such services. A few participants stated:

“Well, they say that the speculum used may interfere with the size of my vagina. That really scared me.” ...participant 1 of FGD 2.

“I never thought of it before. It was my friend who asked me to accompany her for screening, and in the process, she convinced me to get screened for breast cancer.” ...participant 3 of FGD 1.

“A friend once told me how they did prostate cancer screening on him and how embarrassing it was. Scientists need to device a friendlier method. I never wanted to go through the same because it is embarrassing for men.” ...participant 11 of FGD 2.

“My eldest brother who is a dentist encouraged me to go for colonoscopy after he was diagnosed with familial adenomatous polyposis (FAP) because it runs in families and is a major predisposing factor to colon cancer.” ...participant 2 of FGD 5.

Theme 3: Public campaigns

World cancer days are often utilized to air programs on social media and television/radio to enlighten the public on the gains and gaps that exist in cancer control, prevention and treatment. The local governments also do organize medical camps and outreaches that are used to disseminate this information to the public. A number of participants in this study reported to have received information in such events. Some of them stated:

“I got this information during the international breast cancer day on one of the national TV stations. My sister and I made a decision to be going for cervical cancer screening every five years.” ...participant 7 of FGD 4.

“I remember medical staff from our health center carried out an outreach in the nearby market where they managed to talk about a number of cancer types and their prevention. That’s where I got this idea from and decided to be going for screening occasionally.” ...participant 6 of FGD 6.

4.5: Association between behavioral factors and cancer screening uptake

The results presented in this section encompassed knowledge on cancer screening (cues to action) among the participants, determinants of health seeking behavior in regards to uptake of cancer screening, facilitators and barriers to screening behaviors and knowledge on preventive behaviors to cancer.

4.5.1: Cues to action

All cases and 83.6% (n=97) of controls had heard of cancer screening. Awareness of cancer screening was significantly different between cases and controls (p value =0.005). Cases mostly acquired information on cancer screening from health practitioner recommendation; while controls got information on cancer screening from friends/relatives 25.0% (n=29), health practitioner recommendation 31.0% (n=36), and media 25.9% (n=30). The source of information on cancer screening was not significantly different between cases and controls (p value =0.143). Forty-seven-point six percent (n=20) of cases and 34.5% (n=40) of controls knew of people who had or died of cancer. Knowledge of people who had or died of cancer was also not significantly different between cases and controls (p value= 0.134). Victims of cancer who were known to cases were mostly relatives 28.7% (n=12); and acquaintances among the controls 23.4% (n=27). Knowledge on people who had or died of cancer was significantly different between cases and controls (p value =0.032). Cases mainly cited early detection of cancer 95.2% (n=40) as the main reason for screening. Controls cited some of the main reasons for screening such as checking for infections 30.2% (n=35) and early detection of cancer 31.9% (n=37). Noteworthy, 35.3% (n=41) of the controls did not know the importance of cancer screening. Distribution of reasons for cancer screening was not significantly different between cases and controls (p value =0.479). When the participants were asked about the appropriate time for screening, they stated different times in human life cycle which showed a knowledge gap. The reasons stated were: upon starting unprotected sex, in sickness or during treatment, anytime, when a close relative is suffering from cancer or

dead, from childhood, from puberty, early before any sickness, adulthood, from 3 years of age and if recommended by healthcare worker (Table 4.12).

Table 4.13: Chi square test for cues to action (knowledge on cancer screening)

Variable	Category	Study arm				Total	Fishers exact (df)	P value
		Case	%	Control	%			
Aware of cancer screening	No	0	0	19	16.4	19	7.820(1)	0.005
	Yes	42	100	97	83.6	139		
How they learnt about cancer screening	Media	5	11.9	30	25.9	35	9.175(3)	0.143
	Health practitioner recommendation	24	57.1	36	31.0	60		
	Friends/relatives	12	28.6	29	25	41		
	Others	1	2.4	0	0	1		
Knowledge of anyone who has or died of cancer	No	22	52.4	76	65.5	98	2.259(1)	0.134
	Yes	20	47.6	40	34.5	60		
Type of relationship with cancer victims	Acquaintance	8	19.1	27	23.3	35	4.681(1)	0.032
	Relative	12	28.6	12	10.3	24		
Reasons for screening	Don't know	0	0	41	35.3	41	50.633(2)	0.479
	For early detection of cancer	40	95.2	37	31.9	77		
	Check for infections	1	2.4	35	30.2	36		
Appropriate time for screening	Don't know	1	2.4	5	4.3	6	15.104(10)	0.128
	Upon starting sex (unprotected)	2	4.8	0	0	2		
	Anytime	18	42.9	16	13.8	34		
	When sick/ during treatment	2	4.8	1	0.9	3		
	When close relative is sick/ dead	5	11.9	4	3.5	9		
	From childhood	6	14.3	1	0.9	7		
	Puberty	10	23.8	12	10.3	22		
	From 3 years	1	2.4	0	0	1		
	Early before sickness	1	2.4	0	0	1		
	Adulthood	1	2.4	0	0	1		
	If recommended by healthcare worker	2	4.8	1	0.9	3		

Strength of association between knowledge and uptake of cancer screening was statistically significant ($p < 0.05$) in some aspects except for “*knowledge on anyone who had cancer or died of cancer; type of relationship with cancer victims; and appropriate time for screening*” ($p > 0.05$). There was a 4.720 times likelihood of uptake of cancer screening in regards to how participants learnt about cancer screening; and awareness of reasons for cancer screening also translated to 70.4% less likelihood of going for cancer screening (Table 4.4).

4.5.2: Determinants of health seeking behaviors

Determinants of health seeking behavior regarding uptake and non-uptake of cancer screening were also assessed. Sixty nine percent ($n=29$) of cases strongly agreed that cancer screening provided sense of control higher than only 14.7% ($n=17$) of controls group. Ninety-five-point two percent ($n=40$) of cases strongly agreed that it was worth doing cancer screening as compared to 33.6% ($n=39$) of controls. As to whether cancer screening detected pre-cancerous cells before symptoms, 85.7% ($n=36$) of cases were in strong agreement compared to 29.3% ($n=35$) of controls. Only 4.8% ($n=2$) of cases believed that cancer screening was painful in comparison to 29.3% ($n=34$) of controls. On whether it was embarrassing and unpleasant to do cancer screening, a high of 75% ($n=87$) of controls strongly agreed as compared to 31% ($n=13$) of cases. Thirty-nine-point six percent of controls agreed that screening was not necessary if there were no signs and symptoms compared 0% ($n=0$) of cases. None of the cases were afraid to take cancer screening which was different for participants in the controls arm (12.9% [$n=15$]). Four-point three percent ($n=5$) of controls were not free to talk about cancer screening as compared to 2.4% ($n=1$) of cases. It was also noted in this study that 11.9% ($n=5$) of cases and 0.9% ($n=1$) of controls were worried of cancer (Table 4.14).

Table 4.15: Determinants of health seeking behavior regarding uptake of screening

Variable	Study arm	Rate							
		Strongly disagree		Disagree		Agree		Strongly agree	
		n	%	n	%	n	%	n	%
Cancer screening provides sense of control	Case	0	0.0%	0	0.0%	12	28.6%	29	69.0%
	Control	14	12.1%	37	31.9%	46	39.7%	17	14.7%
It is worth doing cancer screening	Case	0	0.0%	0	0.0%	1	2.4%	40	95.2%
	Control	2	1.7%	4	3.4%	69	59.5%	39	33.6%
Cancer screening detects pre-cancerous cells before symptoms	Case	1	2.4%	1	2.4%	3	7.1%	36	85.7%
	Control	25	21.6%	46	39.7%	9	7.8%	34	29.3%
Cancer screening is very painful	Case	3	7.1%	10	23.8%	26	61.9%	2	4.8%
	Control	1	0.9%	6	5.2%	73	62.9%	34	29.3%
It is embarrassing and unpleasant to do cancer screening	Case	2	4.8%	1	2.4%	25	59.5%	13	31.0%
	Control	2	1.7%	3	2.6%	22	19.0%	87	75.0%
Screening is not necessary if there are no signs and symptoms	Case	36	85.7%	5	11.9%	0	0.0%	0	0.0%
	Control	15	12.9%	21	18.1%	39	33.6%	39	33.6%
Afraid to take screening test	Case	15	35.7%	19	45.2%	7	16.7%	0	0.0%
	Control	20	17.2%	33	28.4%	46	39.7%	15	12.9%
Not free to talk about cancer screening	Case	26	61.9%	14	33.3%	0	0.0%	1	2.4%
	Control	53	45.7%	46	39.7%	10	8.6%	5	4.3%
Worried of cancer	Case	12	28.6%	18	42.9%	6	14.3%	5	11.9%
	Control	50	43.1%	55	47.4%	8	6.9%	1	0.9%

This study found that cases had significantly higher agreement levels to the health seeking behavior determinants compared to controls ($p < 0.05$). Chi square tests also indicated statistically significant difference in the distribution of the agreement levels between cases and controls (Table 4.15).

Table 4.16: Fishers exact results for determinants of health seeking behavior regarding uptake of screening

Variable	Study arm	Rate				Total	Fishers exact (df)	P value
		Strongly disagree	Disagree	Agree	Strongly agree			
Cancer screening provides a sense of control	Case	0	0	12	29	41	50.991(3)	<0.001
	Control	14	37	46	17	114		
It is worth doing cancer screening	Case	0	0	1	40	41	48.432(3)	<0.001
	Control	2	4	69	39	114		
Cancer screening detects pre-cancerous cells before symptoms	Case	1	1	3	36	41	43.583(3)	<0.001
	Control	25	46	9	34	114		
Cancer screening is very painful	Case	3	10	26	2	41	23.615(3)	<0.001
	Control	1	6	73	34	114		
It is embarrassing and unpleasant to do cancer screening	Case	2	1	25	13	41	27.719(3)	<0.001
	Control	2	3	22	87	114		
Screening is not necessary if there are no signs and symptoms	Case	36	5	0	0	41	79.817(3)	<0.001
	Control	15	21	39	39	114		
Afraid to take screening test	Case	15	19	7	0	41	17.735(3)	<0.001
	Control	20	33	46	15	114		
Not free to talk about cancer screening	Case	26	14	0	1	41	5.886(3)	0.033
	Control	53	46	10	5	114		
Worried of cancer	Case	12	18	6	5	41	13.614(3)	0.01
	Control	50	55	8	1	114		

The strength of association these determinants of health behaviors had with cancer screening uptake was done using Mantel-Haenszel test and found that only two determinants were statistically significant. They include: *'screening was not necessary if there were no signs and symptoms'* and *'afraid to take screening test'*. Believing that screening was not necessary if there were no signs and symptoms translated to 86.6% less likelihood of going for cancer screening. Similarly, being afraid to take cancer screening meant that there was a 66.7% less likelihood of going for cancer screening (Table 4.4).

4.5.3: Facilitators and barriers to screening behaviors

Facilitators of screening uptake among cases included encouragement by another (friend, relative, medic) 57.1% (n=24); death from cancer of someone known to respondents 31.0% (n=13); increased incidence/prevalence of cancer 31.0% (n=13); persons known to respondents to be suffering from cancer 2.4% (n=1); personal decision to know own cancer status 14.3% (n=6); and sighting signs and symptoms of cancer 14.3% (n=6).

Barriers of screening uptake among controls included lack of knowledge/awareness about cancer (screening, symptoms, and treatment) 46.6% (n=54); ignorance 14.7% (n=17); fear/ embarrassment while being screened or the possibility of positive results 23.3% (n=27); religion not allowing such procedures 4.3% (n=5); perceived lack of cancer symptoms (healthy body) 15.5% (n=18); lack of time/ procrastination 10.3% (n=12); lack of money 1.7% (n=2); and others not allowed by husband 0.9% (n=1).

4.5.4: Preventive behaviors to cancer development

Ninety-seven-point six percent (n=41) of cases and 14.7% (n=17) controls were of the opinion that cancer was a preventable disease. All cases and 86.2% (n=100) of controls reported that there was an effective preventive behavior that could significantly reduce the risk of cancer. Ninety-seven-point six percent and 63.8% of controls believed that cessation of smoking as a behavior could prevent cancer development. Balanced diet was also a factor that 95.2% of cases and 74.1% of controls believed that could prevent cancer. Avoiding direct sunlight as a cause of some types of cancer was another factor that 35.7% of cases and 19.8% of controls believed could prevent cancer. Sixty-seven-point two percent of controls believed that avoiding environmental pollutants could prevent cancer as compared to 7.1% of cases. Avoiding infections was also a factor that 50% of cases and 34.5% of controls believed could prevent cancer development. Minimal to no stress (cases-35.7%, controls-14.7%), normal body weight (cases-76.2%, controls-34.5%), moderate to no use of alcohol (cases-97.6%, controls-61.2%), physical activity (cases-83.3%, controls-59.5%), vaccinations such as HPV vaccine (cases-95.2%, controls-

45.7%) and avoiding risky sexual behavior (cases-52.4%, controls-31.9%) were other behaviors that participants believed could prevent cancer [Table 4.17].

Table 4.18: Preventive behaviors to cancer development

Lifestyle and environmental factors	Cases		Controls	
	Frequency	Percent	Frequency	Percent
Cessation of smoking	41	97.6%	74	63.8%
Diet e.g., minimal meat consumption, increased consumption of fresh fruits and vegetables, avoiding junk or processed foods	40	95.2%	86	74.1%
Avoiding direct exposure to sunlight	15	35.7%	23	19.8%
Avoiding environmental pollutants	3	7.1%	78	67.2%
Avoiding infections	21	50.0%	40	34.5%
Minimal to no stress	15	35.7%	17	14.7%
Normal body weight	32	76.2%	40	34.5%
Moderate to no use of alcohol	41	97.6%	71	61.2%
Physical activity	35	83.3%	69	59.5%
Vaccinations such as HPV vaccine	40	95.2%	53	45.7%
Avoiding risky sexual behavior	22	52.4%	37	31.9%
Others...avoiding tight underwear like bras, sucking of breasts, avoiding direct contact with chemicals, breast massage.	1	2.4%	1	0.9%

Ninety-seven-point six percent (n=41) of participants in the cases group agreed to the fact that cessation of smoking could prevent cancer compared to 63.8% (n=74) of controls. Diet such as minimal meat consumption was also a lifestyle factor that 95.2% (n=40) of cases believed could prevent cancer compared to 74.1% (n=86). Thirty-five-point seven percent (n=15) of cases also believed that avoiding direct exposure to sunlight could prevent certain types of cancers compared to 19.8% (n=23) of controls group. Avoiding environmental pollutants was another factor that both cases and controls believed could prevent cancer accounting for 7.1% (n=3) and 67.2% (n=78) respectively. Thirty-five-point seven percent (n=15) of cases believed that minimal to no stress could prevent cancer as compared to 14.7% (n=17) of controls group. Normal body weight as a lifestyle factor was a factor that was considered could as well prevent cancer among 76.2% (n=32) of cases and 34.5% (n=40) of controls group respectively. Ninety-seven-point six percent (n=41) of cases and 61.2% (n=71) of controls believed that moderate to no use of alcohol

was a factor that prevented the development of cancer. Eighty-three-point three percent (n=35) of cases higher than that of controls group of 59.5% (n=69) also believed that physical activity could prevent cancer development. Vaccinations such as HPV vaccine which prevent cervical cancer was supported by 95.2% (n=40) of cases and 45.7% (n=53) in the controls group. Others that were highlighted included: avoiding tight under-wears like bras, sucking of breasts, avoiding direct contact with chemicals and breast massage. This study also found that cases significantly reported that cancer was a preventable disease compared to controls ($p < 0.05$). Chi square tests also indicated significant difference in the distribution of the responses (p value = 0.009 and 0.014). Only one factor, '*avoiding infections*', was not significant (p 0.083) [Table 4.18].

Table 4.19: Fishers exact results for preventive behaviors to cancer development

Lifestyle and environmental factors	Cases		Controls		Fishers exact (df)	P value
	Frequency	%	Frequency	%		
Cessation of smoking	41	97.6%	74	63.8%	17.379(1)	<0.001
Diet e.g., minimal meat consumption, increased consumption of fresh fruits and vegetables, avoiding junk or processed foods	40	95.2%	86	74.1%	7.156(1)	0.007
Avoiding direct exposure to sunlight	15	35.7%	23	19.8%	4.141(1)	0.042
Avoiding environmental pollutants	3	7.1%	78	67.2%	10.152(1)	0.001
Avoiding infections	21	50.0%	40	34.5%	2.999(1)	0.083
Minimal to no stress	15	35.7%	17	14.7%	8.306(1)	0.004
Normal body weight	32	76.2%	40	34.5%	21.245(1)	<0.001
Moderate to no use of alcohol	41	97.6%	71	61.2%	19.370(1)	<0.001
Physical activity	35	83.3%	69	59.5%	7.490(1)	0.006
Vaccinations such as HPV vaccine	40	95.2%	53	45.7%	30.779(1)	<0.001
Avoiding risky sexual behavior	22	52.4%	37	31.9%	5.355(1)	0.021
Others...avoiding tight underwear like bras, sucking of breasts, avoiding direct contact with chemicals, breast massage.	1	2.4%	1	0.9%	3.00(1)	0.223

The strength of association between behaviors assessed and uptake of cancer screening were all significant except for ‘avoiding infections’ which had a p value of >0.05.

Cessation of smoking meant 95.6% less likelihood of taking up cancer screening, while for balanced diet, it was 83.7% less likelihood. Avoiding direct sunlight exposure translated to 55% less likelihood of cancer screening while for avoiding environmental pollutants, it was 83.8% less likelihood. There was 44.7% less likelihood of participants who believed that avoiding infections could prevent cancer to go for cancer screening. Minimal to no stress and normal body weight meant that there was 68.8% and 83.3% less likelihood of going for cancer screening, respectively. Moderate to no use of alcohol and physical activity were other behaviors that participants believed could prevent cancer and translated to 96.1% and 70% less likelihood of going for cancer screening respectively. There was a 56.9% less likelihood of going for cancer screening in believing that avoiding risky sexual behavior could prevent cancer development (Table 4.4).

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATION

5.0: Introduction

This chapter presents discussion and conclusion of the findings. In addition, it also presents the recommendations from the study.

5.1 Discussion

This was done according to the specific objectives of the study, which provided a firm basis upon which conclusions and recommendations were advanced in order to address the aforementioned factors.

5.1.1 Psychological factors associated with the uptake of cancer screening

Perceived susceptibility, severity and benefits as components of health belief model were statistically significant and increased the likelihood of being screened. Uptake of cancer screening depended on the person's perception of these critical areas such as if they regarded themselves susceptible to cancer, if they believed that cancer had potential serious consequences and finally if they believed that the barriers to screening were outweighed by its benefits, which were all confirmed in this study to increase the likelihood of being screened for cancer. A study by Dibarloo *et al.*, (2017) had similar findings and established that perceived severity of cancer and perceived benefits of screening were better predictors to breast self-examination practice. Most of the previous local studies concentrated on illness-specific rather than general factors. For instance, a study done at Jaramogi Oginga Odinga referral and teaching hospital (JOORTH) in Kisumu by Morema *et al.*, (2014) about determinants of cervical cancer screening uptake revealed that those who felt were not susceptible to cancer were more likely not to go for cancer screening. Perceiving cancer as a severe disease if left untreated could have been one of the major reasons that prompted the participants to have gone for cancer screening,

for instance, if a middle-aged woman knew that her grandmother suffered and died of breast cancer. And lastly, perceiving cancer screening as of benefit and that it could prevent the risks associated with cancer also increased the likelihood of cancer screening, for example, when a middle-aged woman recognize that yearly mammograms are effective in reducing deaths from breast cancer.

Mantel-Haenszel tests revealed that cancer screening was also associated with cognitive well-being, perceived autonomy and self-efficacy. It was also noted that an increase in perceived stress was associated with an increase in screening uptake. In this study, the use of cancer screening was positively associated with higher perceived stress which contradicted the findings of a study by Hajek *et al.*, (2017). Stress that was reported by the respondents in this study was contributed by the fact that some of the respondents had first degree relatives diagnosed with cancer in the past, or might have been exposed to carcinogens in their various places of work and felt at risk or could be experiencing signs and symptoms consistent with those of cancer.

On the other hand, cognitive well-being which determined how individuals evaluated their overall life was one of the factors that played a pivotal role as a facilitator and it was established that a majority of controls were extremely dissatisfied with life accounting for 27.6% as compared to cases at 9.5%. Extreme satisfaction with life was higher among cases accounting for 2.4% as compared to controls at 0.0%. This indicates that cognition (the ability to process information and make sound judgements) was important in health behaviors such as cancer screening uptake. Autonomy, which assessed the association of self-determination among cases and controls and the impact it had on screening uptake revealed that the mean score was higher among cases than among controls and that there was statistically significant difference between cases and controls ($p < 0.05$). This clearly indicated that empowering individuals to independently think and act on their own health issues had a positive impact in the general wellbeing. This was evidenced by the fact that cases showed higher levels of autonomy than the controls. In self-efficacy, which is the belief in one's abilities to change, exhibited statistically significant difference between cases and controls ($p < 0.05$) and the mean score being higher among cases (32.7) than

among controls (28.7). Self-confidence to execute a behavior or produce desired levels of performance that exercised influence over actions was important in ensuring humans made healthy moves such as cancer screening. These findings were consistent with a study done in Germany by Hajek *et al.*, (2017) which revealed that the use of cancer screening was positively associated with cognitive well-being, self-efficacy, perceived autonomy. Another study done in Iran by Sakhvidi *et al.*, (2015) found a statistically significant positive correlation between self-efficacy and cancer preventive behavior.

The following facilitators to screening uptake among cases came up during focus group discussions: (1) anxiety, (2) stress, (3) positive perception and attitude and (4) motivation; while barriers experienced by the control group were: (1) negative perception and fear, (2) negative attitude and (3) embarrassment. Issues such as embarrassment, fear of pelvic examination and misconceptions regarding cancer screening had also been identified as leading factors of not accessing screening services frequently in a study done by Jisa, (2021). Similar to my study findings, Ekane *et al.* (2015) also established that 8% of women also did not utilize screening services such as pap smear as it was reported to be a painful procedure which could have generated a negative perception and fear among the control group in this study.

5.1.2 Social factors associated with the uptake of cancer screening

Among the social factors assessed, social network, which examined loneliness level; and social exclusion were found to be associated with uptake of cancer screening. Loneliness can be either emotional or social. For emotional loneliness, controls showed a higher mean of 2.27 as compared to 1.24 of cases; while for social loneliness, cases had a higher loneliness mean of 3.20 compared to 2.19 of controls. In this study, the control group could have not taken seriously issues on cancer screening perhaps because of a feeling of emotional disconnectedness from people around them on a deep or meaningful level. During focus group discussions (FGD), a number of participants in the control group, especially women, complained of a negative connotation from the society whenever they could be seen having gone for cervical cancer screening. This could explain why they

shied off from being screened. For social loneliness which was higher among cases, though minimal but statistically significant, could be as a result of absence of social contacts in terms of who to consult during a health crisis, and resorted to visiting a health facility for a professional advice, hence ended up being screened for cancer. During the FGD meetings, the participants verbalized that they could not freely share their health issues amongst themselves in the community for fear of being seen as “different”, thus ended up seeing health facilities as a safe haven which could be an explanation why they participated in cancer screening at a higher level.

This study showed that social exclusion, which is the feeling that one does not belong to the society had higher mean scores among the controls compared to cases. Participants in the control group felt more worried of being left behind, had feelings of not belonging to society, being left out and excluded from society. In fact, lower social exclusion which was evident among the cases translated to a 1.785 times likelihood of going for cancer screening.

These findings were partly supported by a study done by Lagerlund *et al.*, (2014) on psychosocial factors and attendance at a population-based mammography screening program in a cohort of Swedish women which found that there was a statistically significant association between non-uptake of screening and living alone. In general, social network and support factors were positively related to mammography attendance. Another study in India by Wu *et al.*, (2012) also noted that care providers, family and friends positively influenced breast cancer screening. Social network may encourage greater screening uptake or other preventive health care measures, perhaps through perceived sense of responsibility towards one’s social group to take care of oneself or through social pressures to follow prevailing social norms around cancer screening.

Locally, there are no studies examining the social factors associated with cancer screening uptake. Focus group discussions also highlighted four main themes: (1) decision maker in the family; (2) influence from family and friends; (3) public campaigns; and (4) encouragement from family and friends, as some of the factors that either positively or

negatively influenced uptake of screening. Men being the main decision makers in some families could dictate when women in these families would seek which services and this could most likely be one of the reasons for low uptake. Influence from family or friends carried with it myths that negatively impacted the uptake. Some could term the procedures during screening as embarrassing and painful which probably could have discouraged many from taking up the services.

5.1.3 Behavioral factors associated with the uptake of cancer screening

In this study, behavioral factors encompassed participants' knowledge on cancer screening, determinants of cancer screening as a health behavior, facilitators and barriers to cancer screening, knowledge on preventive behaviors that predispose to or cause cancer and how they are associated with screening uptake.

All cases and 83.6% of controls had heard of cancer screening which was significantly different between cases and controls (p value =0.005), an indication that awareness of cancer screening as a service offered in the health facilities had an impact on uptake of such services. These findings were supported by a study done by Birhanu *et al.* (2012) in Ethiopia whose results found a correlation of awareness of cancer screening with its uptake. A similar study by George (2021) which sought to find out factors influencing utilization of cervical cancer screening services among women, also found that lower level of knowledge regarding cervical cancer screening was significantly associated with nonparticipation in screening services. Specific knowledge on cancer was a critical factor influencing cancer screening services and the adoption of healthy lifestyle practices that can prevent cancer. This indicated the importance of a support system from the healthcare professionals to make their clients aware of various methods of cancer screening. In addition, awareness programs and screening campaigns should also be organized for people who have less contact with health care facilities to improve their knowledge and practices on the prevention of cancer. As to whether the source of information on cancer screening influenced the uptake of screening, no statistical significance was found and therefore, no association could be established. Contrary to these findings, a study done by

Twinomujuni *et al.* (2016) found that women who had been recommended for screening by health workers were more likely to be screened. Victims of cancer who were known to cases were mostly relatives accounting for 28.7%; and acquaintances among the controls (23.4%). Knowledge on people who had or died of cancer was significantly different between cases and controls indicating that the anxiety that is attached to losing a relative to cancer could have informed their decision to go for cancer screening. Ninety-five-point two percent of cases mainly cited early detection of cancer as the main reason for screening. Controls on the other hand cited some of the main reasons for screening as checking for infections (30.2%) and early detection of cancer (31.9%). Noteworthy, 35.3% of the controls did not know the importance of cancer screening. For this reason, cancer screening was not significantly different between cases and controls and there was no indication that knowledge on reasons for cancer screening could influence its uptake. Participants in this study stated different situations in the human life cycle concerning the appropriate time for cancer screening which showed a knowledge gap. The reasons stated were: upon starting unprotected sex, in sickness or during treatment, anytime, when a close relative is suffering from cancer or is dead, from childhood, from puberty, early before any sickness, adulthood, from 3 years of age and only if recommended by the healthcare worker.

Determinants of health-seeking behaviors which were statistically significant were “screening is not necessary if there are no signs and symptoms; and being afraid of being screened”. In essence, it means that the belief that cancer screening is not necessary if there are no signs and symptoms and also fear of being screened are likely to hinder its uptake. This is also supported by similar findings of knowledge on the signs and symptoms as a major determinant for being screened for cervical cancer in a study by Morema *et al.*, (2014) at JOORTH, Kisumu. Barasa *et al.*, (2017) also noted in their study on improving access to cancer testing and treatment in Kenya that poor health-seeking behaviors among the population were a barrier to access cancer screening.

Facilitators to screening uptake that were raised by the participants included encouragement by another (friend, relative, medic), death from cancer of someone known

to participants, increased incidence/prevalence of cancer, another person known to the participants to be suffering from cancer, personal decision to know own cancer status and sighting signs and symptoms of cancer such as bleeding. A study by Wong *et al.*, (2013) noted that having a family member with colorectal cancer increased the likelihood of the family members going for cancer screening. Barriers to screening uptake raised among controls included lack of knowledge/awareness about cancer (screening, symptoms, and treatment), ignorance, fear/ embarrassment while being screened or the possibility of positive results, religion not allowing such procedures, perceived lack of cancer symptoms (healthy body), lack of time/ procrastination, lack of money and others not allowed by their spouses. Part of the findings were in congruent with a study done by Ndejjo *et al.*, (2016) which noted that the major barriers to cervical cancer screening that the respondents reported were perception-related including having no signs and symptoms of the disease, thought of not being at risk, lack of time and fear of test outcomes.

Knowledge on preventive behaviors such as cessation of smoking; diet such as minimal meat consumption; avoiding direct exposure to sunlight; avoiding environmental pollutants; avoiding infections; minimal or no stress; normal body weight; moderate to no use of alcohol; physical activity; vaccinations such as HPV vaccine and avoiding risky sexual behavior were assessed. In this study, cases significantly believed that the above behaviors can effectively prevent cancer compared to controls. This study found that cases significantly believed that cancer is a preventable disease compared to controls ($p < 0.05$) which could mean that knowledge played a major role in health seeking behavior (cancer screening uptake). A study done by Ng'ang'a *et al.*, (2018) on predictors of cervical cancer screening among Kenyan women had similar findings and reported that women who engaged in binge drinking, high sugar consumption and insufficient physical activity and who knew these were risk factors to cancer development were more likely to be screened.

5.1.4 Triangulation

This study was undertaken among the residents of Masinga subcounty to determine the factors associated with uptake of cancer screening using a mixed method research design.

Quantitative data utilized case-control study design while qualitative data employed phenomenological study design. A mixed study design was used because of its ability to collect rich and comprehensive data that permits a more complete and synergistic data utilization for the purpose of this particular study. For qualitative data, the focus was on patients who had been screened for cancer who formed cases group, and those that never got screened for cancer who formed the control arm of the study participants, all of whom were sampled systematically and later interviewed by the researcher. On the other hand, participants in FGDs were purposively selected (cases and controls) and were used to generate qualitative data with regard to perception and experiences that influenced their decision to or not to go for cancer screening.

Subsequently, data analysis was completed separately for the qualitative and quantitative parts of the study. The final product represented triangulation in that it represented analysis of data from two methods, for instance, themes generated from qualitative data were a mirror reflection of what qualitative data findings established. An example of this is subtheme “*Past encounters/experiences with cancer*”, which included stress, that in this case positively impacted the decision to uptake such services. This type of stress could be due to signs and symptoms of cancer that individuals experienced, cancer in the family and long-term engagement in dangerous behaviors such as smoking. A number of participants reiterated that this type of stress prompted them to go for screening, which can be triangulated with *perceived susceptibility* in HBM.

With these findings, the null hypotheses were rejected in favor of alternative hypotheses:

1. There was significant relationship between psychological factors and the uptake of cancer screening.
2. There was significant relationship between social factors and the uptake of cancer screening.
3. There was significant relationship between behavioral factors and the uptake of cancer screening.

5.2: Conclusion

Notably, from the findings of this study, psychological factors such as health belief model constructs, cognitive wellbeing, perceived autonomy and self-efficacy were associated with the uptake of cancer screening. An increase in perceived stress was also associated with an increase in screening uptake. While for social factors, social network and social exclusion were found to be associated with uptake of screening. On behavioral factors, cases significantly believed that preventive behaviors can effectively prevent cancer compared to controls.

People often face significant barriers coupled with inadequate knowledge that result in late presentation, hence increased morbidity and mortality. The ultimate goal of early detection and prevention is to eliminate, reverse or reduce one's risk of developing or dying of cancer emanating from these barriers and knowledge deficit. The findings of this study can therefore be used to develop specific interventions that are tailored to meet the unique sociodemographic needs of the locality. This requires an extensive understanding of the population and risk-based associations with cancer. For instance, knowledge on human behavior presents several avenues for targeted and sustained intervention to ensure a significant reduction in cancer morbidity and mortality; psychosocial experiences on the other hand are known to increase the risk of some cancers yet people are often quite resistant to change.

Even though cancer diagnosis and treatment have substantially progressed into precision medicine initiatives, cancer screening and prevention have not caught up with the advances. Nevertheless, early detection and prevention of cancer should adopt techniques that fit in precision prevention initiatives touching on the aforementioned barriers. Understanding general psychological, social and behavioral factors that are associated with cancer screening uptake might be fruitful in addressing issues of individuals at high risk of cancer development.

5.3: Recommendations

There is need for concerted efforts by both the government of Kenya and the private entities to ensure the following:

1. Psychological factors- well designed health education programs on cancer and benefits of screening aimed at scaling up awareness and perception; multimedia approach that utilize audio-visual and pictorials on cancer to increase knowledge on cancer prevention; strengthen health support groups within communities; strengthen public campaigns on cancer screening and prevention such as medical outreaches; providing information through IEC (information, education and communication) materials and giving clear explanation about screening procedure can help in reducing anticipated psychological distress and embarrassment.
2. Social factors- Strengthen health support groups within communities; make known to patients, through community health volunteers (CHVs) and other community leaders, patient rights and when to seek help (health advocacy).
3. Behavioral factors- increase public health awareness and education to dispel myths surrounding cancer screening and prevention; integrate cancer screening issues into the normal health programs such as family planning and HIV services. Incorporating behavioral research findings in policy-making can improve attempts to decrease tangible behaviors such as smoking, viral exposure and controllable environmental exposures. It can also inform attempts to improve on the clinical trial enrollments.

Targeted studies among other regions or communities are also recommended so as to make comparisons on factors associated with low or non-uptake of cancer screening since Kenya is a multicultural society. In this way, community specific barriers to cancer screening could be identified for appropriate interventions to scale up screening.

Effective cancer screening and prevention options can be developed to address cancer burden in a resource-constrained environment like Kenya. An in-depth analysis of

effective and successful interventions and policies being implemented in countries facing similar challenges would provide valuable lessons to Kenya's health sector and government and non-government policymakers.

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APPENDICES

Appendix I: Informed Consent

Title of the study: Psychological, social and behavioral factors associated with the uptake of screening services for early detection of cancer in Masinga sub county, Machakos county, Kenya.

Investigator: Bornventure Paul Odiwuor Omolo

Phone Number: +254726257901,

School of Nursing,

Jomo Kenyatta University of Agriculture and Technology (JKUAT),

P.O BOX 6200, Nairobi.

Introduction and purpose of the study: I am a nursing student at JKUAT, pursuing a Master degree in oncology and palliative care nursing. The purpose of this study is to determine psychosocial and behavioral factors associated with the uptake of screening services of cancer in Masinga sub-county. I am conducting this study in partial fulfillment of the requirements for the award of degree of Master of Science in Nursing (Oncology and palliative care Nursing) of Jomo Kenyatta University of Agriculture and Technology. I invite you to participate in this study and the following information is important to help you make an informed decision about participation.

Potential benefits of the study: The information you give me will yield a better understanding of the nature and extent of how health behaviors and psychosocial experiences are associated with late presentation of cancer and will inform policymaking personnel on designing effective interventions in both public health and in the healthcare setting. Individuals who participate in this study may also have a better understanding of cancer screening and its benefits, hence enable individuals to experience and increase their overall sense of well-being.

Potential risks: There are no known risks involved. However approximately 30 mins of your time will be needed for this interview.

Participation: Participation in this study is voluntary. Confidentiality will be maintained and results will only be used for its intended purpose. Refusal to participate or withdrawal from the study will not result in any penalty or consequences. You are free to ask questions or seek clarification at any point during the study.

Confidentiality: All information taken from the study will be coded to protect each subject's name. No names or other identifying information will be used when discussing or reporting data. Once audio recordings are coded and transcribed, they will be destroyed.

Compensation: There is no monetary compensation for participating in the study.

Voluntary Participation and Authorization: Your decision to participate in this study is completely voluntary. If you decide to not participate in this study, it will not affect the care, services or benefits to which you are entitled.

Withdrawal from the Study and/or Withdrawal of Authorization: If you decide to participate in this study, you may withdraw from your participation at any time without penalty.

Cost/Reimbursements: There is no cost for participating in this study. Any expenses resulting from participation in this study will not be reimbursed by the investigator.

For more information or clarification, you can contact me or my supervisors:

1. Prof. Sherry Oluchina, PHD, MScN, BScN
Senior lecturer,
JKUAT.

2. Dr. Serah Kaggia, MBChB, MMed Path,
Senior lecturer,
JKUAT.

Consent:

I (participant number) agree to participate in this study. My participation in this study is voluntary and I have been reassured that my personal details and the information I will disclose will be kept confidential. I confirm that all my concerns about my participation in the study have been adequately addressed by the investigator and the investigator has asked me questions to ascertain my comprehension of the information provided.

Participant's signature

Date

I confirm that I have clearly explained the content of the study to the participant and he/she has voluntarily agreed to participate without coercion.

Investigator's signature.....

Date.....

Appendix II: Questionnaire

Section A: Socio-demographic factors

1. What _____ is _____ your age?.....
2. What is your sex? []Male []Female
3. What is your marital status? []Married []Single []Divorced []Separated []Widowed
4. What is your level of Education? []None []Primary school []Secondary school []College or University
5. What is your religion? []Christian []Muslim []Hindu []Other.....
6. What is your occupation? []Self-employed []Skilled worker []Unemployed

Section B: Psychological factors

7. How best do you agree to the following components?

	Strongly agree- 1	Agree-2	Do not agree-3
I am at risk of developing cancer (Perceived susceptibility)			
Cancer is a serious illness and it can lead to death (Perceived severity)			
Screening can save my life (Perceived benefits)			

8. Satisfaction with Life Scale (SWLS), (Pavot and Diener, 1993) measuring cognitive well-being (CWB). Below are five statements that you may agree or disagree with. Using the 1 - 7 scale, indicate your agreement with each item.

	Strongly disagree [1]	Disagree [2]	Slightly disagree [3]	Neither agree nor disagree [4]	Slightly agree [5]	Agree [6]	Strongly agree [7]
1 In most ways my life is close to my ideal							
2 The conditions of my life are excellent							
3 I am satisfied with my life.							
4 So far, I have gotten the important things I want in life.							
5 If I could live my life over, I would change almost nothing.							

Scoring: 31 - 35 Extremely satisfied, 26 - 30 Satisfied, 21 - 25 Slightly satisfied, 20 Neutral, 15 - 19 Slightly dissatisfied, 10 - 14 Dissatisfied, 5 - 9 Extremely dissatisfied.

9. A 4-item Perceived Stress Scale (PSS), (Cohen *et al.*, 1988). Using the 1 - 4 scale, indicate your agreement with each item.

	Never [0]	Almost [1]	Sometimes [2]	Fairly Often [3]	Very Often [4]
1	In the last month, how often have you felt that you were unable to control the important things in your life?				
2	In the last month, how often have you felt confident about your ability to handle your personal problems?				
3	In the last month, how often have you felt that things were going your way?				
4	In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?				

Scoring: PSS scores are obtained by reversing responses (e.g., 0=4, 1=3, 2=2, 3=1 & 4=0) to the two positively stated items (items 2 and 3) and then summing across all scale items. For the negatively stated items (1 and 4), score them as they are (i.e. 0=0, 1=1, 2=2, 3=3 & 4=4).

10. The Self-Determination Scale (SDS), (Sheldon *et al.*, 1996) - [awareness of oneself and perceived choice]. *Instructions:* Please read the pairs of statements, one pair at a time, and think about which statement within the pair seems truer to you at this point in your life. Indicate the degree to which statement A feels true, relative to the degree that Statement B feels true, on the 5-point scale shown after each pair of statements. For instance, if statement A feels completely true and statement B feels completely untrue, the appropriate response would be 1. If the two statements are equally true, the appropriate response would be a 3.

		Only feels true	A	1	2	3	4	5	Only feels true	B
1	A. I always feel like I choose the things I do. B. I sometimes feel that it's not really me choosing the things I do.									
2	A. My emotions sometimes seem alien to me. B. My emotions always seem to belong to me.									
3	A. I choose to do what I have to do. B. I do what I have to, but I don't feel like it is really my choice.									
4	A. I feel that I am rarely myself. B. I feel like I am always completely myself.									
5	A. I do what I do because it interests me. B. I do what I do because I have to.									
6	A. When I accomplish something, I often feel it wasn't really me who did it. B. When I accomplish something, I always feel it's me who did it.									
7	A. I am free to do whatever I decide to do. B. What I do is often not what I'd choose to do.									
8	A. My body sometimes feels like a stranger to me. B. My body always feels like me.									
9	A. I feel pretty free to do whatever I choose to. B. I often do things that I don't choose to do.									
10	A. Sometimes I look into the mirror and see a stranger. B. When I look into the mirror, I see myself.									

Scoring Information for the SDS: First, items 1, 3, 5, 7, 9 need to be reverse scored so that higher scores on every item will indicate a higher level of self-determination. To reverse score an item, subtract the item response from 6 and use that as the item score. Then, calculate the scores for the awareness-of-self subscale and the perceived-choice subscale by averaging the item scores for the 5 items within each subscale. The subscales are:

Awareness of self: 2, 4, 6, 8, 10

Perceived choice: 1, 3, 5, 7, 9

11. General Self-Efficacy Scale, (Schwarzer & Jerusalem, 1995).

		Not all [1]	at true	Hardly true [2]	Moderately true [3]	Exactly true [4]
1	I can always manage to solve difficult problems if I try hard enough.					
2	If someone opposes me, I can find the means and ways to get what I want.					
3	It is easy for me to stick to my aims and accomplish my goals.					
4	I am confident that I could deal efficiently with unexpected events.					
5	Thanks to my resourcefulness, I know how to handle unforeseen situations.					
6	I can solve most problems if I invest the necessary effort.					
7	I can remain calm when facing difficulties because I can rely on my coping abilities.					
8	When I am confronted with a problem, I can usually find several solutions.					
9	If I am in trouble, I can usually think of a solution.					
10	I can usually handle whatever comes my way.					

Scoring: Add up all responses to a sum score. The range is from 10 to 40 points. A higher score represents a higher self-efficacy.

12. Do your values and beliefs hinder you from going for cancer screening? []Yes

[]No

If yes, what are some of them?

.....

.....

.....

.....

Section B: Social factors

13. De Jong Gierveld Loneliness Scale (Emotional [1, 4 and 6] and social [2, 3 and 5] loneliness). Using the 1 - 5 scale, indicate your agreement with each item.

	None of the time (1)	Rarely (2)	Some of the time (3)	Often (4)	All of the time (5)
1	I experience a general sense of emptiness				
2	There are plenty of people I can rely on when I have problems				
3	There are many people I can trust completely				
4	I miss having people around me				
5	There are enough people I feel close to				
6	I often feel rejected				

Scoring: Total *loneliness score* can be categorized into four levels: *not lonely* (score 0, 1 or 2), *moderately lonely* (score 3 through 8), *severely lonely* (score 9 or 10), and *very severe loneliness* (score 11).

14. Perceived social exclusion scale, (Bude & Lantermann, 2006).

	Strongly Agree [1]	Agree [2]	Disagree [3]	Strongly disagree [4]
1	I am worried to be left behind			
2	I feel like I do not really belong to society			
3	I feel that I am left out			
4	I feel excluded from society			

Scoring: Higher values reflect higher perceived social exclusion.

Section C: Behavioral factors

15. Have you heard of cancer screening? []Yes []No

16. If yes, how did you learn about cancer screening? []Media []Health practitioner recommendation []Friends/relatives []Others
.....

17. Do you know of anyone who has or died of cancer? []Yes []No.
If yes, who? Relative, friend etc.....

18. Why is cancer screening done? []For early detection of cancer []Check for infections
[]Don't know

19. Have you ever been screened for cancer (Male- prostate, esophageal and colorectal; Female- Breast, cervical and esophageal) in the past 1-3 years?

a. []Yes,

i. Which type of screening?

.....
.....

ii. What motivated you to go for cancer screening (facilitators)?

.....
.....
.....

b. []No,

i. What prevented you from being screened for cancer (barriers)?

.....
.....
.....

20. When should someone go for screening?

.....
.....
.....

21. Use a scale of 1-4 indicating your level of agreement for the following statements about screening.

4 – Strongly agree, 3 - Agree, 2 - Disagree, 1 –Strongly Disagree.

	4	3	2	1
Cancer screening gives me a sense of control				
It is worth doing cancer screening				
Cancer screening detects pre-cancerous cells before symptoms				
Cancer screening is very painful				
It is embarrassing and unpleasant to do cancer screening				
Screening is not necessary if there are no signs and symptoms				
I am afraid to take screening test				
I am not free to talk about cancer screening				
I am worried of cancer				

22. Is cancer a preventable disease? []Yes []No

23. Is there an effective preventive behavior that can significantly reduce the risk of this disease? []Yes []No

If yes, which preventive behavior do you know (tick as appropriate)?

Lifestyle and environmental factors

- Cessation of smoking
- Diet e.g. minimal meat consumption, increased consumption of fresh fruits and vegetables, avoiding junk or processed foods
- Avoiding direct exposure to sunlight
- Avoiding environmental pollutants
- Avoiding infections
- Minimal to no stress
- Normal body weight
- Moderate to no use of alcohol
- Physical activity
- Vaccinations such as HPV vaccine
- Avoiding risky sexual behavior
- Others.....

Focus group discussion (FGD) guide

1. How familiar are you with cancer screening? How did you learn about it?
2. What made you to go for cancer screening (cases)?
 - a) Individual factors
 - b) Family factors
 - c) Community/societal factors?
3. What made it difficult for you to go for cancer screening (control)?
 - a) Individual factors
 - b) Family factors
 - c) Community/societal factors?
4. Which behaviors can contribute to/increase the risk of developing cancer?
5. How has your social life influenced or hindered your decision to go for cancer screening?

Kiambatisho III: Hati ya kufahamishwa

Kichwa cha utafiti: Sababu za kisaikolojia na tabia zinazohusiana na utaftaji wa huduma za uchunguzi wa kugundua saratani mapema katika kaunti ndogo ya Masinga, kaunti ya Machakos, Kenya.

Mpelelezi: Bornventure Paul Odiwuor Omolo

Nambari ya Simu: +254726257901

Shule ya Uuguzi

Chuo Kikuu cha Kilimo na Teknolojia cha Jomo Kenyatta (JKUAT)

P. O BOX 6200, Nairobi.

Utangulizi na madhumuni ya utafiti: Mimi ni mwanafunzi wa uuguzi huko JKUAT, wa shahada ya uzamili katika masomo ya saratani ya uuguzi. Madhumuni ya utafiti huu ni kuamua sababu za kisaikolojia na tabia zinazohusiana na utaftaji wa huduma za uchunguzi wa saratani katika kaunti ndogo ya Masinga. Ninafanya utafiti huu kwa kutimiza matakwa ya tuzo ya shahada ya uzamili ya Uuguzi wa Chuo Kikuu cha Kilimo na Teknolojia cha Jomo Kenyatta. Ninakualika kushiriki katika utafiti huu na habari ifuatayo ni muhimu kukusaidia kufanya uamuzi sahihi juu ya ushiriki.

Faida zinazowezekana za utafiti: Habari unayonipa itatoa uelewa wa asili na kiwango cha jinsi tabia ya kiafya na uzoefu wa kisaikolojia zinavyohusishwa na uwasilishaji wa saratani na itawajulisha wafanyikazi wa sera kubuni sheria katika afya ya umma na katika mazingira ya utunzaji wa afya. Watu ambao wanashiriki katika utafiti huu wanaweza pia kuwa na uelewa mzuri wa uchunguzi wa saratani na faida zake, kwa hivyo kuwawezesha watu kupata uzoefu na kuongeza hali yao ya jumla ya ustawi.

Hatari zinazowezekana: Hakuna hatari zinazojulikana zinazohusika. Walakini takriban dakika 30 za wakati wako zitahitajika kwa mahojiano haya.

Ushiriki: Ushiriki katika utafiti huu ni wa hiari. Usiri utatunzwa na matokeo yatumika tu kwa madhumuni yake yaliyokusudiwa. Kukataa kushiriki au kujiondoa kwenye utafiti

hautasababisha adhabu yoyote au matokeo. Uko huru kuuliza maswali au kutafuta ufafanuzi wakati wowote wa utafiti.

Usiri: Habari yote iliyochukuliwa kutoka kwa utafiti itaorodheshwa ili kulinda jina la kila somo. Hakuna majina au habari nyingine ya kutambua itatumika wakati wa kujadili au kuripoti. Mara rekodi za sauti zinapowekwa alama na kuandikwa, zitaharibiwa.

Fidia: Hakuna fidia ya pesa kwa kushiriki katika utafiti huu.

Ushiriki wa hiari na Idhini: Uamuzi wako wa kushiriki katika utafiti huu ni wa hiari kabisa. Ukiamua kutoshiriki katika utafiti huu, haitaathiri utunzaji, huduma au faida ambazo unastahili.

Kujiondoa kutoka kwa Utafiti na / au Kuondolewa kwa idhini: Ukiamua kushiriki katika utafiti huu, unaweza kujiondoa kutoka kwa ushiriki wako wakati wowote bila adhabu.

Gharama / Malipo: Hakuna gharama ya kushiriki katika utafiti huu. Gharama yoyote inayotokana na kushiriki katika utafiti huu haitalipwa na mpelelezi.

Kwa habari zaidi au ufafanuzi, unaweza kuwasiliana nami au wasimamizi wangu

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Mhadhiri mwandamizi

JKUAT.

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Mhadhiri mwandamizi

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Idhini:

Mimi (nambari ya mshiriki) Nakubali kushiri katika utafiti huu na nimeelezwa kusudi, faida na hatari ya utafiti huu. Naelewa ya kwamba Ushiriki katika

utafiti huu ni kwa hiari na uamuzi wa kushiri au kutokushiriki hakutaathiri kukaa kwa hospitali hii. Nimehakikishiwa ya kwamba maelezo ya kibinafsi na habari nitakayo peana itawekwa kwa Usiri. Nadhibitisha ya kwamba wasiwasi kuhusu kushiriki kwenye utafiti huu umeshighulikiwa na mchunguzi na mchunguzi ameniuliza maswali kujua ufahamu wa habari zilizotolewa.

Sahihi ya mshiriki

Tarehe

Nadhibitisha ya kwamba nimeeleza maudhui ya utafiti kwa mshiriki na amekubali kushiriki kwa utafiti huu kwa hiari bila kulazimishwa.

Sahihi ya Mchunguzi

Tarehe

Kiambatisho 5: Dodoso

Sehemu A: Sababu za kijamii na idadi ya watu

1. Umri wako ni gani?.....
2. Jinsia yako ni gani? Mwanaume [] Mwanamke []
3. Je! Hali yako ya ndoa ni gani? Kuolewa [] Asieolewa [] Kuachana [] Aliyetengwa [] Mjane []
4. Kiwango chako cha elimu ni gani? Hakuna [] Shule ya msingi [] Shule ya Sekondari Chuo au Chuo Kikuu []
5. Dini yako ni gani? Mkristo [] Mwislamu [] Mhindi [] Nyingine []
6. Kazi yako ni gani? Kazi binafsi [] Mfanyikazi mwenye ujuzi [] Asiye na kazi []

Sehemu B: Sababu za kisaikolojia

7. Je! Unakubali vipi sehemu zifuatazo?

	Kukubaliana sana-1	Kukubaliana-2	Usikubali-3
(Uwezo wa kupatikana) Niko kwenye hatari ya kupata saratani			
(Ukali uliopatikana) Saratani ni ugonjwa mbaya na inaweza kusababisha kifo			
(Faida zilizopatikana) Uchunguzi unaweza kuokoa maisha yangu			

8. Kuridhika na Kiwango cha Maisha (SWLS), (Pavot na Diener, 1993) kupima ustawi wa utambuzi (CWB. Chini ni taarifa tano ambazo unaweza kukubaliana au kutokubaliana nazo. Kutumia kiwango cha 1 - 7, onyesha makubaliano yako na kila kitu.

	Sikubali kabisa [1]	Kutokubaliana [2]	Sikubaliani kidogo [3]	Sikubaliani wala kutokubaliana [4]	Kubali kidogo [5]	Kukubaliana [6]	Kukubaliana sana [7]
1 Kwa njia nyingi maisha yangu ni karibu na bora yangu							
2 Masharti ya maisha yangu ni bora							
3 Nimeridhika na maisha yangu.							
4 Kufikia sasa, nimepata vitu muhimu ninavyotaka maishani.							
5 Kama ningeweza kuishi maisha yangu, ningebadilika karibu chochote.							

Alama 31 - 35 ameridhika sana, 26 - 30 Ameridhika, 21 - 25 Ameridhika kidogo, 20 Neutral, 15 - 19 Hajaridhika, 10 - 14 Hajaridhika, 5 - 9 Hajaridhika sana.

9. Kiwango 4 cha mafadhaiko (PSS), (Cohen *et al.*, 1988. Kutumia kiwango cha 1 - 4, onyesha makubaliano yako na kila kitu.

	Kamwe [0	Karibu [1	Wakati mwingine [2	Kwa haki Mara nyingi [3	Mara nyingi sana [4
1	Katika mwezi uliopita, ni mara ngapi umehisi kuwa haukuweza kudhibiti vitu muhimu katika maisha yako?				
2	Katika mwezi uliopita, ni mara ngapi umejisikia ujasiri juu ya uwezo wako wa kushughulikia shida zako za kibinafsi?				
3	Katika mwezi uliopita, ni mara ngapi umehisi kuwa mambo yalikuwa yakienda sawa?				
4	Katika mwezi uliopita, ni mara ngapi umehisi shida zilikuwa zikiongezeka sana hivi kwamba haukuweza kuzishinda?				

Alama Alama za PSS hupatikana kwa majibu ya kurudisha nyuma (e. g. 0 = 4, 1 = 3, 2 = 2, 3 = 1 & 4 = 0) kwa vitu vinne vilivyoainishwa (2 & 3) na kisha muhtasari wa vitu vyote vya kiwango.

10. Kiwango cha Kujiamulia (SDS), (Sheldon *et al.*, 1996) - [ufahamu wa wewe mwenyewe na chaguo linalofahamika. *Maagizo*: Tafadhali soma jozi ya taarifa, jozi moja kwa wakati, na ufikirie ni taarifa gani ndani ya jozi hiyo inaonekana kuwa nzuri kwako wakati huu katika maisha yako. Onyesha kiwango ambacho taarifa A inahisi kweli, kulingana na kiwango ambacho Taarifa B inahisi kweli, kwa kiwango cha alama 5 iliyoonyeshwa baada ya kila jozi ya taarifa. Kwa mfano, ikiwa taarifa A inahisi kweli kabisa na taarifa B inahisi sio kweli kabisa, majibu

sahihi yatakuwa 1. Ikiwa taarifa hizo mbili ni kweli sawa, majibu sahihi yatakuwa
3.

		A tu ndio	1	2	3	4	5	B tu ndio
		nahisi ni						nahisi ni
		kweli						kweli
1	A. Mimi huhisi kila wakati kama ninachagua vitu ninavyofanya. B. Wakati mwingine mimi huhisi kuwa sio mimi kuchagua vitu ninavyofanya.							
2	A. Mhemko yangu wakati mwingine huonekana kama mgeni kwangu. B. Mhemko wangu daima huonekana kuwa wangu.							
3	A. Ninachagua kufanya kile ninachostahili kufanya. B. Ninafanya kile ninachohitaji, lakini sijisikii kama ni chaguo langu kweli.							
4	A. Ninahisi kuwa mimi ni nadra sana mwenyewe. B. Ninahisi kama mimi ni mwenyewe kila wakati.							
5	A. Ninafanya kile ninachofanya kwa sababu kinanipendeza. B. Ninafanya kile ninachofanya kwa sababu lazima.							
6	A. Wakati ninakamilisha kitu, mara nyingi nahisi sio mimi ndiye aliyefanya hivyo. B. Wakati ninakamilisha kitu, mimi huhisi kila wakati ni mimi ndiye aliyefanya.							
7	A. Niko huru kufanya chochote ninachoamua kufanya. B. Ninachofanya mara nyingi sio kile ambacho ningechagua kufanya.							
8	A. Mwili wangu wakati mwingine huhisi kama mgeni kwangu. B. Mwili wangu huhisi kama mimi.							
9	A. Ninahisi huru kufanya chochote ninachochagua. B. Mara nyingi mimi hufanya vitu ambavyo sikuchagua kufanya.							
10	A. Wakati mwingine mimi huangalia kwenye kioo na kumwona mgeni. B. Ninapoangalia kwenye kioo, ninajiona.							

Alama ya Habari kwa SDS Kwanza, vitu 1, 3, 5, 7, 9 zinahitaji kubadilishwa alama ili alama za juu kwenye kila kitu zionyeshe kiwango cha juu cha kujiamua. Ili kubadilisha alama ya kitu, toa majibu ya bidhaa kutoka 6 na utumie kama alama ya bidhaa. Halafu, mahesabu ya alama za Uhamasishaji wa Ubinafsi mdogo na upeanaji wa Choice uliopatikana kwa kuongeza alama ya bidhaa kwa vitu 5 kati ya kila subscale. Msaada ni

Uhamasishaji wa Ubinafsi: 2, 4, 6, 8, 10

Chaguo lililopokelewa: 1, 3, 5, 7, 9

11. Kiwango cha ufanisi wa jumla (Schwarzer na Yerusalemu, 1995).

	Sio kweli kabisa [1	Si kweli kabisa [2	Kweli kabisa [3	Kweli kabisa [4
1	Ninaweza kila wakati kutatua shida ngumu ikiwa nitajaribu sana vya kutosha.			
2	Ikiwa mtu ananipinga, naweza kupata njia na njia za kupata kile ninachotaka.			
3	Ni rahisi kwangu kushikamana na malengo yangu na kutimiza malengo yangu.			
4	Nina hakika kuwa ningeweza kushughulika vizuri na matukio yasiyotarajiwa.			
5	Shukrani kwa ustadi wangu, najua jinsi ya kushughulikia hali zisizotarajiwa.			
6	Ninaweza kutatua shida nyingi ikiwa nitawekeza juhudi zinazohitajika.			
7	Ninaweza kukaa utulivu wakati unakabiliwa na shida kwa sababu ninaweza kutegemea uwezo wangu wa kukabiliana.			
8	Wakati ninakabiliwa na shida, kawaida ninaweza kupata suluhisho kadhaa.			
9	Ikiwa nina shida, kawaida ninaweza kufikiria suluhisho.			
10	Kawaida naweza kushughulikia chochote kinachokuja.			

Alama Ongeza majibu yote kwa alama ya jumla. Masafa ni kutoka kwa alama 10 hadi 40.

Alama ya juu inawakilisha ufanisi wa hali ya juu.

12. Maadili na imani zako hukuzuia kuenda kwa uchunguzi wa saratani? Ndio []

Hapana []

Ikiwa ndio, ni nini baadhi yao?

.....
.....
.....
.....

Sehemu B: Sababu za kijamii

13. De Jong Gierveld kiwango cha Upweke (Kihemko [1, 4 na 6] na upweke wa kijamii [2, 3 na 5]. Kutumia kiwango cha 1 - 5, onyesha makubaliano yako na kila kitu.

	Hakuna wakati (1	Mara chache (2	Wakati fulani (3	Mara nyingi (4	Wakati wote (5
1	Ninapata hisia ya jumla ya utupu				
2	Kuna watu wengi ambao ninaweza kutegemea wakati nina shida				
3	Kuna watu wengi ambao ninaweza kuwaamini kabisa				
4	Ninakosa kuwa na watu karibu				
5	Kuna watu wa kutosha ambao ninahisi karibu nao				
6	Mara nyingi mimi huhisi kukataliwa				

Alama Jumla *alama ya upweke* inaweza kuwekwa katika viwango vinne *sio upweke* alama 0, 1 au 2 *upweke kiasi* alama 3 hadi 8 *upweke sana* alama 9 au 10), na *upweke mkubwa sana* alama 11.

14. Kiwango cha kutengwa kwa kijamii, (Bude Lantermann, 2006).

	Kwa nguvu Kukubaliana [1]	Kukubaliana [2]	Kutokubaliana [3]	Sikubali kabisa [4]
1	Nina wasiwasi kuachwa nyuma			
2	Ninahisi kama mimi si wa jamii			
3	Ninahisi kuwa nimebaki nje			
4	Ninahisi kutengwa na jamii			

Alama Thamani za juu zinaonyesha kutengwa kwa hali ya juu kwa jamii.

Sehemu C: Sababu za tabia

15. Je! Umesikia juu ya uchunguzi wa saratani? Ndio [] Hapana []

16. Ikiwa ndio, umejifunzaje juu ya uchunguzi wa saratani? Mtandao [] Pendekezo la mtaalamu wa afya [] Marafiki / jamaa [] Wengine..... []

17. Je! Unajua mtu yeyote ambaye amekufa au alikufa na saratani? Ndio [] Hapana []

18. Ikiwa ndio, nani? Jamaa, Rafiki, nk.
.....

19. Kwa nini uchunguzi wa saratani unafanywa? Kwa kugundua saratani mapema [] Angalia maambukizo [] Sijui []

20. Je! Umewahi kupimwa saratani yoyote katika kipindi cha mwaka moja hadi mitatu iliyopita (1-3)?

a. Ndio

i. Ni aina gani ya uchunguzi?

.....
.....

ii. Ni nini kilikuchochea kwenda kwa uchunguzi wa saratani (wawezeshaji?)

.....
.....
.....

b. Hapana

i. Ni nini kilikuzuia kupitiwa saratani (vizuizi)?

.....
.....
.....

ii. Ni wakati upi mtu anapaswa kwenda kwa uchunguzi?

.....
.....
.....

21. Tumia kiwango cha 1-4 kinachoonyesha kiwango chako cha makubaliano kwa taarifa zifuatazo kuhusu uchunguzi

4 – Kukubaliana sana, 3 – Kukubaliana, 2 – Kutokubaliana, 1 -Kukataa kabisa.

	<u>4</u>	<u>3</u>	<u>2</u>	<u>1</u>
Uchunguzi wa saratani hunipa hisia za kudhibiti				
Inafaa kufanya uchunguzi wa saratani				
Uchunguzi wa saratani hugundua seli za saratani kabla ya dalili				
Uchunguzi wa saratani ni chungu sana				
Ni aibu na haifurahishi kufanya uchunguzi wa saratani				
Kuangalia sio lazima ikiwa hakuna dalili na dalili				
Ninaogopa kuchukua uchunguzi wa uchunguzi				
Siko huru kuzungumza juu ya uchunguzi wa saratani				
Nina wasiwasi wa saratani				

22. Je! Unaamini kuwa saratani ni ugonjwa unaoweza kuepukwa? Ndio [] Hapana []

23. Je! Kuna tabia bora ya kuzuia ambayo inaweza kupunguza hatari ya ugonjwa huu? Ndio [] Hapana []

Ikiwa ndio, ni tabia gani ya kuzuia unajua (jibu inafaa)?

Maisha na mambo ya mazingira

Kukomesha sigara

Lishe, kwa mfano, matumizi kidogo ya nyama, kuongezeka kwa matumizi ya matunda na mboga mpya, kuzuia chakula kisicho na chakula au kusindika

Kuepuka mfiduo wa jua moja kwa moja

Kuepuka uchafuzi wa mazingira

Kuepuka maambukizo

Kidogo bila mafadhaiko

Uzito wa kawaida wa mwili

Wastani wa matumizi ya pombe

Shughuli ya mwili

Chanjo kama vile chanjo ya HPV

Kuepuka tabia hatari za ngono

Mengine

Mwongozo wa vikundi

1. Je! Unajua jinsi ya uchunguzi wa saratani? Ulijifunzaje juu yake?
2. Ni nini kilikufanya uende kwa uchunguzi wa saratani (kesi)?
 - d) Sababu za kibinafsi
 - e) Sababu za kifamilia
 - f) Sababu za Jumuiya / kijamii?
3. Ni nini kiliifanya iwe ngumu kwako kwenda kwa uchunguzi wa saratani (kudhibiti)?
 - d) Sababu za kibinafsi
 - e) Sababu za kifamilia
 - f) Sababu za Jumuiya / kijamii?
4. Ni tabia gani inayoweza kuchangia / kuongeza hatari ya kupata saratani?
5. Maisha yako ya kijamii yameathiri vipi au imezuia uamuzi wako wa kwenda uchunguzi wa saratani?