UTILIZATION OF CERVICAL CANCER SCREENING SERVICES AMONG NURSES WORKING AT MUHIMBILI NATIONAL HOSPITAL AND OCEAN ROAD CANCER INSTITUTE – DAR ES SALAAM TANZANIA

Zuhura Mlupilo Mawona, BScN

Master of Public Health Dissertation
Muhimbili University of Health and Allied Sciences
October, 2019

Muhimbili University of Health and Allied Sciences

School of Public Health and Social Science

UTILIZATION OF CERVICAL CANCER SCREENING SERVICES AMONG NURSES WORKING AT MUHIMBILI NATIONAL HOSPITAL AND OCEAN ROAD CANCER INSTITUTE- DAR ES SALAAM TANZANIA

By

Zuhura Mlupilo Mawona

A Dissertation Submitted in (Partial) Fulfilment for the Requirements of the Degree of Master of Public Health of

Muhimbili University of Health and Allied Sciences
October, 2019

CERTIFICATION

The undersigned certify that he has read and hereby recommends acceptance by Muhimbili University of Health and Allied Sciences a dissertation entitled: **''Utilization of Cervical Cancer Screening Services among Nurses working at Muhimbili National Hospital and Ocean Road Cancer Institute Dar es Salaam – Tanzania'',** (partial) in fulfilment of the requirements for the degree of Master of Public Health of Muhimbili University of Health and Allied Sciences.

_____

Prof. Gideon Kwesigabo

(Supervisor)

_____

Date

DECLARATION AND COPYRIGHT

I, **Zuhura Mlupilo Mawona**, declare that this **dissertation** is my own original work and that it has not been presented and will not be presented to any other University for a similar or any other degree award.

Signature…… **Date**……

ACKNOWLEDGEMENTS

I express my sincere gratitude to all those who in different ways have made the production of this dissertation possible. First and foremost, I would like to thank ALLAH for the gift of life and health HE has been granting me and all those who made this dissertation possible.

This study was supported by Centres for Disease Control (CDC). I am very grateful to them for their generous support during the entire duration of this dissertation.

My sincere gratitude should extend to my employer, Muhimbili National Hospital for supporting me over the entire course duration.

I also thank my supervisor Professor Gideon Kwesigabo and other members of academic staffs for guiding me through the entire study period and sharing their competencies and experiences with me. Their patience, excitement and willingness to provide guidance made the completion of this research an enjoyable experience.

I would like to thank all the staff members and coordinators of cervical for their support and contribution in the fulfilment of this dissertation.

I would like to acknowledge and thank research assistants and colleagues under the School of Public Health for their support towards the completion of this work.

Finally, I would like to thank all respondents (NURSES), who took part in this study for their tolerance.

DEDICATION

I dedicate my dissertation work to my family and friends. A special feeling of gratitude to; my tender loving husband Eng. MAWONA, Hassan; my lovely daughters- Amina, Nuru, Khadija and Rahma; and my sons Ahmed and Sihanza without forgettig my nieces Mtanga and Sendege (Jacky) for their love, support and endurance while pursuing the distance learning course at MUHAS. May the ALLAH show you, HIS favor and give you his peace. I also dedicate this dissertation to my lovely parents; my mother, the late Khadija Hussein and my dad, the late Rashid Mlupilo. May Allah rest them in peace, Amin.

ABSTRACT

Background: Cervical cancer is a significant global health burden, with an estimated burden in Tanzania at 51 new cases per 100,000. Despite the country's wide spread screening program for the disease, its utilization among health care professional like nurses remains low. Information regarding magnitude and factors associated with the utilization of cervical cancer screening services (CCSS) among nurses is limited in Tanzania.

Objective: To determine level of utilization of CCSS among nurses working at Muhimbili National Hospital (MNH) and Ocean Road Cancer Institute (ORCI) and associated factors.

Materials and methods: This was analytical quantitative cross-sectional study that involved the administration of questionnaires to 323 nurses at MNH and ORCI selected through probability sampling methods. The study was done in November 2018. Data were analysed using STATA 14. The main outcome measure was utilization of CCSS and we used Odds Ratio (OR) as a measure of association.

Results: The mean (SD) of nurse's age was 38.6±9.0 years. Utilization over the past 5 years was 11.8%. Factors associated with increased utilization include higher education level: (OR: 2.33, 95% CI: 1.13-4.83), positive provider's attitude (OR:2.69, 95% CI: 1.77-5.68), adequate provider's competency (OR:2.30, 95% CI:1.14-4.63), working at ORCI (OR: 5.63, 95% CI: 2.29-13.80), adequate privacy (OR:2.14, 95% CI:1.02-4.52. Factors associated with low utilization include nurses whose husbands (spouses) were employed (OR:0.20, 95%CI: 0.05-0.95). Predictors of low utilization include perceived low risk to HPV (OR: 0.14, 95% CI:0.04-0.49). Predictors of increased utilization include perceived satisfaction with services.

Conclusion Utilization of CCSS among nurses at MNH and ORCI is low, at 11.8%. Factors associated with low utilization include perceived low risk to HPV and long waiting time.

Recommendations: Fostering nurses-provider relations by providing refresher courses to providers on the observed gaps is herein recommended to improve the low utilization.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ACRONYMS

AIDS	Acquired Immunodeficiency Syndrome
ASRs	Age standardized incidence rates
CCSS	Cervical Cancer Screening Services
CI	Confidence Interval
CDC	Centres for Disease Control
HIV	Human Immunodeficiency Virus
DNA	Deoxyribonucleic Acid
HPV	Human papillomavirus
IEC	Information Education and Communication
MNH	Muhimbili National Hospital
MOHCDGEC	Ministry of Health, Community Development, Gender, Elderly and Children
MPH	Masters of Public Health
MUHAS	Muhimbili University of Health and Allied Sciences
PI	Principal Investigator
PSRS	Proportionate Stratified Random Sampling
RCHS	Reproductive and Child Health Section
RA	Research Assistant
RR	Relative Risk
OPV	Oral Polio Vaccine
OR	Odds Ratio
ORCI	Ocean Road Cancer Institute
VIA	Visual Inspection of the cervix with Acetic Acid
WHO	World Health Organization

OPERATIONAL DEFINITIONS

The definitions used below have been adapted from access and utilization concepts as defined by Penchansky and Thomas and those from Ronald Andersen[1-3].

Acceptability

In this study the term has been partly defined according to the definition provided by Penchansky et al as the relationship of clients' attitudes about personal and practice characteristics of providers to the actual characteristics of existing providers.

Accessibility

In this study and according to the definition provided by Penchansky et al, the term refers to relationship between the location of supply (cervical cancer screening services) and the location of clients (Nurses); taking account of client's, travel time, distance and cost[1].

Accommodation

In this study the term has been operationalized according to the definition provided by Penchansky et al as the relationship between the manner in which the supply resources are organized to accept clients (including screening and work-shift schedules, privacy) and the clients' ability to fit into these factors and the clients' perception of their appropriateness[1].

Affordability

In this study and according to the definition provided by Penchansky and Thomas the term refers to the relationship of prices of services if any (and providers' insurance or deposit requirements) to the clients' income, ability to pay, and existing health insurance[1].

Availability

In this study, it refers to the adequacy of the supply cervical cancer screening service providers; of clinics-at ORCI and MNH and other services attached to the screening process. This was measured as a categorical variable-yes (available or no (not available)

Cervical cancer screening services

In study, cervical cancer screening services refers to all services provided (including counselling) to a client that must include either Visual inspection of cervix with acetic acid (VIA) or Pap smear screening approach.

Confidentiality of the services

In this research it refers to set of rules that limits access to information discussed between a nurse and their healthcare practitioners in the context of cervical cancer screening. The term was measured from nurse's perspective of satisfaction to confidentiality (as defined above) and recorded as a binary variable; yes/no.

Factor

In this research factors refers to all independent variables that were associated with utilization at bivariate analysis.

Predictors

In this research, predictors refer to only those factors (independent variables) that were found to be significant at Multivariate logistic regression model analysis.

Privacy of the services

In this study, this refers to practice of maintaining the security and confidentiality of patient records and it was measured from nurse's perspective of satisfaction to privacy of CCSS and recorded as a binary variable; yes/no.

Nurse

In this study, a nurse refers to any female aged 21–60 years who underwent nursing training and licensed to practise and provide nursing services at the study sites.

Utilization

In this study utilization refers to the actual use of cervical cancer screening services and it will be measured as a binary outcome by subjectively asking the respondent as to whether she has received a defined list of cervical cancer screening services over the past five years.

CHAPTER ONE

1.1. Introduction and background

Cervical cancer presents a significant global health burden, with an estimated 300000 deaths and 570000 new cases worldwide in 2018, representing 6.6% of all female cancers[4]. It is the fourth most common cancer in women and eighth overall, accounting 7.5% of all female cancer deaths[5-8]. As with liver cancer, a large majority (around 85%) of the global burden occurs in the less developed regions, where it accounts for almost 12% of all female cancers. High-risk regions, with estimated age-standardised rates (ASRs) over 30 per 100,000, include Eastern Africa (42.7), Melanesia (33.3), Southern (31.5) and Middle Africa (30.6) [9]. Rates are lowest in Australia/New Zealand (5.5) and Western Asia (4.4)[6]. Cervical cancer remains the most common cancer in women in Eastern and Central Africa[6, 10]. Tanzania is among the countries with highest cervical cancer burden in East Africa, with an incidence rate of 50.9 per 100,000 women[11] the disease being strongly linked to Human Papilloma Virus (HPV)[6, 12]

Human papillomavirus (HPV) is a group of viruses that are extremely common worldwide with more than 120 types, of which at least 13 are cancer-causing (also referred as high-risk types)[12-14]. The virus (HPV) is a double-stranded DNA virus that infects squamous epithelia, including the skin and mucosae of the upper respiratory and anogenital tracts and is mainly transmitted through sexual contact with most people being infected with the virus shortly after the onset of sexual activity[12, 14]. Evidence suggests that the prevalence of HPV in women declines with age but increases with increasing numbers of sexual partners[12]. Despite the fact that most HPV infections are asymptomatic and self-limiting, persistent infection occurs in 10–15% of women and is associated with various forms of cancer[15]. Cervical cancer is caused by sexually acquired infection with certain types of HPV[14]. Research shows that (HPV) is necessary but not sufficient for cervical cancer, and the virus is a factor in other malignancies including vaginal, vulval, anal, penile and oropharyngeal cancers[12]. Although HPV has a high prevalence, the rate of cervical cancer is low, so other factors are likely to influence disease progression[12]. Sub-types 16 and 18 (HPV-16 and HPV-18) have been found to be the most pathogenic of the high-risk HPV types and undeniably, they together account for 70–80% of cervical cancers, 40–50% of vulval and oropharyngeal cancers and 70–80% of anal cancers[16].

Cervical cancer can be prevented and the prognosis is good if detected early. Public health prevention of cervical cancer includes both secondary prevention through cervical cancer screening and primary prevention through HPV vaccination. Cervical cancer could be prevented through regular screening for precancerous lesions for example by Papanicolaou test (Pap smear) and follow-up of abnormal results and vaccination during adolescence. In developed countries, regular screening with a Pap smear has been shown to effectively lower the risk for developing invasive cervical cancer, by detecting precancerous changes[17]. However, in developing countries, only approximately 5% of eligible women undergo cytology-based screening in a 5-year period because of very low number of trained and skilled professionals to implement those programs effectively[18].

Recent studies have demonstrated that visual inspection with acetic acid (VIA) is an alternative sensitive screening method[19]. It is cheap and non-invasive, and can be done in a low-level health facility like a health centre. In Tanzania, mass screening campaigns programs have been conducted using Visual inspection with acetic acid (VIA) in order to detect early signs of precancerous cells and offering treatment for the affected women. VIA is cost effective and does not need specialization to conduct the procedure.

Available reports show that utilization of cervical cancer screening in resource limited countries including Tanzania remains low due to various factors such as knowledge about the disease, education, age, and marital status. Previous studies show that women with high levels of knowledge about cervical cancer and its prevention are more likely to access screening services[20-22]. Nevertheless, a substantial number of women such as female health workers who supposedly have higher level of knowledge do not undergo screening as recommended. For example, a study done among female medical practitioners in Enugu state, Nigeria showed that only 18% of female health workers who were aware of the Pap smear had undergone screening[23]. These findings suggest other factors underlying low utilization of cervical cancer screening which needs further exploration in order to inform the designing of various intervention to improve the situation.

1.2. Problem statement

In Tanzania, cervical cancer remains the leading cause of cancer related morbidity and mortality among women in the country with estimated age-standardized incidence rate (ASR) of 50.9 cases per 100,000 women[6, 12]. The high burden of cervical cancer in developing countries including Tanzania is related to a high prevalence of HPV infection and the lack of effective cervical cancer screening services (CCSS) or programmes[24]. Nevertheless, in settings where effective screening programmes are available, poor knowledge and poor health seeking behaviour affects have been shown to affect utilization of such services[20].

Since nurses play an important role in promoting public health in matters of disease prevention and changing the behaviour of individuals with respect to their health and that they constitute one of most authoritative sources of information about health matters for the general populace especially women[25], their well-being remains the most important concern to the health of Tanzanians. Moreover, as majority of our nurses are women and that CCSS currently prevents 70% of cervical cancer deaths[26, 27], problems related to utilization of these screening services remain of great concern especially among these providers. Evidence suggests that despite good knowledge of cervical cancer among female health workers such as nurses, their utilization of CCSS remains low in most developing countries including Tanzania[28, 29]. The observation which suggests further exploration of underlying factors influencing utilization of CCSS. To address the burden of cervical cancer, various strategies have been used in the country including increasing access to screening using a low-cost VIA screening tests which are integrated in various reproductive health services[30].

Despite the efforts to enhance utilization of CCSS, anecdotal reports suggest poor utilization of these services among nurses at MNH and ORCI, reaching as low as 2.5 percent in some facility reports reviewed from the later[31]. This low utilization bears significant implications to the community in general because since these providers play a major role in enlightening the public on the availability and need for CCSS[32].

Moreover, poor utilization on the CCSS are known to have direct and indirect health hazards associated with cervical cancer disease ranging from physical illness to cognitive and socio-economic burdens, all related to morbidity and mortality arising from the disease[25, 32].

In Tanzania, there is paucity of information regarding the magnitude of utilization of CCSS among nurses. Also unknown are the determinants of the poor utilization. We therefore set out to determine the level of utilization of CCSS and their associated factors among nurses at two specialized referral sites where the information is limited.

1.3. Conceptual framework

The conceptual framework used in this study is based on a framework developed by Andersen and Gravel et al[3, 33]

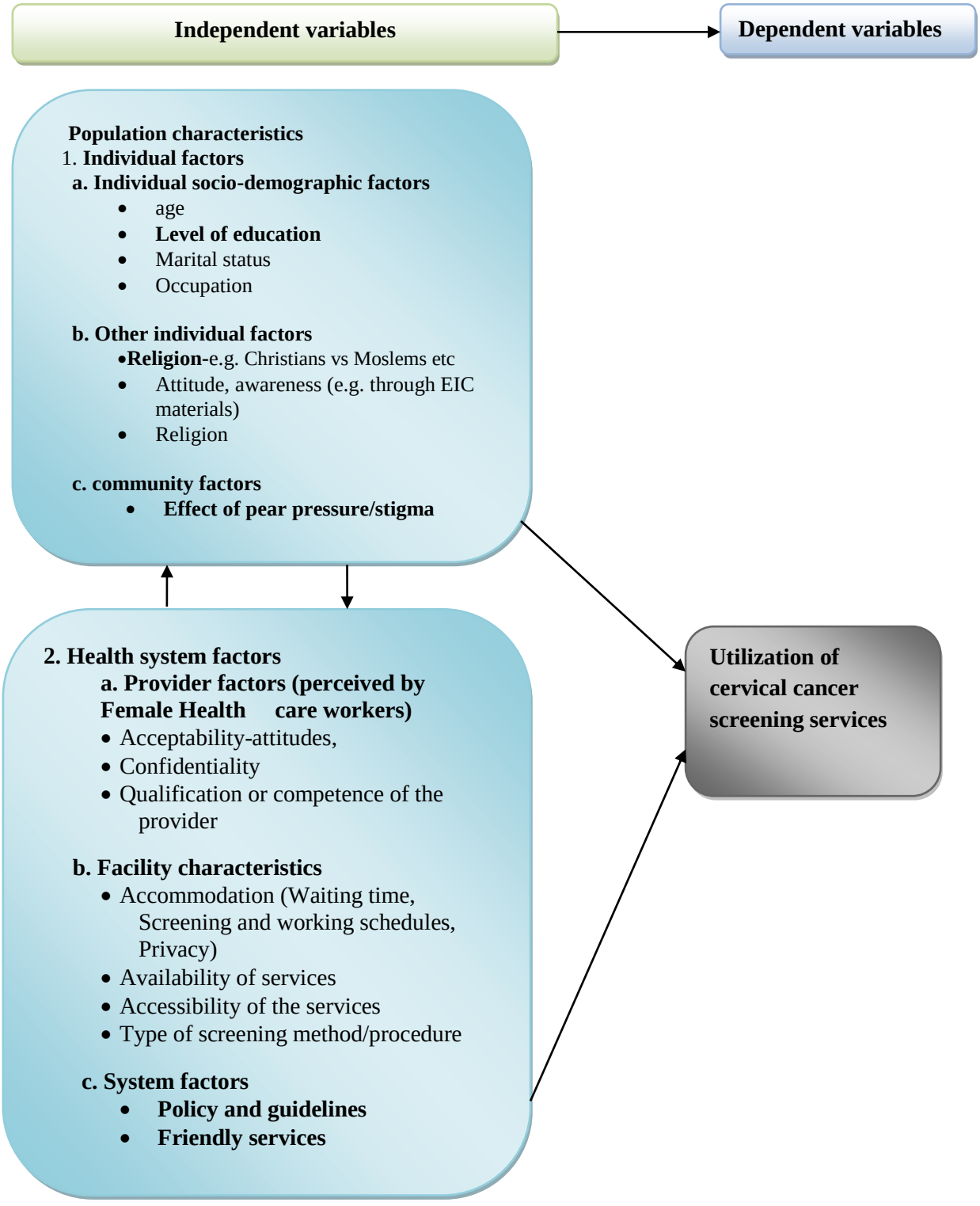


Figure 1: Conceptual framework for utilization of CCSS among nurses

Explanation of the conceptual framework

Models of health care utilization provide guidance for defining variables, specifying the relationships between them, and evaluating programs and policies concerned with access to and utilization of health care services[2]. This study utilizes conceptual model adapted from Andersen and Gravelle to guide the measurement approach. In his behavioural model of health services use, Andersen suggested that people's use of health services is a function of their predisposition to use health services (e.g. level of education), factors that enable or impede use (resource factors e.g. availability of cervical screening services), and need for health services (e.g., awareness of the services) [3]. Approximately a decade later, Gravelle et al, added that utilization of health service is a function of factors linking health system (policy and resource allocation) and population (the community and the individual factors) [33].

From the conceptual framework availability of a guiding policy (policy factors) for cervical cancer screening among nurses might influence the practice among providers (a facility factor) which ultimately influence utilization of cervical cancer screening services.

Individual factors among nurses (attitudes and beliefs) towards HPV screening might determine whether they will go to the clinics to receive the screening services, thus influencing their utilization.

Individual factors (population factors) like age or level of education of nurses can directly influence utilization of screening services.

This research managed to investigate all the major categories of factors included in the proposed framework.

1.4. Rationale of the study

By determining the magnitude of utilization and the associated factors among nurses, the information generated from this study will be used by the relevant health facilities (MNH and ORCI) to develop plans and strategies to address the observed gaps in the utilization and improve CCSS to these important health care professional cadres. The information emanating from this study will be used by the ministries -MOHEGC and PORALG to develop strategies that will improve utilization of cervical cancer screening services among nurses and other female health workers in general. The report of this study will be used by managers of various Reproductive and Child Health program to review and improve the integrated cervical cancer screening services to accommodate more nurses in the implementation of their cervical cancer screening programs.

Being a fundamental research, the findings originating from this study will be presented in international journals and scientific conferences both within and outside Tanzania should opportunity arise and help to invigorate our advances in knowledge and research activities as a whole.

1.5. Research Questions

1. What is the magnitude of utilization cervical cancer screening services among nurses working Muhimbili National Hospital (MNH) and Ocean Road Cancer Institute (ORCI)?
2. What are the factors associated with utilization of cervical cancer screening services among nurses working Muhimbili National Hospital (MNH) and Ocean Road Cancer Institute (ORCI)?

1.6. Study objectives

1.6.1. Study main objective

To determine utilization and factors associated with cervical cancer screening services among nurses working Muhimbili National Hospital (MNH) and Ocean Road Cancer Institute (ORCI).

1.6.2. Specific Objectives

The Specific objectives of the study are

1. To determine the utilization of cervical cancer screening services among nurses working at MNH and ORCI.
2. To determine individual factors associated with the utilization of cervical cancer screening services among nurses working at MNH and ORCI.
3. To determine health facility (provider) factors associated the utilization of cervical cancer among nurses working at MNH and ORCI.
4. To determine health system factors associated with the utilization of cervical cancer screening services among nurses working at MNH and ORCI.

CHAPTER TWO

2.0. LITERATURE REVIEW

2.1. Burden of Cervical Cancer

Cervical cancer is the fourth most common cancer in women globally, with an estimated 570,000 new cases in 2018 representing 6.6% of all female cancers[34]. Almost 90% of deaths from cervical cancer in 2015 occurred in developing countries[34]. In Tanzania, cervical cancer is the most common female cancer with an estimated age-standardized incidence rate of 54.9 per 100 000 women per year resulting to a high cancer related mortality rate of 32 per 100 000 women per year[35]. Each year more than 7,300 Tanzanian women are diagnosed with cervical cancer. More than half of these women die as they are diagnosed at a late stage of the disease[28, 36]

Interventions to control cervical cancer

The World Health Organization (WHO) recommends a comprehensive approach to cervical cancer prevention and control that includes multi-disciplinary interventions across the life course[34]. The recommended interventions to improve cervical cancer control include community education, social mobilization, vaccination, screening, treatment and palliative care. Almost all of cervical cancer deaths could be avoided if known effective interventions were available to all women and implemented, including immunizing adolescent girls against human papilloma virus (HPV) and cervical screening and treatment of pre-cancerous lesions[34].

The WHO recommends early detection, by screening all women in the target age group, followed by treatment of detected precancerous lesions to prevent the majority of cervical cancers. The WHO guidelines state that cervical cancer screening should be performed at least once for every woman in the target age group of 30–49 years where most benefit can be achieved[34]. The suggested screening tests include HPV testing, cytology and visual inspection with acetic acid (VIA). However, cervical cancer screening guidelines vary between different parts of the world. In the United States the guidelines. for women aged 21 years and above, or 5 years if screening with a Pap test and an HPV DNA test, for

women aged thirty years and above. In Thailand cervical cancer screening target women aged 30-60 years and screening is recommended within every five years' intervals[34].

In Tanzania, the government is committed to address cervical cancer burden through various strategies and intervention including establishment of reproductive health cancer unit under its Reproductive and Child Health Section (RCHS) in 2008 and development of the National Cervical Cancer Prevention and Control Strategic Plan (2011-2015). Various guidelines, IEC materials and trainings have been developed to increase quality of services and demand for the intervention. In Tanzania, cervical cancer screening is recommended for all women aged 30-50 years, as the main targeted age group. However, when a woman is HIV positive, the screening is done at any age. The screening frequency is three years for those who are HIV negative or their serostatus is unknown and yearly for HIV positive women. There is lack of information if the intervals of screening have effect on the utilization of cervical cancer screening, the situation which justifies a need for further research.

2.2. Utilization of Cervical cancer screening services

Utilization of cervical cancer screening varies greatly between developed and developing countries. Cervical cancer screening in developed countries is one of the great public health success stories, reflected by a continuing dramatic fall in the incidence of carcinoma of the cervix and mortality from the disease[37]. Prevalence of cervical cancer screening among women in developed countries is reported to be between 40 % and 90 %. Previous reports in the USA show an overall cervical cancer screening rate of 83%[38]. A study conducted in Thailand reported that two thirds of women were adherent to recommendations to screening at least once within five years[39]. On the other hand, only 5 % of women in developing countries are screened for cervical cancer. Previous studies in Tanzania show that the prevalence of cervical cancer screening ranges between 6% to 22.6%[35, 40, 41]. The findings of previous studies are context specific, might not reflect the real situation in other settings. Moreover, long time has passed since the last reports; therefore, due to developments in health care, there might be changes in practice and utilization of various interventions hence a need for further research.

2.3. Factors associated with utilization of cervical cancer screening services

According to previous studies, utilization of cervical cancer screening services is influenced by various issues at individual and health service delivery level as highlighted below:

Individual factors

At individual level, factors that influence utilization of cervical cancer screening include age, marital status, occupation, religion, attitude, awareness and stigma. Previous studies show that screening practices are substantially lower in younger women aged 20-29 years and elderly women aged 60 years and above. Moreover, various studies in developing countries including Tanzania show that women with college education had screened for cervical cancer compared to those with secondary education or less [40, 42].

Knowledge on cervical cancer and its prevention has shown to be important in the access to screening services. Women with higher levels of knowledge about cervical cancer and its prevention are more likely to adhere to recommended interventions to prevent the disease[43, 44]. A recent study in Tanzania show that women with the highest level of knowledge about cervical cancer and its prevention were more likely than those with low and medium levels of knowledge to have been screened for cervical cancer[35]. High level of awareness is not necessarily a single factor for the uptake of interventions as reflected by low utilization of screening services among supposedly knowledgeable groups of people such as medical personnel. For example, earlier studies show that less than a quarter of female health workers who are highly aware of the screening services had utilized them[41, 45]. These findings suggest a need to explore other factors contributing to utilization of screening services.

Other factors influencing utilization of cervical cancer screening include embarrassment about the procedure, fear of positive results, having abnormal vaginal symptoms, and having time[20, 21]. Previous studies in Tanzania, report other factors such as husband approval of cervical cancer screening, marital status and number of children as factors influencing acceptability of cervical cancer screening[40, 46].

Provider factors (perceived by Nurses)

Providers factors influencing utilization of cervical cancer include acceptability and attitudes of health workers, gender of health provider, confidentiality and qualification or competence of the provider. Acceptability and attitude of health worker is important for utilization of various interventions for example, if health provider has negative attitude about the intervention might not be able to provide adequate information concerning cancer of the cervix and screening to the patient for informed decision[47]. Studies from Norway and Taiwan show women preference to female doctor or provider for Pap tests[48, 49]. The age and gender of the service provider have shown to influence the utilization of cervical cancer screening in study conducted in Kenya; women reported preference to an older mature female nurse at the service point[47]. Providers factors influencing utilization of cervical cancer include acceptability-attitudes- women's preference for the sex of health provider, confidentiality and qualification or competence of the provider.

Facility characteristics

Earlier studies have documented facility characteristics associated with utilization of cervical cancer screening including waiting time, screening and working schedules, privacy; availability of services; accessibility of the services and type of screening method/procedure. In a study conducted in Kenya among HIV infected women show that long waiting time as a barrier to respondents to not accessing cervical cancer screening[47, 50]. Concerns about privacy has been reported as a barrier to some women to access cervical cancer screening in Australia, Uganda and United States[51-53]. Moreover, non-availability of screening in lower health facilities has shown to affect screening uptake in some developing countries[54, 55]. Lack of patient-friendly health services has been reported as a barrier to screening services in some countries such as Serbia[56]. Other significant barriers as reported in a study among health providers in Kenya and Malawi include workload, lack of supplies and trained staff[57, 58].

There is inadequate information on health facility characteristics that motivate or discourage women to access cervical cancer screening in the country. Therefore, assessment of the current situation is important to inform the development of various interventions aimed at increasing utilization of the services.

CHAPTER THREE

3.0. METHODOLOGY

3.1. Study design

This was an analytical cross-sectional study that utilized quantitative method of data collection with application of inferential statistics to provide estimates of a generalized relationship among variables.

3.2. Study area

The study was conducted at two major health facilities based in Dar es salaam namely Muhimbili National Hospital (MNH) and Ocean Road Cancer Institute (ORCI). Apart from being the key National Referral health facilities and providing care at tertiary levels, MNH and ORCI provide teaching services for university students. We selected MNH and ORCI because being a national referral, MNH receives majority of cervical cancer patients and diagnose them and or provide surgical intervention to the disease and finally refer them to ORCI for expertise oncologic management. Moreover, the two hospitals offer preventive services, curative servicers and super specialized services for cervical cancer disease. The two hospitals have female nurse-coordinated clinics which routinely provide cervical cancer screening services (CCSS) to the members of the community as well as for the working staff. Female nurses are the main service providers in the two clinics.

3.3. Study population

These were nurses aged 21 years and above working at the two institutions, MNH and ORCI. The age of 21 was chosen because international and national cervical cancers screening guidelines affirm that screening among women should start at this age.

3.4. Sample size

Since our outcome is utilization of cervical cancer screening services which were measured as a binary variable, the sample size was estimated using Cochran's formula [59] as detailed below:

$$\text{Samplesize } (n) = \frac{z^2_{1-\alpha/2}\, pq}{d^2}$$

, we fixed type one error at α=0.05, desiring a <5% chance of drawing a false-positive conclusion, hence we used z=1.96.

p=proportion of nurses who have been screened for cervical cancer in Tanzania and q=1-p (variance component of a binary outcome as defined above).

P=0.15[41], thus q=0.85

d=marginal error for the prevalence estimate (d. ± 0.05), i.e. we intend to estimate the true proportion to within ± 5% points, define at 0.04.

Thus, from above definitions:

$$Sample\ size = \frac{1.96^2 x 0.15 x 0.85}{0.04^2}$$

$$Sample\ size = \frac{0.4898}{0.0016}, \quad Sample\ size = 306$$

Accounting for 5% non-response, the total and **final sample size** was estimated at 323 nurses.

3.5. Sampling methods

Multistage sampling technique involving both probability and non-probability methods were used to identify study respondents.

Stage one: Selection of study sites

Two hospitals were purposefully selected.

Stage two: At facility level

The number of respondents for each facility were obtained using Proportionate Stratified Random Sampling (PSRS) i.e. according to the proportion of nurses employed at the time of this survey. The two facilities in this situation established the strata for proportions.

Using pps, we obtained the 296 nurses at MNH as follows:

$$Number\ of\ respondents\ at\ MNH = \frac{Total\ nurses\ working\ at\ MNH}{Total\ number\ of\ female\ nurses\ at\ (MNH + ORCI)}$$

$$Number\ of\ respondents\ at\ MNH = \frac{803}{803 + 74} = 295.7 \sim 296$$

The sample size at ORCI, was therefore 323-296=27 nurses

Stage three: Final selection of respondents

Systematic random sampling was used to obtain the required number of respondents from each hospital.

Estimation of sampling frame

From each hospital a non-ordered sampling frame was created. This was a list of all available nurses. The sampling interval was calculated by dividing the total number of nurses in the facility by the sample size required for each site. The random starting point was selected between 1 and the sampling interval. After the starting point, the sampling interval was added (to get the next nurse) until the final respondent was obtained. In the event the selected nurse is not found, the sampling interval is added to obtain the next respondent and the process repeated if this nurse is also missing or did not consent. Thirty-five (35) nurses were interviewed over a single day by 5 research assistants (RA). The number 35 (7 for each RA per day) have been chosen to maximize the validity and reliability of the collected information. The exercise continued for five working days of the first week (175) and for the second week to achieve a final sample size of 323 nurses.

3.6. Inclusion and exclusion criteria

Inclusion criteria

- All female nurses aged 21 years and above, working at the two study sites were included in this study.

Exclusion criteria

- All female nurses aged 21 years and above who were not fit to participate in the study for any reason.
- All nurses without permanent or full-time employment status like interns,
- All nurses who were not involved in providing daily nursing care, like administrators.

3.7. Study variables

Dependent variable

The main outcome variable for this study was utilization of cervical cancer screening services (CCSS) among female nurses at the two study sites which was measured as a binary variable by subjectively asking each respondent as to whether she has received CCSS over the past at three years, in accordance to some international and local guideline.

How utilization was defined and coded:

1. Utilization was coded 1 (users) if the respondent mention that she had been screened for cervical cancer using either Visual Acetic acid (VIA) or Pap Smear approaches over the past three years according to defined standard guidelines.
2. Utilization was coded 0 (non-users) if the respondent had not received either Pap smear or VIA over the past three years.

Independent variables

These were categorized based on Andersen model of health service utilization as outlined in the conceptual framework and summarized below:

1) Socio-demographic variables

These included continuous variables such as age and other categorical variables like level of education, spouse occupation and marital status etc.

2) Socio-cultural factors

These included factors that operate within cultural norms and society attributes and affects thoughts, feelings and behaviors; they include: -

- Ability to make decisions of place cervical cancer screening services, beliefs
- Acceptability-This variable was measured as a dimension of access as outlined in the Andersen model of health services utilization. Satisfaction with the services and provider's attitude were used to measure this construct.
- Stigma-this came out from respondents as the reason for not utilizing CCSS.

Institutional (health system) or facility factors:

Health system factors involved all attributes are related to the facilities or administration arrangement and several constructs were used including the dimensions of access.

1) Availability of services

This was defined in the operational definition and its measurements were based on perceptions from participants regarding the presence or absence of the CCSS for nursing

2) Accessibility of services

The contruct was defined as a dimension of access according to the definition provided by Andersen as outlined in the operational definitions. Perceived weighting time was asked as a qualitative variable (adequate, long, reasonable) and was used as a proxy for the measurement of services accessibility.

3) Affordability

The construct was measured as a dimension of access and defined based on the attributes used by Andersen model. Whether the participant paid (or not) for the services and the client's perception of worth relative the payment arrangement was used to measure the construct.

Measurement of other independent variables

These were measured as indicated in the table below.

No	Variable	Measurement
1.	Nurse's age	This was measured and recorded as continuous variable. It was later made categorical based on standard classification applied in similar studies.
2.	Level of education	This was measured as the highest education attained and recorded as categorical variable; certificate, diploma, degree, masters.
3.	Nurse's marital status	This was measured as current marital status and recorded as categorical variable; single (never married), married, divorced/separated and widowed.
4.	Awareness of CCSSs	This was measured by asking a direct question as to whether she was aware of the CCSS and recorded as binary (yes/no)
5.	Religion	This was measured as a categorical variable.
6.	Stigma	This was recorded if respondent mention it as a barrier not to seek

		services at MNH/ORCI.
7.	Satisfaction with services	This was measured as a general satisfaction with the CCSSs and recorded as binary categorical variable, yes or no.
8.	Choice of facility	This was measured as a nurse's response to choose a particular health facility.
9.	Waiting time	This was measured as perceived waiting time and recorded as categorical variable; very long, long, fair/reasonable, don't know.
10.	Competency of provider	This was measured from a nurse's perspective as to whether she perceive the CCSS provider as competent(yes) or not (no).

3.8. Data collection

This involved quantitative means of data collection methods and the whole exercise was conducted over a period of two weeks from mid-November 2018. Thirty-five (35) nurses were interviewed over a single day, seven (7) respondents by each research assistant (RA/PI).

Data were collected from sampled nurses. through pre-designed, pre-tested (outlined in section 2.92), structured questionnaires administered by the PI and well-trained research assistants. The questionnaire, designed in English were translated into Swahili by PI. Back translation to English were done by one person who did not see the original English version of the questionnaire and who has a good command of the two languages. The back translated version was then compared with the original questionnaire.

The data collection tool (questionnaire)

This was a predesigned structured questionnaire with 42 questions and it three sections. The first section carried the introduction part-in which the interviewer introduces him/herself to the interviewee. The second part of the questionnaire capture the general information from the two health facilities and the respondents working environments. The final third portion of the tool carried factors associated with utilization of CCSS-ranging from socio-demographic to institutional factors, developed using the conceptual framework outlined in chapter one.

3.9. Data quality Control

3.9.1. Training of research assistants

To maximize validity and reliability of the collected information, the research assistants were trained for five days at a private hired venue, Biashara complex Kinondoni, Dar es salaam.

The following were the major topics covered during the training period:

1. Introduction-This included the orientation of the research proposal that covered title, background, justification, objectives, methodology and study's ethical considerations.

2. Validity and reliability-ways of maximizing validity and reliability during data collection.

3. Interview skills practice- going through data collection tools, and interviews skills.

3.9.2. Pre-test of tools

The data collection tool was pre-tested and reviewed before data collection. This aimed at increasing reliability and validity of the data collection tool. The final questionnaire was completed and appropriately adjusted to collect data after addressing the linguistic challenges. This was done by the PI. Pre-visits to the study sites were done before conducting the research so as to make arrangements with cervical cancer screening coordinators, to set the date for the study and to obtain official approval letters from the respective facilities.

3.10. Data management

3.10.1. Data control

The collected data were checked for completeness on a daily basis by the PI.

3.10.2 Data entry and cleaning

The coded questionnaire was then entered into pre-developed data entry screens using EPIDATA version 3.02 and cleaned. Cleaning and checking for any inconsistencies were carried out by the PI. Double data entry was done to allow for data validation prior to analysis. Each questionnaire was entered against its unique identifier. The final data set was exported to STATA 14 computer software package for analysis. Storage in both manual and electronic were done, with data backups being kept in different locations that

allowed easy retrieval of the information. Data access was limited to the PI though computer passwords.

3.10.3. Preliminary data analysis

Descriptive data analyses were conducted to obtain summaries for categorical variables such as level of education, occupation etc using proportions, percentages and frequencies. Continuous variables such as age were summarized using mean (standard deviation, SD) and median (interquartile range, IQR) and were presented using tables and bar charts.

The level of utilization of cervical cancer screening services:

This was estimated as a proportion of nurses aged 21 years and above who meet the criteria for utilization defined in this study (section 2.7). Therefore, among the total nurses interviewed in this study, the level of utilization of CCSS was determined.

Univariate analysis, Bivariate and Multivariate analysis

Univariate analysis with descriptive statistics (involving analysing proportions and percentages using frequencies) was conducted for each variable in each objective (2 to 4).

Bivariate analysis was done to establish association between independent variables and the outcome variable for each of the objective 2 to 4. All independent variable were cross tabulated with an outcome variable with OR being used as a measure of association.

Multivariate analysis

This involved running a binary multivariable logistic regression (BLRM) model to estimate adjusted odds ratios (OR) and their 95% confidence intervals. The model allowed the effect of one predictor variable on the outcome to be studied while adjusting for other variables.

The following steps were used during multivariate analysis:

1. Forward elimination method was used where one variable was added at a time. All independent variables initially significant at bivariate analyses and those known to be associated with the dependent variable from literature (and considered plausible although not significant), were considered and entered into the BLRM with dependent variable.
2. Dummy variables were created for categorical independent variables, to ensure that all categories under a single variable were analysed. The most significant variable at bivariable analysis was entered first.

3. Since we were aiming at building a parsimonious model i.e. a model that accomplishes a desired level of explanation or prediction with as few predictor variables as possible. the p-value of <0.1 for each variable was used as a criterion for its inclusion in the model.
4. The specified cut off P-value for any variable was P<0.05. If the P-value for any variable was < 0.05, the variable was retained in the model. On the other end if P>0.05 value, the variable was removed from the model. For each of the p-value, the regression equation was refitted and the procedure terminated when no more variables could be entered or removed.

Determinants of utilization of CCSS were based on adjusted OR which were presented with their 95% CIs. A p-value < 0.05 was taken to represent a statistically significant association. During the model development, we assumed: 1) the relationship between the logit and predictor variables was linear, 2) there is no strong linear relationship between explanatory variables i.e. there was no collinearity between independent variables and 3) the observations were independent.

3.11. Ethical considerations

This study was approved by the MUHAS Institutional Review Board (IRB). Permissions were sought before conducting data collection at MNH and ORCI.

a) Voluntary Participation

Research participants were informed that their participation in this study is purely voluntary and that they have the right to stop or withdraw from it at any time without penalty. Moreover, they were informed that withdrawal from the study or inability to participate will not in any way affect them or their family's medical care or benefits for which they are entitled.

b) Consent Process:

Respondents were allowed to participate on the basis of informed consent as required by the MUHAS IRB. The research team (PI and research assistants) approached each potential study participant, informed them of the purpose of study, and request consent. Recruitment and consent took place at a scheduled time that was convenient to the participant. The description (sufficient information) of the research was provided to all participants. Participants were allowed to ask questions for further clarifications before

they sign the consent form. Two written consent forms were signed by both researcher and the participant. As PI, I kept one form and the other was retained by the participant. The informed consent has been included in the list of appendices, see appendix 1.

c) The use of offensive, discriminatory or other unacceptable language

While the questionnaire was being formulated, the PI checked the language to maintain the non-offensive and non-discriminatory of the tool in terms of the wording process. Every effort was made to ensure that the language of each question was concise and directed towards producing uniformity of understanding among the respondents. Throughout the training of research assistants and during data collection the PI ensured that care was taken to see that respondents were not interpreting the language in different manner.

d) Privacy and anonymity

Privacy during interviewing and confidentiality of information were guaranteed. Each respondent was interviewed separately from the other. In case the participant happens to be uncomfortable to be for one interviewer, she was allowed to be interviewed by another investigator or allowed to withdraw from the study. The names of the participants were not enquired/recorded, and this avoided the tracing back of the information. The information collected were only accessible by the research team/PI.

3.13. Dissemination

The report of the study will be submitted to the School of Post Graduate, MUHAS in partial fulfilment of the requirements for the award of Masters of Public Health (MPH) degree. Moreover, results will be disseminated to the MoHCDGEC. The management MNH will receive a copy of the report. Should there be an opportunity, the manuscript of the report will be published in peer reviewed journals and presented at local and international conferences.

CHAPTER FOUR

4.0. RESULTS

A total of 323 nurses were recruited into the study, 296 (91.6%) being from Muhimbili National Hospital (MNH) and the rest from Ocean Road Cancer Institute (ORCI).

4.1 Socio demographic characteristics of the respondents

Table 1, figure 2 summarize socio-demographic characteristics of respondents; The mean age was 38.6 (SD± 9.0) and approximately 40% of respondents were young adults aged 30-39 years. Two-thirds (66.6%, 215/323) of participating nurses were married and 63.2% (204/323) had completed a diploma of nursing. More than two-thirds (68.4%, 221/323) of nurses were Christians.

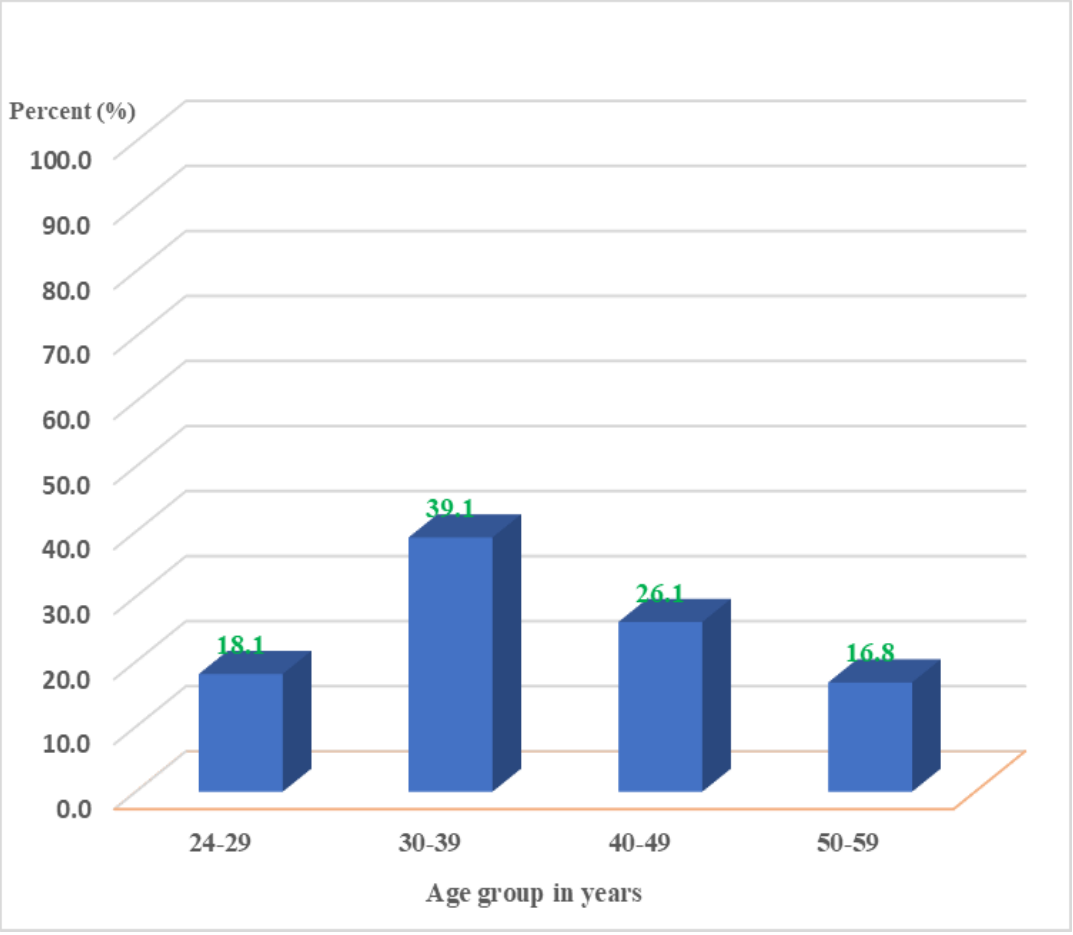


Figure 2: Frequency and proportion of respondents by their age groups

Table 1: Socio-demographic characteristics of the respondents

Variable	Frequency (N=323)	Proportion (%)
Age$^{\beta}$ in years (n=310)		
Mean ±SD	38.6± 9.0	
24-29	56	18.1
30-39	121	39.0
40-49	81	26.1
50-59	52	16.8
Highest education attained		
Certificate	48	14.9
Diploma	204	63.2
Degree	66	20.4
Masters	5	1.5
Marital status		
Single	77	23.8
Married	215	66.6
Divorce/Separated	19	5.9
Widowed	10	3.1
Cohabiting	2	0.6
Occupation of the spouse$^{\beta}$, n=217		
None	2	0.9
Peasant	3	1.4
Employed	124	57.1
Business (trader)	55	25.4
Self-employed	33	15.2
Having children (parity)		
Mean±SD	**2.4**±1.1	
Yes	257	79.6
No	66	20.4
Number of children$^{\beta}$ (n=257)		
One	67	26.1
Two	82	31.9
Three and above	108	42.0
Place of work		
MNH	296	91.6
ORCI	27	8.4
Religion		
Muslim	102	31.6
Christian	221	68.4

Note: *β represents variable that do not add-up to 323 (sample size) due to some missing data.*

4.2 The level of utilization

Among 323 nurses who were interviewed for utilization of CCSS, 38/323 (11.8%) utilized the services (were screened for cervical cancer) over the past three years. The proportion of nurses who utilized cervical cancer screening services (. i.e. the level of utilization) was estimated at 11.8% (95% CI:0.08-0.16) with standard error of 0.02.

Awareness

Our analysis shows that majority of nurses 85.8% (277/323) were aware of the cervical cancer screening services in their facility; with level of awareness being higher at ORCI (96.3%, 26/27) compared to MNH, 84.7% (251/296).

Utilization and awareness

About 13.7% (38/277) of nurses who were aware of cervical cancer screening services utilized the services and figure 3.

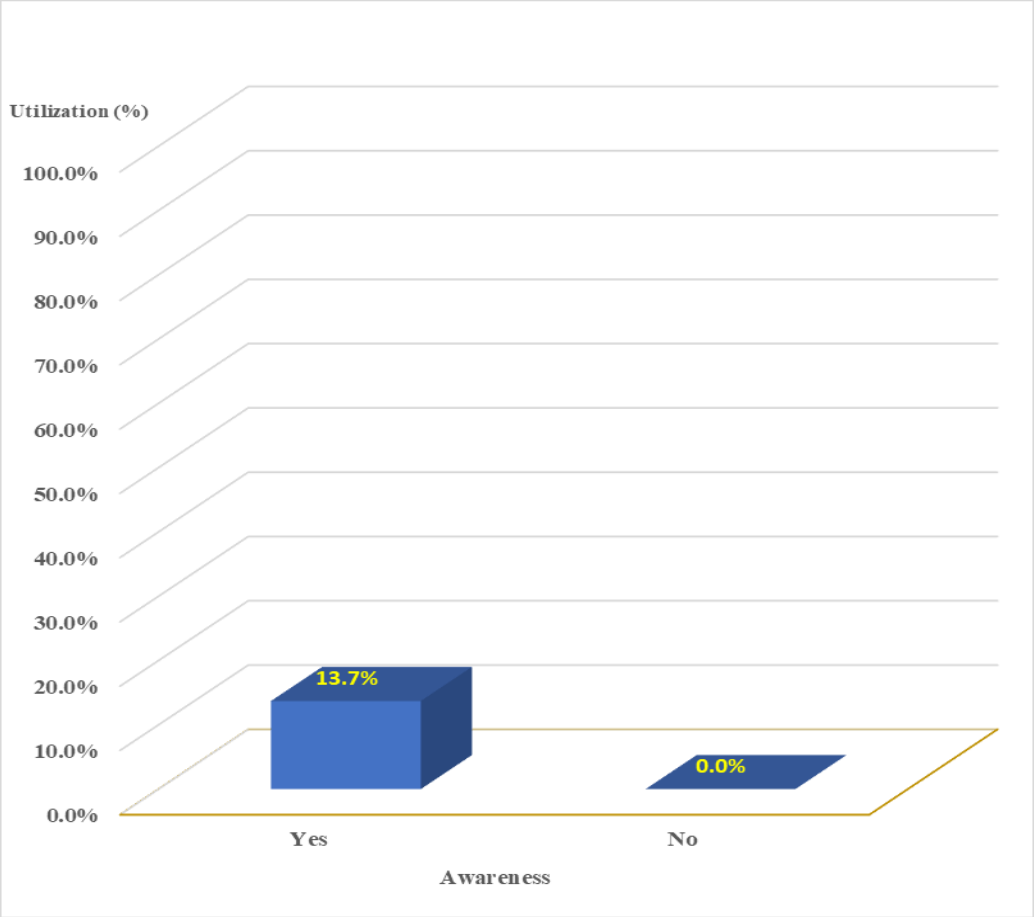


Figure 3: Proportion of CCSSs utilization by level of respondents among nurses

4.3 Factors associated with utilization of cervical cancer screening services

Individual factors associated

Table 3 summarizes individual factors associated with utilization of cervical cancer screening services (CCSS) as found in this study. Of the 133 middle aged nurses, 40-59 years, 20 (15.0%) had utilized CCSS compared to only 1.8% seen among young nurses aged 24-29 years. At bivariate analysis, older nurses had approximately (~) 10 times greater odds of utilizing CCSS compared to young adults (unadj. OR:9.73, 95% CI:1.22-77.79).

The magnitude of utilization of CCSS were higher among nurses who had at-least a degree level compared to those with lower education status (certificate or diploma). Nurses with a degree or master's level of education had ~twice greater odds (statistically significant) of utilizing CCSS compared to those with lower educational levels, (unadj. OR:2.33, 95% CI:1.33-4.83).

Married nurses had comparatively higher level of utilization of CCSS (12.4%) compared to those who were single (9.1%). Although the odds of utilizing CCSS were 42% more for married nurses compared to those who were single, we did not find any significant difference between the group categories we analysed (unadj. OR: 1.42, 95% CI (0.59-3.42).

Although nurses who had no children had 91% (statistically significant) less odds for utilizing CCSS (OR: 0.09, 95% CI: 0.01-0.70) compared to those with at-least one child, we did not find any statistical differences when we independently evaluated the effect of number of children on utilization of CCSS (unadj. 0.52, 95% CI: 0.22-1.19).

The magnitude of utilization of CCSS among nurses who perceived themselves as being at lower (or no) risk of acquiring cervical cancer was lower (9.2%) compared to those who perceived themselves as being at higher risk (19.7%). The odds of utilizing CCSS were ~ 40% less among nurses who perceived themselves as having lower (or no) risk of developing cervical cancer compared to those with perception of higher risk, (OR: 0.59, 95% CI: 0.18-0.94).

Although the level of utilization of CCSS among nurses who were Christians were higher (13.6%, 20/221) compared to that of nurses who were Muslims (7.8%, 8/102), we did not find any significant difference when we compared the odds of utilization in the two groups at bivariate analysis (unadj. 1.85, 95% CI: 0.81-4.20).

Table 2: Individual factors associated with utilization of Cervical Cancer Screening Services (CCSS)

Variable	Utilization of CCSS/Total	%	Crude OR	95% CI	Adjusted OR	95% CI
Social-demographic factors						
Age (years) [β],						
Young adult 24-29	1/56	1.8	1.00			
Young adult 30-39	16/121	13.2	8.38	1.04-67.53*	4.21	**0.48-37.17**
Middle aged, 40-59	20/133	15.0	9.73	1.22-77.79*	5.86	**0.67-51.04**
Level of education						
Certificate/diploma	24/252	9.5	1.00			
Degree/Masters	14/71	19.7	2.33	1.13-4.83*	5.02	1.52-16.7
Marital status						
Single	7/77	9.1	1.00			
Married/Cohabiting	27/217	12.4	1.42	0.59-3.42	-	-
Separated/Widowed	4/29	13.8	1.60	0.43-5.99	-	-
Spouse's occupation[β]						
Employed (salaried)	19/124	15.3	1.00			
Business (trader)	2/55	3.6	0.20	0.05-0.95*	0.19	0.04-1.02
Self employed	6/33	18.2	1.22	0.45-3.39	1.31	0.34-4.97
Religion						
Muslim	8/102	7.8	1.00			
Christian	30/221	13.6	1.85	0.81-4.20	1.77	0.48-6.49
Parity (no. of children)						
1 and above	27/257	14.4	1.00			
0	1/66	1.5	0.09	0.01-0.70*	0.62	0.05-7.20
Number of children[β]						
One	14/67	20.9	1.00			
Two	10/82	12.2	0.53	0.21-1.29	0.32	0.71-1.48
Three and above	13/108	12.0	0.52	0.22-1.19	0.39	0.10-1.60
Other individual factors						
Perception about husband's occupation[β]						
At risk	7/39	18.0	1.00			
Not a risk	11/93	11.8	0.61	0.22-1.73	0.64	0.18-2.36
Not sure	9/83	10.8	0.56	0.28-1.64	1.40	0.34-5.84
Perception about partner behaviour[β]						
High/moderate risk	8/35	22.8	1.00			
Low or no risk	14/91	15.4	0.61	0.23-1.63	1.11	0.29-4.29
Not sure	5/57	8.8	0.32	0.09-1.12	0.46	0.07-2.27
Self-perception as risk[β]						
High/moderate risk	26/132	19.7	1.00			
Low or no risk	9/98	9.2	0.41	0.18-0.94*	0.14	0.04-0.49*
Not sure	3/47	6.4	0.28	0.08-0.99*	0.08	0.08-0.84*

Note: *[β]-variables which do not add-up to 322due to missing data; *-statistically significant results*

4.4 Provider's factors associated with utilization of cervical cancer screening services

Table 4, summarizes provider's factors associated with utilization of cervical cancer screening services (CCSS) as found in this study.

4.4.1 Work experience

Nurses who had worked beyond 10 but less than 20 years were found to have slightly higher utilization of CCSS (14.7%, 14/95) compared to those who have been working for 10 years or less (10.4%, 19/182). Despite the observed higher utilization, we did not find any significance difference in the magnitude of utilization when we compared the three categories of the variable work experience at bivariate analysis, (unadj. OR:1.48, 95% CI: 0.70-3.12).

4.4.2. Acceptability of services

Nurses who perceived provider's attitude as being friendly had higher magnitude of CCSS utilization (16.6%, 27/163) compared to those who perceived the provider attitude to be unfriendly (6.9%, 11/160). At bivariate analysis, nurses who perceived provider's attitude to be friendly had significantly more than twice greater odds of utilizing CCSS compare to those who had described provider's attitude as being unfriendly (Unadj. OR: 2.69, 95% CI: 1.27-5.68). More over about 10.3% of nurses who did not utilize services at MNH mentioned negative attitude of the provider as being one of reason for doing so, figure 6.

4.4.3. Service quality (providers competency)

Nurses who perceived CCSS providers to be competent in the way the provide CCSS had higher levels of CCSS utilization (18.8%, 22/137) compared to those who described providers as non-competent (8.1%, 15/186). Nurses who perceived providers as being competent had significantly ~2 times greater odds of utilizing CCSS compared to those who perceived the providers as being not competent (Unadj. OR: 2.30, 95% CI: 1.14-4.63).

4.4.4. Provider's availability

Although the odds of utilizing CCSS was approximately 73% more for nurses who perceived providers for screening services to be adequate compared to those who perceived that providers were not adequate, we did not find any significant results between the two groups (Unadj. OR: 1.73, 95% CI: 0.87-3.4). The fact that 6.9 % of nurses at the study sites

did not use CCSS at their working places due to overcrowding has some reflection to the inadequacy of service providers.

Table 3: Provider's factors associated with utilization of CCSS

Variable	Utilization of CCSS/Total	%	Crude OR	95% CI	Adjusted OR	95% CI
Work experience (years)						
Median (iqr)	**10 (10)**					
< or equal to 10	19/182	10.4	1.00			
11-20	14/95	14.7	1.48	0.70-3.12	1.35	0.47-4.39
Above 20	5/46	10.9	1.04	0.37-2.98	1.95	0.43-8.76
Perception to the provider's attitude						
Unfriendly	11/160	6.9	1.00			
Friendly	27/163	16.6	2.69	1.27-5.68*	1.92	0.82-4.41
Perception about provider's competency						
Not competency	15/186	8.1	1.00			
Competent	22/137	16.8	2.30	1.14-4.63*	1.29	0.57-2.95
Availability of health care providers						
Not adequate	16/175	9.1	1.00			
Adequate	22/148	14.9	1.73	0.87-3.46	1.15	0.40-3.38

**Statistically significant results.*

4.5 Health system (facility) factors associated with utilization of CCSS among nurses

Table 5, summarizes health system (facility) factors associated with utilization of cervical cancer screening services (CCSS) as found in this study.

4.5.1 Site of work

Nurses who works at ORCI had a much higher level of utilization of CCSS (37.0%, 10/27) compared to those who works at MNH (9.5%, 28/196). At bivariate analysis, ORCI nurses had significantly more than five times greater odds of utilizing CCSS compared to nurses working at MNH (OR: 5.63, 95% CI: 2.29-13.8).

4.5.2. Satisfaction with services

Nurses who expressed themselves as being satisfied with services had much higher level of CCSS utilization (23.2%) compared to those who were unsatisfied with the services (5.7%). At bivariate analysis, nurses who were satisfied with CCSS had ~ five-fold greater odds of utilizing CCSS compared to young adults (OR: 5.01, 95% CI: 2.35-10.68).

4.5.3. Perception about waiting time and issues related to tight working schedule

Nurses who perceived waiting time as normal had higher level of CCSS utilization (16.2%, 27/167) compared to those who perceived waiting time as long (7.1%, 11/156). At bivariate analysis nurses who perceived waiting time as normal had significantly more than twice-greater odds of using CCSS compared to those who perceived this variable as long (OR:2.54, 95% CI: 1.20-5.37). The waiting time remain an important factor since 10.3% of nurses did not use CCSS due to their work schedule.

4.5.4. Privacy

Nurses who perceived privacy as being adequate had higher level of CCSS utilization (15.1%, 27/179) compared to those who perceived it as not adequate (7.6%, 11/144). At bivariate analysis nurses who perceived privacy as adequate had ~2 times-greater odds of using CCSS compared to those who perceived it as inadequate (OR:2.14, 95% CI: 1.02-4.52). About 17.2% of nurses who were non-users of CCSS mentioned poor privacy as being a problem that deters them to use CCSS in the study sites, figure 4.

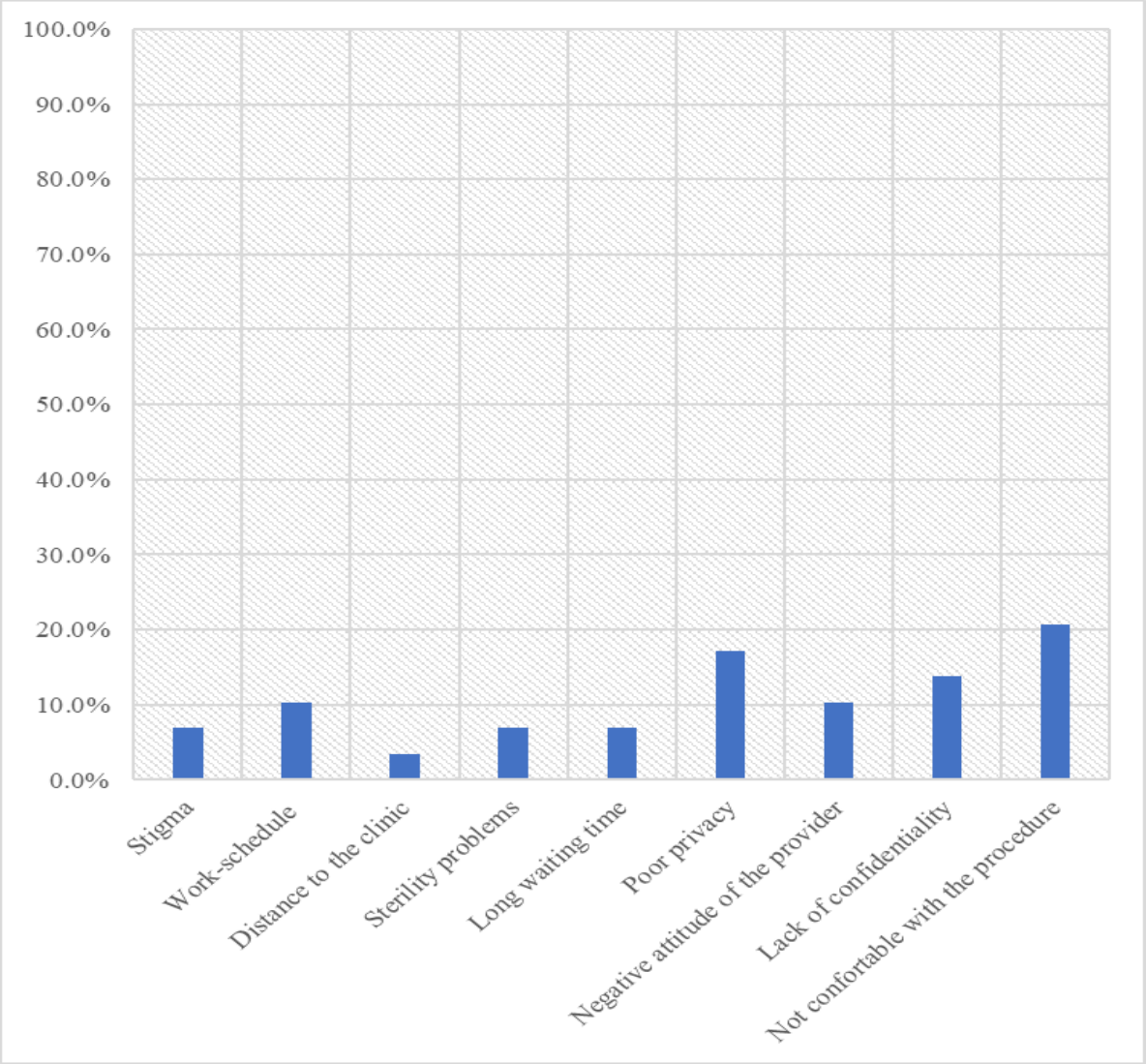


Figure 4: Reasons for not utilizing CCSS at MNH and ORCI

4.5.5. Confidentiality

Despite the fact that utilization of CCSS among nurses who perceived confidentiality as adequate being higher (15.2%) compared to those who perceived it as inadequate (8.7%) we did not find any significance difference in the two groups (OR: 1.88, 95% CI: 0.93-3.77) during bivariate analysis. However, about 13.8% of nurses who were non-users of CCSS, mentioned confidentiality as being the reason for not doing so.

Table 4: Health system factors associated with utilization of cervical cancer screening services

Variable	Uptake of CCSS/Total	%	Crude OR	95% CI	Adjusted OR	95% CI
Facility name						
MNH	28/296	9.5	1.00			
ORCI	10/27	37.0	5.63	2.29-13.8*	4.23	0.84-21.09
Hospital department						
Medical	13/148	8.8	1.00			
Surgery	14/143	9.8	1.12	0.51-2.49	1.17	0.52-2.66
OPD and Oncology	11/32	34.4	5.44	2.06-14.33*	1.83	0.17-19.33
Nursing working area						
Inpatient	30/245	12.2	1.00			
Outpatient	5/34	14.7	1.24	0.44-3.44	0.38	0.04-3.23
Operating rooms and CS	2/34	8.7	0.68	0.15-3.07	0.71	0.06-8.23
EMD/Dialysis	1/21	4.8	0.35	0.05-2.79	2.49	0.17-35.50
Nursing department						
Nursing and HK and CS	224/252	11.1	1.00			
Maternal and repr. health	10/71	14.1	1.31	0.60-2.85	2.09	0.66-6.58
Satisfaction with services						
No	12/211	5.7	1.00			
Yes	26/112	23.2	5.01	2.35-10.68*	18.7	5.18-21.09*
Perception about waiting time						
Too long	11/156	7.1	1.00			
Normal	27/167	16.2	2.54	1.20-5.37*	1.46	0.55-3.84
Perception about Privacy						
Not adequate	11/144	7.6	1.00			
Adequate	27/179	15.1	2.14	1.02-4.52*	1.28	0.40-4.09
Perception about confidentiality						
Not adequate	15/172	8.7	1.00			
Adequate	23/151	15.2	1.88	0.93-3.77	0.62	0.20-1.88

Binary Multivariate Logistic Regression modelling (BMLLM) and analysis

Predictors of CCSS among nurses at MNH and ORCI

All the independent variables that were found to be statistically significant ($p<0.05$) in their association with utilization of CCSS were considered for binary logistic regression model in multivariable analysis. Moreover, all independent variables with their p-value less than 0.1 and those which had p-value greater that 0.1 but with plausible association with CCSS utilization as read from literature were included in the model to explain quantitatively the association of the independent variables with a dichotomized outcome, i.e. utilization of CCSS. Factors that were predicting utilization of cervical cancer screening services in the final logistic regression model were perception of being at high risk of developing cervical cancer (acquiring HPV), table 2 and satisfaction with the services provided in clinics, table 5.

Interpreting final logistic regression model on CCSS uptake among nurses

1. Perception as being at risk of cervical cancer

Perception among nurses of being at increasing risk of developing cervical cancer or acquiring HPV infection remained a strong predictor of CCSS utilization even after controlling for other variables in the final logistic regression model. Nurses who perceived themselves as being at increasing risk of developing cervical cancer or acquiring HPV infection were 86% less likely to utilize CCSS compared to those who perceive themselves as being at high risk, (Adj. OR: 0.14, 95% CI: 0.04-0.49).

2. Satisfaction with services

The perception of being dissatisfied with services remained a strong predictor of CCSS uptake even after controlling for other variables in the final logistic regression model. Nurses who were satisfied with the services were ~19 times more as likely to use CCSS as compared to those who were not satisfied with the services, (Adj. OR:18.7, 95% CI:5.18-21.09).

Other factors associated with low CCSS utilization

1. Procedure not comfortable (figure 6):

About 20.7% of non-users mentioned that they are not comfortable with the procedure; while ~7% cited sterility problem as a reason.

2. Stigma

About 7% of non-users mentioned stigma as a reason for not using CCSS.

3. Distance to the clinics

About 7% of nurses mentioned distance to the clinics as being a reason for not using CCSS.

CHAPTER FIVE

5.0 DISCUSSION

Utilization and awareness of cervical cancer screening services (CCSS)

This study reports a low utilization (11.8%) of cervical cancer screening services (CCSS) among nurses at for both study sites of Muhimbili National Hospital (MNH) and Ocean Road Cancer Institute (ORCI). The possible explanation for the low utilization came clear in this study. The fact that nurses perceive themselves as low risk and that they are dissatisfied with the services explains the observed low utilization. There is a general consensus in many studies for the low CCSS utilization. A study done in Nigeria showed 8% of cancer screening in community-based study among women[60] and Ethiopian study reported utilization of the intervention at estimated magnitude of 9.9%[61]. Further, studies in the region including some parts of Tanzania reported even lower utilization of CCSS. A study done in northern Tanzania for example, showed that only 6% of interviewed women reported had ever been screened for cervical cancer[35] .

Nevertheless, our prevalence of CCSS is lower than findings from Low Income Countries (LIC) and some parts of developing countries[21, 45]; with a study among nurses in the northern part of Tanzania reporting an utilization of up to 15%[41]. Observed differences in the utilization of CCSS in various parts of the world might be explained by several factors grouped into individual, provider and health system factors as discussed in the following section.

Factors associated with utilization of CCSS

Individual factors

Level of awareness of cervical cancer screening among nurses varied between the two study sites; with ORCI having higher proportion than MNH. The ~10% difference in the finding might be explained by the fact that ORCI remains a long-time specialized hospital for management of cancers including cervical cancers. This specialization might nurses allow nurses working at this site to be more exposed and more aware, thus making them more compelled to utilize CCSS than their counterpart. However, the validity of this explanation remains to be elucidated by further research. Moreover, the fact that ORCI nurses had much higher utilization of CCSS implies the need to create more awareness

among nurses who remains the heartbeat of screening procedures at MNH in order to improve their health seeking behaviour and consequently boost their CCSS utilization.

Higher level of education had a positive influence on the utilization of CCSS among nurses as found in our analysis. Education in this regard might create an opportunity for learning and thus possibly enhancing more awareness among those educated compared to the less ones. Our findings in this aspect remains similar with previous reports from resource limited countries which show that women with higher than secondary level of education were generally more likely to utilize CCSS compared to those with secondary education or less[40, 42]. Moreover, those educated might be more pursuit and active in health matters, including higher level of health seeking behaviour, though our study did not ascertain the truthfulness to this explanation.

Marital status has shown to be associated with utilization of CCSS among our study participants; with married nurses on a higher utilization level compared those who were single. The plausible explanation to our observation might be related to the fact that married nurses perceive themselves as being at higher risk than those who are single and thus much more compelled to undergo CCSS. This likely explanation is much supported by our analysis which showed that perceived high risk among nurses significantly influences their utilization of CCSS. Our observation is consistent with previous studies done in Tanzania and others conducted in similar African settings in countries of Malawi, and Nigeria which reported marital status as a factor influencing acceptability of cervical cancer screening[20, 40, 46, 58] and in Thailand[21]. In Turkey however, Ertem, did not find any significant difference between knowledge or attitude about screening method and marital status[62].

Having children show association with cervical cancer screening in the present study, with nurses who had no children having lower likelihood of utilizing CCSS compared to those with at-least one child. Our findings might be explained by the fact that parity possibly increases awareness to CCSS thus influencing its utilization although this remains to be investigated. Our findings in this aspect bears significant resemblance to observations that were made in India in 2013 by Shekhar et al. In a study about knowledge, attitude and practices among Nursing Staff in a Tertiary Level Teaching Institution of Rural India

analysis Shekhar et al found that found that so was the association between higher parity and likelihood of getting a Pap smear[63]. Similar accounts were shown in Thailands[21]. On the other end, our finding is contrary to that reported by Labeit et al which showed that women who had children especially below 4 years were less likely to utilize CCSS. Further, number of children was not significantly associated with the utilization of CCSS which is similar to findings observed by Labeit and colleagues[64].

Perception of being at lower (or no) risk of cervical cancer was associated with low utilization of CCSS. Two thirds of nurses who perceived as being at lower risk of cervical cancer didn't utilize CCSS. The possible explanation to this observation can be attributed to behavioural attributes as supported by the constructs of Health Belief Model. According to HBM, perceived risk influences an individual to undergo screening of cervical cancer as shown by Visanuyothin et al in Thailand in 2015[21]. This finding confirms previous results of studies done in Saudi Arabia, London, United Kingdom and Texas in the USA[65, 66]. The fact that perception of risk to cervical cancer and Human Papilloma Virus (HPV) infection remained a strong predictor of CCSS utilization, ring the bell for a theory-based behavioural approach intervention that will be tailored at enhancing understating risks and how they are perceived among nurses. Health belief models and other behavioural approaches known to work in addressing perceived barrier risks might be tested and applied among nurses.

Provider's factors associated with utilization of cervical cancer screening services

Positive perceptions about the providers' attitude, their friendliness and competence were among compelling evidence associated with improved utilization of CCSS among nurses. These findings are consistent with evidence obtained from other studies among Low income and middle-income countries which cited perceived or actual unfriendliness and incompetence of health providers as a barrier of women to access CCSS[29, 67].

Health system (facility) factors associated with utilization of cervical cancer screening services

At health system level various factors including the perceived inadequacies in privacy has been found to be associated with lower utilization. The fact that non-users of CCSS mentioned problems in privacy to be the reason for them not to undergo screening has very

important implications if we are to improve the utilization of these services at the two study sites. Similar observations were made in Hong Kong where staff manner and privacy were the most common contributing barrier to CCSS utilization[68].

Study limitations

This study has several potential limitations:

- This study was carried out in only one region and at tertiary hospitals. Thus, the findings might not sufficiently reflect the realities of other settings in Tanzania where nurses are working and hence limited generalization.
- The research has been conducted at tertiary hospitals (MNH and ORCI) which are actively involved in cancer management. The nurses in these sites might be more aware of the disease and this might bring overestimation of the reported utilization.
- Moreover, the limitations in the measurement used to ascertain utilization need to be highlighted. The 3-year cut-off level used in measuring utilization might carry some recall bias; we measured utilization over the past 3 years from the time of data collection. Some nurses might not have recalled well. Moreover, the 3-year cut-off might end in underreporting since information from study sites revealed that despite the absence of protocols and guidelines in their working places the cut-off point of 5 years is used among non-HIV risk people, which in this case may include the nurses.

However, the findings might be useful in development of strategies which target this specific cadre of health professionals in the country.

CHAPTER SIX

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1. Conclusions

Utilization of cervical cancer screening services among nurses in tertiary hospitals in Dar es Salaam is low, estimated at 11.8%. Differences in the level of awareness exists among nurses regarding the availability of CCSSS between the two hospitals. Low utilization of cervical cancer screening was associated with individual, and health system factors. Individual factors associated with low utilization of CCSS include lower level of education, being single, not having children, perceived low risk of cervical cancer; negative perception about health provider's attitude and competence. Health system factors associated with low utilization were low satisfaction with services; perceived long waiting time and lack of privacy.

Predictors of low utilization were perception that someone is not at risk and perception about low satisfaction with the services.

Being uncomfortable with the procedure, lack of confidentiality, sterility problems and stigma were among mentioned reasons for not utilizing the CCSS.

6.2. Recommendations

In view of the above findings and conclusions, it can therefore be recommended as follows:

Efforts directed at improving utilization and enhancing awareness

Efforts and strategies directed towards addressing the associated factors, predictors and reasons of poor utilization will be important interventions to address the observed lower prevalence of CCSS among nurses. Improving awareness among nurses is highly recommended as our results have shown. Health promotion events targeting nurses to address observed gaps (perceptions)-using proven theory-based educational programs-like HBM remain the hallmark for efforts directed at alleviating low use and mitigating negative or mis- perceptions and attitudes.

The suggested approaches

Strengthening health promotion through theory-based behavioural strategies that will target nurses especially those who are younger, single and those with have no children; emphasis should be put on changing perceptions as found in this survey.

Developing facility specific strategies, including segmented educational programs aimed at improving utilization of CCSS are herein recommended to address factors associated with low utilization. Fostering patient-provider relations by providing refresher courses to providers on the observed gaps; improving privacy of consultations rooms and addressing long waiting time of services remain critical part of these recommendations.

Improving awareness through the use of proven theory-based educational interventions and other forms of Information, education and communication (IEC) approaches will enhance utilization of CCSSs as found by this study

Further research is needed to provider a more detailed analysis on the gaps observed if we are to alleviate the low utilization.

REFERENCES

1. Penchansky R, Thomas JW. The concept of access: definition and relationship to consumer satisfaction. Medical care. 1981;19(2):127-40.

2. Aday LA, Andersen RM. Health Care Utilization and Behavior, Models of. Encyclopedia of Biostatistics: John Wiley & Sons, Ltd; 2005.

3. Andersen RM. Revisiting the Behavioral Model and Access to Medical Care: Does it Matter? Journal of Health and Social Behavior. 1995;36(1):1-10.

4. WHO. Cervical cancer: It is preventable. It is treatable. It is time to eliminate it.: WHO; 2019.

5. Maraqa B, Lataifeh I, Otay L, Badran O, Nouri YQ, Issam I, et al. Prevalence of Abnormal Pap Smears: A Descriptive Study from a Cancer Center in a Low-Prevalence Community. Asian Pacific Journal of Cancer Prevention : APJCP. 2017;18(11):3117-21.

6. Globocan. Cervical Cancer: Estimated Incidence, Mortality and Prevalence Worldwide in 2012. (IARC) , Section of Cancer Surveillance (22/5/2018); 2012.

7. Nwabichie Chinemerem Cecilia; RAM, Suriani I. Global Burden of Cervical Cancer: A Literature Review. International Journal of Public Health and Clinical Sciences. 2017;4(2).

8. Bray F, Ferlay J, Soerjomataram I, Siegel RL, Torre LA, Jemal A. Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA: a cancer journal for clinicians. 2018;68(6):394-424.

9. Jacques F, Isabelle S, Rajesh D, Sultan E, Colin M, Marise R, et al. Cancer incidence and mortality worldwide: Sources, methods and major patterns in GLOBOCAN 2012. International Journal of Cancer. 2015;136(5):E359-E86.

10. LaVigne AW, Triedman SA, Randall TC, Trimble EL, Viswanathan AN. Cervical cancer in low and middle income countries: Addressing barriers to radiotherapy delivery. Gynecologic Oncology Reports. 2017;22:16-20.

11. Hutubessy R, Levin A, Wang S, Morgan W, Ally M, John T, et al. A case study using the United Republic of Tanzania: costing nationwide HPV vaccine delivery using the WHO Cervical Cancer Prevention and Control Costing Tool. BMC Medicine. 2012;10:136-.

12. Mehrnoosh AA, Theresa FW. Cervical cancer prevention and screening: the role of human papillomavirus testing. The Obstetrician & Gynaecologist. 2016;18(4):251-63.

13. Bernard H-U, Burk RD, Chen Z, van Doorslaer K, zur Hausen H, de Villiers E-M. Classification of Papillomaviruses (PVs) Based on 189 PV Types and Proposal of Taxonomic Amendments. Virology. 2010;401(1):70-9.

14. Human papillomavirus (HPV) and cervical cancer [Internet]. 2018 [cited 15 February 2018]. Available from: http://www.who.int/news-room/fact-sheets/detail/human-papillomavirus-(hpv)-and-cervical-cancer.

15. Yang X, Cheng Y, Li C. The role of TLRs in cervical cancer with HPV infection: a review. Signal Transduction And Targeted Therapy. 2017;2:17055.

16. Bouvard V, Baan R, Straif K, Grosse Y, Secretan B, Ghissassi FE, et al. A review of human carcinogens—Part B: biological agents. The Lancet Oncology. 2009;10(4):321-2.

17. Acharya Pandey R, Karmacharya E. Cervical cancer screening behavior and associated factors among women of Ugrachandi Nala, Kavre, Nepal. European journal of medical research. 2017;22(1):32-.

18. WHO. Prevention of cervical cancer through screening using visual inspection with acetic acid (VIA) and treatment with cryotherapy. A demonstration project in six African countries: Malawi, Madagascar, Nigeria, Uganda, the United Republic of Tanzania, and Zambia. 2012;Sexual and reproductive health.

19. Chung MH, McKenzie KP, De Vuyst H, Richardson BA, Rana F, Pamnani R, et al. Comparing Papanicolau smear, visual inspection with acetic acid and human papillomavirus cervical cancer screening methods among HIV-positive women by immune status and antiretroviral therapy. AIDS (London, England). 2013;27(18):2909-19.

20. Idowu A, Olowookere SA, Fagbemi AT, Ogunlaja OA. Determinants of Cervical Cancer Screening Uptake among Women in Ilorin, North Central Nigeria: A Community-Based Study. Journal of Cancer Epidemiology. 2016;2016:8.

21. Visanuyothin S, Chompikul J, Mongkolchati A. Determinants of cervical cancer screening adherence in urban areas of Nakhon Ratchasima Province, Thailand. Journal of infection and public health. 2015;8(6):543-52.

22. Matejic B, Vukovic D, Pekmezovic T, Kesic V, Markovic M. Determinants of preventive health behavior in relation to cervical cancer screening among the female population of Belgrade. Health Education Research. 2011;26(2):201-11.

23. Agu U, Ogboi J, Ezugwu E, Okeke T, Patricia Nonye A. The knowledge, attitude, and practice of universal precaution among rural primary health care workers in Enugu Southeast Nigeria2015. 109-25 p.

24. Ifemelumma CC, Anikwe CC, Okorochukwu BC, Onu FA, Obuna JA, Ejikeme BN, et al. Cervical Cancer Screening: Assessment of Perception and Utilization of Services among Health Workers in Low Resource Setting. International Journal of Reproductive Medicine. 2019;2019:8.

25. Kemppainen V, Tossavainen K, Turunen H. Nurses' roles in health promotion practice: an integrative review. Health Promotion International. 2013;28(4):490-501.

26. Landy R, Pesola F, Castañón A, Sasieni P. Impact of cervical screening on cervical cancer mortality: estimation using stage-specific results from a nested case–control study. British Journal of Cancer. 2016;115(9):1140-6.

27. Mayor S. Screening reduced cervical cancer deaths by more than two thirds, UK study finds. BMJ. 2016;354.

28. Moshi FV, Vandervort EB, Kibusi SM. Cervical Cancer Awareness among Women in Tanzania: An Analysis of Data from the 2011-12 Tanzania HIV and Malaria Indicators Survey. International Journal of Chronic Diseases. 2018;2018:7.

29. Ndejjo R, Mukama T, Kiguli J, Musoke D. Knowledge, facilitators and barriers to cervical cancer screening among women in Uganda: a qualitative study. BMJ Open. 2017;7(6).

30. Yeates KE, Sleeth J, Hopman W, Ginsburg O, Heus K, Andrews L, et al. Evaluation of a Smartphone-Based Training Strategy Among Health Care Workers Screening for Cervical Cancer in Northern Tanzania: The Kilimanjaro Method. Journal of global oncology. 2016;2(6):356-64.

31. MNH. Cervical Cancer Screening Clinic review progress report. Dar es salaam: Muhimbili National Hospital, gynaecology Oa; 2018 June 2018.

32. Arulogun OS, Maxwell OO. Perception and utilization of cervical cancer screening services among female nurses in University College Hospital, Ibadan, Nigeria. The Pan African Medical Journal. 2012;11:69.

33. Gravelle H, Sutton M, Morris S, Windmeijer F, Leyland A, Dibben C, et al. Modelling supply and demand influences on the use of health care: implications for deriving a needs-based capitation formula. Health Economics. 2003;12(12):985-1004.

34. WHO. Cervical cancer-Early diagnosis and screening Comprehensive approach to cervical cancer: WHO; 2018.

35. Cunningham MS, Skrastins E, Fitzpatrick R, Jindal P, Oneko O, Yeates K, et al. Cervical cancer screening and HPV vaccine acceptability among rural and urban women in Kilimanjaro Region, Tanzania. BMJ Open. 2015;5(3).

36. Bray F, Ren JS, Masuyer E, Ferlay J. Global estimates of cancer prevalence for 27 sites in the adult population in 2008. Int J Cancer. 2013;132(5):1133-45.

37. Annabelle F. Cervical cancer screening in Australia: Past and present. Cancer Cytopathology. 2016;124(4):231-4.

38. Arica. White; Trevor D. Thompson; Mary C. White; Susan A. Sabatino; Janet de Moor; Paul V. Doria-Rose DAMGLC. Cancer Screening Test Use Report. United States: CDC, Division of Cancer Prevention and Control CDoCCaPS, National Cancer Institute, National Institutes of Health, Bethesda, Maryland; 2017 August 1, 2017. Contract No.: 8.

39. Visanuyothin S, Chompikul J, Mongkolchati A. Determinants of cervical cancer screening adherence in urban areas of Nakhon Ratchasima Province, Thailand. Journal of infection and public health. 2015;8(6):543-52.

40. Lyimo FS, Beran TN. Demographic, knowledge, attitudinal, and accessibility factors associated with uptake of cervical cancer screening among women in a rural district of Tanzania: Three public policy implications. BMC Public Health. 2012;12(1):22.

41. Urasa M, Darj E. Knowledge of cervical cancer and screening practices of nurses at a regional hospital in Tanzania. African Health Sciences. 2011;11(1):48-57.

42. Ezechi OC, Gab-Okafor CV, Ostergren PO, Odberg Pettersson K. Willingness and acceptability of cervical cancer screening among HIV positive Nigerian women. BMC Public Health. 2013;13(1):46.

43. Harsha Kumar HN, Tanya S. A Study on Knowledge and Screening for Cervical Cancer among Women in Mangalore City. Annals of Medical and Health Sciences Research. 2014;4(5):751-6.

44. Liu T, Li S, Ratcliffe J, Chen G. Assessing Knowledge and Attitudes towards Cervical Cancer Screening among Rural Women in Eastern China. International Journal of Environmental Research and Public Health. 2017;14(9):967.

45. Kileo NM, Michael D, Neke NM, Moshiro C. Utilization of cervical cancer screening services and its associated factors among primary school teachers in Ilala Municipality, Dar es Salaam, Tanzania. BMC Health Services Research. 2015;15:552.

46. Kahesa C, Kjaer S, Mwaiselage J, Ngoma T, Tersbol B, Dartell M, et al. Determinants of acceptance of cervical cancer screening in Dar es Salaam, Tanzania. BMC Public Health. 2012;12(1):1093.

47. Njuguna E, Ilovi S, Muiruri P, Mutai K, Kinuthia J, Njoroge P. Factors influencing cervical cancer screening in a Kenyan Health Facility: a mixed qualitative and quantitative study. 2017. 2017;6(4):6.

48. Leinonen MK, Campbell S, Klungsøyr O, Lönnberg S, Hansen BT, Nygård M. Personal and provider level factors influence participation to cervical cancer screening: A retrospective register-based study of 1.3 million women in Norway. Preventive Medicine. 2017;94:31-9.

49. Lin T-F, Chen J. Effect of Physician Gender on Demand for Pap Tests. Economics Research International. 2014;2014:8.

50. Maseko FC, Chirwa ML, Muula AS. Client satisfaction with cervical cancer screening in Malawi. BMC Health Services Research. 2014;14(1):420.

51. Anaman-Torgbor JA, King J, Correa-Velez I. Barriers and facilitators of cervical cancer screening practices among African immigrant women living in Brisbane, Australia. European journal of oncology nursing : the official journal of European Oncology Nursing Society. 2017;31:22-9.

52. Bukirwa A, Mutyoba JN, N.Mukasa B, Karamagi Y, Odiit M, Kawuma E, et al. Motivations and barriers to cervical cancer screening among HIV infected women in HIV care: a qualitative study. BMC Women's Health. 2015;15:82.

53. Studts CR, Tarasenko YN, Schoenberg NE. Barriers to cervical cancer screening among middle-aged and older rural Appalachian women. Journal of community health. 2013;38(3):500-12.

54. Nwobodo H, Ba-Break M. Analysis of the Determinants of Low Cervical Cancer Screening Uptake Among Nigerian Women. Journal of Public Health in Africa. 2015;6(2):484.

55. Ibekwe CM, Hoque ME, Ntuli-Ngcobo B. Perceived benefits of cervical cancer screening among women attending Mahalapye District Hospital, Botswana. The Asian Pacific Journal of Cancer Prevention (APJCP) 2010;11(4):1021-7.

56. Markovic M, Kesic V, Topic L, Matejic B. Barriers to cervical cancer screening: a qualitative study with women in Serbia. Social science & medicine (1982). 2005;61(12):2528-35.

57. Nishimura H, Yatich N, Huchko M. Facilitators and Barriers to Cervical Cancer Screening in Migori County, Kenya. Journal of Global Oncology. 2016;2(3_suppl):82s-s.

58. Munthali AC, Ngwira BM, Taulo F. Exploring barriers to the delivery of cervical cancer screening and early treatment services in Malawi: some views from service providers. Patient preference and adherence. 2015;9:501-8.

59. Cochran WG. Sampling techniques. 3rd edition. ed: John Wiley & Sons, Inc., New York; Baffins Lane, Chichester, Sussex PO19 1UD; 1977.

60. Idowu A, Olowookere SA, Fagbemi AT, Ogunlaja OA. Determinants of Cervical Cancer Screening Uptake among Women in Ilorin, North Central Nigeria: A Community-Based Study. Journal of cancer epidemiology. 2016;2016:6469240-.

61. Mwaka AD, Orach CG, Were EM, Lyratzopoulos G, Wabinga H, Roland M. Awareness of cervical cancer risk factors and symptoms: cross-sectional community survey in post-conflict northern Uganda. Health Expectations. 2016;19(4):854-67.

62. Ertem G. Awareness of cervical cancer risk factors and screening behaviour among nurses in a rural region of Turkey. Asian Pac J Cancer Prev. 2009;10(5):735-8.

63. Shekhar S, Sharma C, Thakur S, Raina N. Cervical cancer screening: knowledge, attitude and practices among nursing staff in a tertiary level teaching institution of rural India. Asian Pac J Cancer Prev. 2013;14(6):3641-5.

64. Labeit A, Peinemann F, Kedir A. Cervical Cancer Screening Service Utilisation in UK. Scientific Reports. 2013;3:2362.

65. Salem MR, Amin TT, Alhulaybi AA, Althafar AS, Abdelhai RA. Perceived Risk of Cervical Cancer and Barriers to Screening among Secondary School Female Teachers in Al Hassa, Saudi Arabia. Asian Pac J Cancer Prev. 2017;18(4):969-79.

66. Nadarzynski T, Waller J, Robb KA, Marlow LA. Perceived risk of cervical cancer among pre-screening age women (18-24 years): the impact of information about cervical cancer risk factors and the causal role of HPV. Sexually transmitted infections. 2012;88(6):400-6.

67. Nwabichie CC, Manaf RA, Ismail SB. Factors Affecting Uptake of Cervical Cancer Screening Among African Women in Klang Valley, Malaysia. Asian Pacific journal of cancer prevention : APJCP.19(3):825-31.

68. Abdullah AS, Leung TY. Factors associated with the use of breast and cervical cancer screening services among Chinese women in Hong Kong. Public health. 2001;115(3):212-7.

APPENDICES

Appendix 1: Consent form for the study respondents

Research description

The main aim of this study is to determine factors associated with utilization of cervical cancer screening services among FHWs working at MNH and ORCI Hospital in Dar es salaam so as to come with recommendations that when considered will improve the utilization of cervical cancer screening services in the targeted population. Information will be collected for a period of eight weeks (~2months) by interviewing FHWs 25 years and above.

Risk

There are no anticipated risks that you may suffer because of your participation in this study.

Benefits

There will be no special benefits to you as a participant. However, the management of MNH and ORCI will get the final report and be able to identify which areas they need to improve according to your views.

Anonymity, Privacy and confidentiality

Privacy during interviewing and confidentiality of information are guaranteed. You will be interviewed separately from other FHWs. In case you happen to be uncomfortable to be Interviewed by me, you can request to be interviewed by someone else or withdraw from the study. You are not required to give your name, so information cannot be traced back to you. The information collected will only be accessible to the research team.

Compensation

No compensation will be available for your time and any inconvenience, but we are very grateful to you for taking part in this study.

Contacts

If you have any questions now, please feel free to ask me. In case you have any question later on, you can contact the PI, Sr. Zuhura Mawona through the telephone number

+255[0] 784372787/0767372787. If you have any issues pertaining to your rights and participation in this study, please contact the Director of post graduate studies, Muhimbili University of Health and Allied Sciences (MUHAS) on the telephone number +255 222150473/6.

Voluntary Participation

Your participation in this study is voluntary and you have the right to stop or withdraw from it at any time without penalty.

Your withdrawal from the study or inability to participate will not in any way affect your health benefits to which you are entitled.

Participant: I understand all the conditions above and have agreed to take part in this study at my own free will.

(Signature / thumb print) ……

Researcher / research assistant's signature……

Any other witness……..

Kiambatanishi 1: Fomu ya ridhaa

Maelezo kuhusu Utafiti

Lengo kuu la utafiti huu ni kugundua kuhusu mambo yanayochangia utumiaji wa huduma za uchunguzi wa saratani ya shingo ya kizazi,miongoni mwa wauguzi wanao fanya kazi katika hospitali ya Taifa ya Muhimbili na Taasisi ya Saratani Ocean Road. Taarifa zitakusanywa kwa kipindi cha wiki mbili na una hiari ya kushiriki ama kutoshiriki kwenye utafiti wakati huu ama wakati wowote utakapoona inafaa.

Madhara

Hakuna madhara yoyote utakayoyapata kupata kwa kushiriki katika utafiti huu.

Faida

Hakuna faida ya moja kwa moja kwako kama mshiriki. Lakini, Watawala wa vituo watapata ripoti ya mwisho na kuweza kuangalia ni maeneo gani wanahitaji kuboresha kutokana na maoni utakayoyatoa.

Usiri

Unahakikishiwa kuwepo kwa faragha wakati wa mahojiano na usiri wa taarifa. Utahojiwa ukiwa peke yako. Endapo itatokea kuwa unamfahamu mmoja wa watafiti, unaweza kuhojiwa na mtu mwingine au kujitoa kwenye utafiti. Hauhitajiki kutoa jina lako, hivyo taarifa zako haziwezi kufuatiliwa na kuhusishwa na wewe. Taarifa zitakazokusanywa zitapatikana tu kwa timu ya utafiti.

Fidia

Hakuna fidia zozote zitakazotolewa kwa ajili ya muda wako na usumbufu mwingine wowote ule, ila tunashukuru sana kwa kushiriki katika utafiti huu.

Mawasiliano

Ikiwa una maswali yoyote sasa, tafadhali jisikie huru kuniuliza. Endapo utakuwa na maswali yoyote baadae, unaweza kuwasiliana na mtafiti mkuu, Sr. Zuhura Mawona kupitia namba yake ya simu +255[0] 784372787/0767372787

Ushiriki wa hiari

Ushiriki wako katika utafiti huu ni wa hiari na una haki ya kutoendelea au kujitoa kwenye utafiti muda wowote ule bila adhabu yoyote. Kujitoa kwako katika utafiti huu hakutakuathiri wewe ama anayekuhusu kwa namna yoyote ile.

Mshiriki: Nimeelewa maelezo na masharti yote yaliyotajwa hapo juu na ninakubali kushiriki katika utafiti huu kwa matakwa yangu mwenyewe.

(Saini / dole gumba)_____

Saini ya Mtafiti /Mtafiti msaidizi_____

Shahidi mwingine yeyote_____

Appendix 2: Quantitative data collection tool for nurses health care providers

Section 1: Introduction			
Good morning/afternoon Iam .....from Muhimbili University of Health and Allied Sciences, School of public health and I'm conducting a study on factors associated with utilization of cervical cancer screening services among nurses working at Muhimbili National Hospital and Ocean Road Cancer Institute. Iam requesting you to take part in this study and all your information will be kept confidential. Your participation is voluntary and you can withdraw any time at your discretion, *read the informed consent!*			
Section 2: General information			
101	Questionnaire number		[_]
102	Date of interview	Date____Month____Year 2018	
103	Name of the interviewer	1. Albert Ngulla 2. Adam Malaika 3. Sophie Tabarani	[ ]
104	Name of the Health facility	1. Muhimbili National Hospital 2. Ocean Road Cancer Institute	[ ]
105	Name of the hospital department	1. Emergency department 2. General OPD 3. Psychiatry and mental health 4. Internal Medicine 5. Surgery 6. Obstretric and Gynaecology 7. Paediatrics 8. Anaesthesiology	[ ]
106	Which nursing area are you working in this facility?	1. Nurses caring for inpatients 2. Nurses caring for outpatients 3. Nurses working under operating rooms and Central sterilization unit 4. Nurses working at EMD 5. Nurses working in the dialysis unit	[ ]

		6. Others, specify, _____	
107	Under what nursing department are you working at this facility?	1. Nursing and housekeeping 2. Maternal and reproductive health (paediatric?) 3. Central sterilization 4. Others, specify _____	[ ]
108	For how long have you been working at this facility?	Record the number in complete years	[___]

109	For how long have you been working as a nurse provider?	Record the number in complete years	[____]
	Section 3: Social demographic information of the respondent		
110	How old are you?	[Indicate age in complete years]	
111	Religion of the respondent	1. Muslim 2. Christian (go to 113) 3. No religion (go to 114) 4. Others, _____(go to 114)	[ ]
112	If she is a Muslim, what dominions	1. Sunni (go to 114) 2. Shia (go to 114) 3. Ahmad (Ansary) (go to 114) 4. Others, _____ (go to 114	[ ]
113	If she is a Christian, what dominions	1. Catholics 2. Lutheran 3. Pentecostals 3. Anglicans 4. SDA 5. Jehovah witness 6. Others, _____	[ ]
114	Which level of education or school did you complete? [Tick the right option]	1. Certificate 2. Diploma 3. Degree 4. Masters 5. Others	[ ]

115	What is your marital status	1. Single go to 117 2. Married 3. Widowed go to 117 4. Separated/ divorced go to 117 5. Cohabiting (living with partner)	[ ]
116	If married or cohabiting, what does your husband (spouse) do	1. None 2. Peasant 3. Employed/Salaried 4. Business/Trader 5. Others, _____	[ ]
117	Do have children?	1. Yes 2. No go to 120	[ ]
118	If yes, how many children do you have?		_____
	Factors associated with utilization of cervical cancer screening services		
119	Are you aware of the cervical cancer screening services?	1. Yes 2. No, go to	[ ]
120	How did you know about cervical cancer screening services for the first time?	1. Heard from a friend 2. Through academic teachings 3. Media (TV, Radio, Magazine, Newspaper) 4. Others, _____	[ ]

121	Check marital status	1. Single, (go to 123) 2. Married 3. Widowed, (go to 123) 4. Separated/ divorced (go to 123) 5. Cohabiting (living with partner)	[ ]
122	How do you consider your husband (spouse) as being at risk of HPV	1. I do not consider him as being at high risk of HPV 2. I consider him as being at moderate risk of HPV 3. I consider him as being at lower risk of HPV 4. I consider him as being at no risk of HPV	[ ]

		5. I'm not sure 6. Others, _____	
123	How do you consider yourself as being at risk of HPV	1. I do not consider myself as being at high risk of HPV 2. I consider myself as being at moderate risk of HPV 3. I consider myself as being at lower risk of HPV 4. I consider myself as being at no risk of HPV 5. I'm not sure 6. Others, _____	[ ]
124	Have you ever been screened for cervical cancer before?	1. Yes 2. No, go to	[ ]
125	If yes when was the screening done	Record the year the screening was conducted	_____
126	Based on the question above, categorize this nurse as being	1. Screened within the past three years 2. Screened between 3-5years ago 3. Screened beyond five years	_____
127	Where were you screened for cervical cancer?	1. Muhimbili National Hospital 2. Ocean Road Cancer Institute 3. Others, please specify_____ go to 140	[ ]
	If the screening was conducted at MNH or ORCI, ask the following		
128	Were you generally satisfied with the services?	1. Yes 2. No	[ ]
129	Did you pay for the services	1. Yes 2. No, go to 131	[ ]
130	If yes, how much did you pay	[mention the amount in nearby TSH]	[_____]

131	What method was used during your screening process?	1. Visual inspection (VIA) 2. Pap smear (pap tests), including the Liquid-based cytology 3. Others, _____	[ ]
132	How do you describe the type of method used during your screening	1. Satisfied 2. Dissatisfied 3. Comfortable with the method	[ ]
133	How do you describe the attitude of the providers	1. Excellent 2. Good 3. Average 4. Poor/bad	[ ]
134	How do you describe the competency of the person who attended you?	1. Excellent 2. Good 3. Average 4. Poor/bad	[ ]
135	What was the gender of the person who attended you	1. Male 2. Female go to 128	[ ]
136	Where you satisfied being attended by a male provider	1. Yes 2. No, go to	[ ]
137	How do describe the waiting time	1. Was too long 2. Within my expectation 3. Less than expected	
	Questions for non-users		
138	Do you think it is important for you to get screened for cervical cancer?	1. Yes 2. No	[ ]
139	If you were to be given an opportunity to be screened for cervical cancer, where would you go?	1. Muhimbili National Hospital 2. Ocean Road Cancer Institute 3. Others, please specify_____	[ ]
	If not at MNH or ORCI ask the following		

140	What is the reason for not choosing MNH or ORCI [Multiple responses allowed]	1. The services are not available 2. I do not like the procedure 3. There is problem with confidentiality 4. Attitude of the provider 5. Competence of the providers 6. There is poor privacy 7. There is overcrowding of the clinic 8. Problems with sterility of the equipment (Safety) 9. Distance of the clinic 10. Work schedule/shift 11. Others, specify_____	
141	What do you think can be proposed as a way of improving cervical cancer screening services among nurses in your health facility? 1. _____ 2. _____ 3. _____		
142	What is the status of this interview?	1. Complete 2. Partially completed 3. Invalid	[ ]
	THANK YOU VERY MUCH FOR TAKING PART IN THIS SURVEY		

Kiambatanishi 2: Dodoso ya ukusanyaji upimaji takwimu kwa wauguzi

Sehemu 1: Utangulizi			
Habari ya asubuhi/Habari ya mchana Mimi .....kutoka chuo kikuu cha sayansi za Afya Muhimbili, shule ya afya ya jamii ninafanya utafiti kuhusu mambo yanayochangia utumiaji wa huduma za uchunguzi wa saratani ya shingo ya kizazi,miongoni mwa wauguzi wanao fanya kazi katika hospitali ya Taifa ya Muhimbili na Taasisi ya Saratani Ocean Road. Ninakuomba uwe miongoni wa washiriki katika utafiti huu, taarifa zote zitatunzwa kwa usiri mkubwa. Ushiriki wako ni wakujitolea, na unaweza kujitoa wakati wowote kama utaona inafaa. Soma utaoaji wa idhini.			
Sehemu 2: Taarifa za jumla			
101	Namba ya dodoso		[101_]
102	Tarehe ya usaili	Tarehe____Mwezi____Mwaka 2018	
103	Jina la anayesaili	1. Mtafiti mwandamizi 2. Mtafiti msaidizi I 3. Mtafiti msaidizi III 4. Mtafiti msaidizi IV 5. Mtafiti msaidizi V	[ ]
104	Jina la Hospitali/Taasisi	1. Hospitali ya Taifa Muhimbili 2. Taasisi ya Saratani ya Ocean Road	[ ]
105	Jina la Idara	1. Idara ya wagonjwa wa dharura 2. Idara ya wagonjwa wa nje 3. Idara ya magonjwa ya Afya ya akili 4. Idara ya Tiba 5. Idara ya Upasuaji 6Idara ya uzazi na kina mama 7. Idara ya watoto 8. Idara ya usingizi	[ ]
106	Unatoka katika Idara gani ya Uuguzi	1.Idara ya Uuguzi na mazingira ya ndani 2Idara ya Afya ya mama na mtoto 3. Idara ya utasishaji 4.Nyinginezo	[ ]

	Sehemu 3: Taarifa za Kijamii za mshiriki		
107	Una umri wa miaka mingapi?	[Rekodi miaka kamili]	
108	Jinsia ya mshiriki	1. Mwanaume 2. Mwanamke	_____
109	Imani ya dini ya mshiriki	1. Muislam 2. Mkristu 3. Pentekoste 4. Nyinginezo	[ ]
110	Elimu yako ni ya kiwango gani? [Weka alama ya vema kwenye jibu sahihi]	1. Cheti 2.Stashahada 3. Shahada 4. Shahada ya Uzamili. 5. Nyinginezo	[ ]

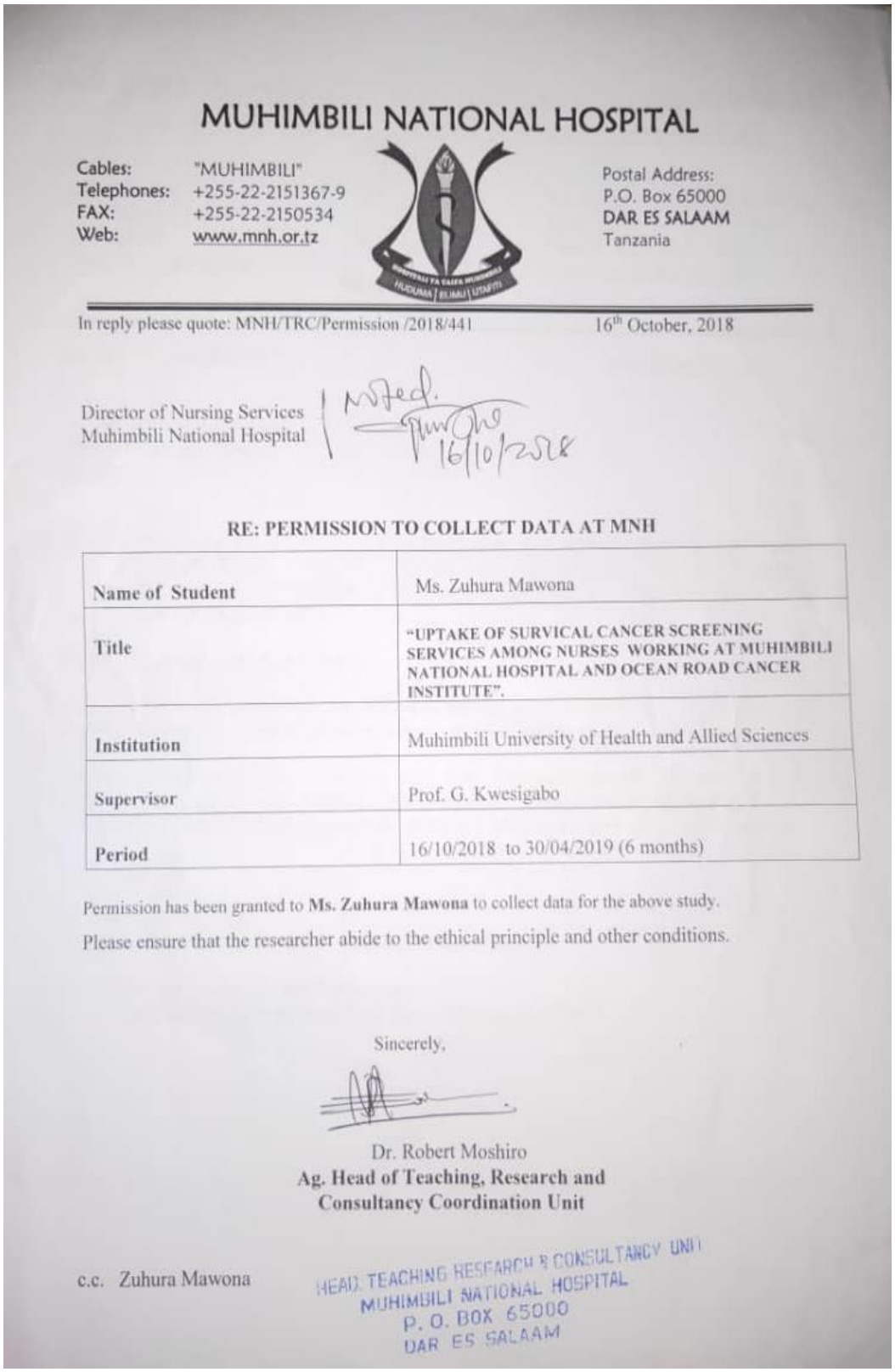
111	Hali yako ya ndoa	1. Sijao/Sijaolewa 2. Nipo kwenye ndoa 3. Mjane/Mgane 4. Mtalaka. 5. Nyinginezo	[ ]
112	Katika Hospitali/Taasisi hii umefanya kazi kwa muda gani?	Rekodi miezi kamili katika namba	[___]
113	Umefanya kazi kama muuguzi katika kipindi gani?	Rekodi miezi kamili katika namba	[____]
	Mambo yanayohusishwa na utumiaji wa huduma za uchunguzi wa saratani ya shingo ya kizazi.		
114	Unafahamu kuhusu huduma za uchunguzi wa saratani ya shingo ya kizazi.	1.Ndiyo 2. Hapana, (Nenda swali.....)	[ ]
115	Ulijuaje kuhusu huduma za uchunguzi wa saratani ya shingo ya kizazi?	1. Kwa kusikia kutoka kwa marafiki 2. Kupitia mafunzo ya kitaaluma 3. Vyombo vya habari. 4. Nyinginezo	[ ]
116	Umeishawahi kufanyiwa uchunguzi wa saratani ya shingo ya kizazi?	1. Ndiyo 2. Hapana, (Nenda swali.....)	[ ]
117	Kama ndiyo ni lini uchunguzi	Rekodi mwaka uliofanyiwa uchunguzi	_____

	ulifanyika?		
118	Ni mahali gani ulifanyiwa uchunguzi wa saratani ya shingo ya kizazi?	1.Hospitali ya Taifa Muhimbili 2. Taasisi ya Saratani ya Ocean Road 3. Nyinginezo, (Tafadhali taja)_____	[ ]
	Kama uchunguzi ulifanyika MNH au ORCI. Uliza yafuatayo		
119	Je uliridhishwa na huduma ulioyoipata?	1. Ndiyo 2. Hapana. (Nenda swali.....)	[ ]
120	Je ulilipia huduma ya uchunguzi?	1. Ndiyo 2. Hapana. (Nenda swali.....)	[ ]
121	Kama ulilipia huduma ya uchunguzi, ulilipa kiasi gani?	[Taja kiasi cha fedha kwa shilingi]	[_____]
122	Ni aina gani ya uchunguzi wa saratani ya shingo ya kizazi uliyofanyiwa	1. VIA 2. Pap smear 3. Nyinginezo	[ ]
123	Unaielezeaje aina uchunguzi uliotumika kukuchunguza saratani ya shingo ya kizazi?	1. Niliridhika 2. Sikuridhika 3. Nilikuwa vizuri	[ ]
124	Unaulezeaje mtazamo wa watoa huduma?	1. Mzuri sana 2. Mzuri 3. Kawaida 4. Mbaya	[ ]
125	Unauelezeaje uwezo wa muhudumu aliye kuhudumia wewe?	1Mzuri sana 2. Mzuri 3. Kawaida 4. Mbaya	[ ]

126	Muhudumu aliyekuhudumia alikuwa ni wa jinsia gani?	1. Mwanaume 2. Mwanamke	[ ]
127	Uliridhika kuhudumiwa na muhudumu wa jinsia ya kiume?	1. Ndiyo 2.Hapana. (Nenda swali....)	[ ]
128	Unauelezeaje muda uliosubiri kupata huduma	1. Ulikuwa mrefu sana 2. Ulikuwa ndani ya mategemeo yangu 3. Mfupi zaidi ya nilivyofikiria	
	Swali kwa ambao hawajawahi kufanyiwa uchunguazi		
129	Unafikiri ni muhimu kwako kufanyiwa uchunguzi wa saratani ya shingo ya kizazi?	1. Ndiyo 2. Hapana	[ ]
130	Kama ungepata nafasi ya kwenda kufanyiwa uchunguzi wa saratani ya shingo ya kizazi ungependa kwenda wapi?	1. Hospitali ya Taifa ya Muhimbili 2. Tasisi ya Saratani a Ocean Road 3.Nyinginezo, (Tafadhali taja)_____	[ ]
	Kama sio MNH au ORCI, uliza maswali yafuatayo		
131	Nisababu zipi zilizo kupelekea kuto kuchagua Hospitali ya Taifa Muhimbili au Taasisi ya Saratani ya Ocean Road? [Majibu tofauti yanaruhusiwa]	1. Huduma hazipatikani 2. Sipendi njia zianazotumika katika uchunguzi 3. Kuna shida ya usiri 4. Mtazamo wa wataoa huduma 5. Uwezo wa wawatoa huduma 6. Hali ya kuwasitiri wateja ni duni 7. Kuna wateja wengi katika kliniki 8. Matatizo ya utasishaji wa vifaa vinavyotumika (Usalama) 9. Umbali wa kiliniki 10. Zamu za kazi 11. Nyinginezo, Zitaje__	
132	Kwa mtazamo wako,toa mapendekezo yako nini kifanyike ili kuboresha huduma za		

	uchunguzi wa saratani ya shingo ya kizazi katika hospitali/Taasisi yako 1. _____ 2. _____ 3. _____		
133	Usaili umefikia hatua gani?	1. Umekamilika 2. Haujakamilika 3. Haufai	[ ]
	AHSANTE SANA KWA SEHEMU YA UTAFITI HUU		

Appendix 3: Permission letter



MUHIMBILI NATIONAL HOSPITAL

Cables: "MUHIMBILI"
Telephones: +255-22-2151367-9
FAX: +255-22-2150534
Web: www.mnh.or.tz

Postal Address:
P.O. Box 65000
DAR ES SALAAM
Tanzania

In reply please quote: MNH/TRC/Permission /2018/441 16th October, 2018

Director of Nursing Services
Muhimbili National Hospital

Noted. 16/10/2018

RE: PERMISSION TO COLLECT DATA AT MNH

Name of Student	Ms. Zuhura Mawona
Title	**"UPTAKE OF SURVICAL CANCER SCREENING SERVICES AMONG NURSES WORKING AT MUHIMBILI NATIONAL HOSPITAL AND OCEAN ROAD CANCER INSTITUTE".**
Institution	Muhimbili University of Health and Allied Sciences
Supervisor	Prof. G. Kwesigabo
Period	16/10/2018 to 30/04/2019 (6 months)

Permission has been granted to **Ms. Zuhura Mawona** to collect data for the above study.

Please ensure that the researcher abide to the ethical principle and other conditions.

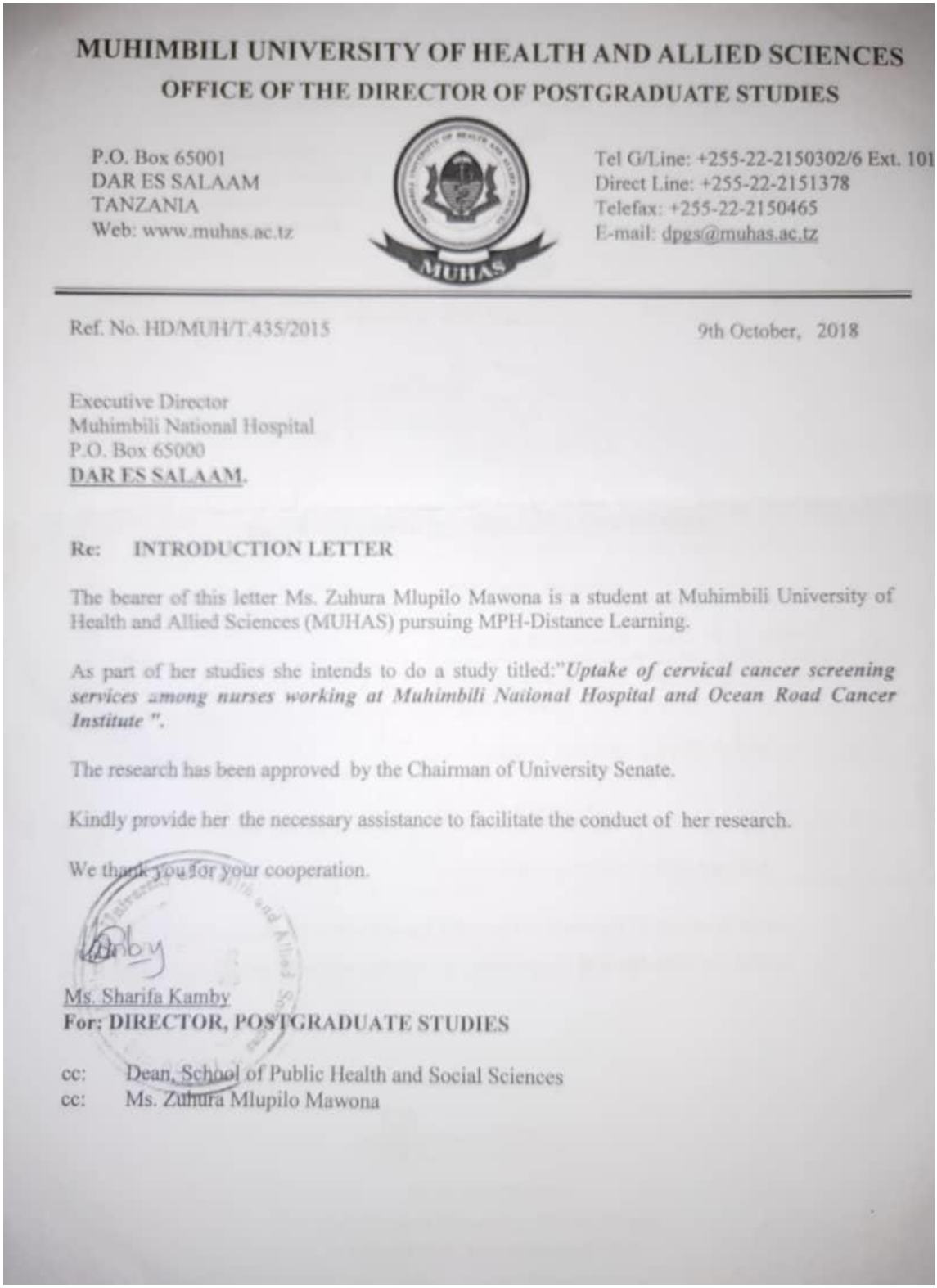
Sincerely,

Dr. Robert Moshiro
Ag. Head of Teaching, Research and Consultancy Coordination Unit

c.c. Zuhura Mawona

HEAD TEACHING RESEARCH & CONSULTANCY UNIT
MUHIMBILI NATIONAL HOSPITAL
P. O. BOX 65000
DAR ES SALAAM

Appendix 4: Introduction letter



MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES
OFFICE OF THE DIRECTOR OF POSTGRADUATE STUDIES

P.O. Box 65001
DAR ES SALAAM
TANZANIA
Web: www.muhas.ac.tz

Tel G/Line: +255-22-2150302/6 Ext. 101
Direct Line: +255-22-2151378
Telefax: +255-22-2150465
E-mail: dpgs@muhas.ac.tz

Ref. No. HD/MUH/T.435/2015

9th October, 2018

Executive Director
Muhimbili National Hospital
P.O. Box 65000
DAR ES SALAAM.

Re: INTRODUCTION LETTER

The bearer of this letter Ms. Zuhura Mlupilo Mawona is a student at Muhimbili University of Health and Allied Sciences (MUHAS) pursuing MPH-Distance Learning.

As part of her studies she intends to do a study titled:"***Uptake of cervical cancer screening services among nurses working at Muhimbili National Hospital and Ocean Road Cancer Institute ".***

The research has been approved by the Chairman of University Senate.

Kindly provide her the necessary assistance to facilitate the conduct of her research.

We thank you for your cooperation.

Ms. Sharifa Kamby
For: DIRECTOR, POSTGRADUATE STUDIES

cc: Dean, School of Public Health and Social Sciences
cc: Ms. Zuhura Mlupilo Mawona