Health facility readiness for provision of cervical cancer screening in Kinondoni Municipal Dar es salaam

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MMed (Obstetrics and Gynaecology) Dissertation
Muhimbili University of Health and Allied Sciences
October, 2018

Muhimbili University of Health and Allied Sciences

Department of Obstetrics and Gynaecology

HEALTH FACILITY READINESS FOR PROVISION OF CERVICAL CANCER SCREENING IN KINONDONI MUNICIPAL, DAR ES SALAAM

By

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A Dissertation Submitted in (partial) Fulfillment of the Requirements for the Degree Master of Medicine in (Obstetrics and Gynaecology) of

Muhimbili University of Health and Allied Sciences
October, 2018

CERTIFICATION

The undersigned certifies that he has read and hereby recommends for acceptance by the Muhimbili University of Health and Allied Sciences a dissertation entitled **"Health facility readiness for provision of cervical cancer screening at kinondoni municipal Dar es Salaam Tanzania"**, in partial fulfilment of the requirements for the degree of Master of Medicine of the Muhimbili University of Health and Allied Sciences.

_____

Prof P. Muganyizi

(Supervisor)

_____

Date

DECLARATION AND COPYRIGHT

I, **Dr. Iddiphonce Alphonce**, 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**_____

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ACKNOWLEDGEMENTS

I am humbly thankful to the Almighty God for his mercy and guidance during the whole period of my study.

I am thankful to my supervisor, Prof. Muganyizi who gave his valuable time to advise, guide and give me fundamentals of carrying out this work.

I also would like to thank all academic staff in my department who constantly offered me constructive criticism that greatly improved my work.

DEDICATION

I dedicate this thesis to my family,in particular to my late father Alphonce Maduhu. May his Soul Rest in Eternal Peace, Amen.

ABSTRACT

Background

Cervical cancer is the second most common cancer among women worldwide. About 83% of the cases occur in developing countries, representing 15% of female cancers. Cervical cancer ranks as the most frequent cancer among women in Tanzania, and the most frequent cancer among women between 15 and 44 years of age with age specific incidence rate of 34 per 100,000.Inspite of the fact that the government of Tanzania is undertaking program for prevention and management of cervical cancer, the prevalence remains high compared to other developing countries. This study aimed to assess the facility readiness for cervical cancer screening, and provider's knowledge on cervical cancer screening in Kinondoni Municipal

Objectives

To assess public health facilities readiness on provision of cervical cancer screening services as part of comprehensive cervical cancer prevention and treatment in Kinondoni municipality.

Methodology

A descriptive cross-sectional study was conducted in Kinondoni municipality from August 2017 to October 2017 whereby a total of 14 public health facilities were surveyed. It included 2 public hospitals, 2 health centers and 10 dispensaries that were expected to be providing cervical cancer screening services. Information on facility readiness on cervical cancer screening, referral modalities, healthcare providers knowledge on cancer screening services and availability of equipment and supplies for screening was collected using a structured researcher administered questionnaire and a checklist. Data were analyzed using SPSS version 23.0 computer program whereby Categorical variables were analyzed and compared using the chi square test and continuous variables were analyzed as mean, standard deviation and compared using student's t-test. In any comparison a p-value of less than 0.05 was interpreted as statistical significant. Facility readiness was assessed based on the presence of all basic items in the Tanzania National Guideline that include

Infrastructure, equipment, Consumables and trained personnel, and working referral system. Knowledge was assessed using a Universal grading system.

Results

Thirteen (92.8%) out of fourteen health facillities had cervical cancer sreening services which was Visual Inspection with Acetic Acid (VIA). Out of these only three (21.4%) facility had all the readiness components fulfilled. A total of 105 health personel from 14 public health facilities were recruited in this study and majority of the participants were nurses 79 (75.2%), followed by Doctors21 (20%). Only18(17.14%) of the interviewed staff had attended cervical cancer screening training. Of all the staff, sufficient knowlege on Cervical cancer was documented in (63.8%) with significantly higher proportion among doctors (95.2%) compared to nurses (55.7%), $p<0.004$.

Conclusion

Facility readiness for comprehensive cervical cancer screening and treatment is low among public health facilities in Dar es Salaaam. Moreover, inspite of higher knowledge on Cervical Cancer screening among staff the great majority were lacking training on Cervical cancer screening.

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ABBREVIATIONS

CIN	Cervical Intraepithelial Neoplasm
CTC	Care and Treatment Centre
HIV	Human Immune Deficiency Virus
HPV	Human Papilloma Virus
MoHCDGEC	Ministry of Health Community Development, Gender, Elderly and Children
MUHAS	Muhimbili University of Health and Allied Sciences
RCH	Reproductive and Child Health
SDG	Service Delivery Guideline
SPSS	Statistical Package for Social Sciences
STA	Screen and Treat Approach
SVA	Single Visit Approach
VIA	Visual Inspection under Acetic acid
WHO	World Health Organization
AIDS	Acquired Immune Deficiency Syndrome
ORCI	Ocean Road Cancer Institute.

OPERATIONAL DEFINITIONS.

Cervical cancer screening is a process used to find changes in the cells of the cervix that could lead to cancer

Public Health Facilities: Includes governmental, parastatal and military health facilities

Facility readiness – availability of infrastructure, availability of functional equipment for screening, availability of guideline and schedule for screening, working referral system, **availability of t**rained providers (current and last three months)

Guideline in this study will include: Service Delivery Guideline for comprehensive Cervical Cancer, flip charts, and protocol should be available displayed at screening unit

Cervical cancer referral form is a national referral form that has a second page or tears away section that facilitates feedback to the referring health facility.

Referral slips – a formal referral form that facilitates referral of patient from one facility to another.

INTRODUCTION

Cervical cancer is a major public health problem in Tanzania as it is throughout the world. It is the second most common cancer in women worldwide and the leading cause of cancer related morbidity and mortality in women in developing countries. Each year, nearly 529,000 new cases of cervical cancer and 274,000 deaths due to cervical cancer occur worldwide. Approximately 85% of this burden occurs in developing countries. (1)

Tanzania has one of the highest cervical cancer burdens in the world and the highest in Eastern Africa. Tanzania has age-standardized incidence rate (ASR) of 50.9 cases per 100,000 women and mortality rate of 37.5 per 100,000 women. These rates are nearly 50% higher to the Eastern Africa average and dramatically higher than in more developed countries.(1,2)

Invasive cervical cancer and its precursor cervical intraepithelial neoplasia (CIN) are associated with persistent infection with oncogenic "high-risk" (HR) types of the human papilloma virus (HPV). In women with healthy immune systems most HPV infections are transient and cleared. Persistent HR-HPV infection significantly increases the risk of cellular change leading to the development of precancerous lesions and eventually invasive cervical cancer. **(1)**The highest burden of the HIV/AIDS epidemic is currently in sub-Saharan Africa, where more than half of the people infected are women who have no access to cervical cancer screening. The association between HIV and invasive cervical cancer is complex. Several studies shows an increased risk of precancerous cervical lesions and a more rapid progression to cancer amongst HIV-infected women.(3)

Visual Inspection with Acetic Acid (VIA) is common approach for cervical cancer screening in low-resource settings including Tanzania**.** Ocean Road Cancer Institute has utilized VIA, amongst other screening methods with reports of sensitivity and specificity for detecting precancerous lesions of the cervix ranging from 60.6-70.7% and 94.4-98.2% respectively (4,5). Studies have reported VIA sensitivity for detecting precancerous lesions comparable to cervical cytology and requires fewer resources.(6).

VIA provides immediate results, thus promoting linkage of screening with treatment. VIA and cry therapy can be used and has proven to be practical and currently feasible in Tanzania.

Linking screening to treatment in a Single visit approach is important. This strategy minimizes the number of patients with abnormal screening results being lost to follow-up and not receiving appropriate treatment(7,8).VIA-based program using the SVA strategy have been shown significantly to reduce precancerous lesions of the cervix and cervical cancer incidence and mortality. Ideally a single visit approach (SVA) is an effective and efficient strategy for secondary prevention of cervical cancer in developing countries and can be conducted by competent clinicians and nurses .(9).

In 2007-2008, a facility-based World Health Organization (WHO) demonstration project was carried out in two health facilities in Tanzania, Peramiho Mission Hospital and Kilimanjaro Christian Medical Centre (KCMC). This project demonstrated that VIA combined with cryotherapy was safe, feasible and acceptable in the country(10).

Tanzania through Ministry of Health Community Development Gender Elderly and children developed service delivary guideline for cervical cancer prevention and control in may2011 and in October 2014 set a budget to every health facility to establish screening services, but there are still few screening centers and a number of cancer patients in advanced stage is increasing every year, hence there is a need of assessment of health facilities readiness on provision of cervical cancer screening to explore the gaps and to find areas for strengthening.

LITERATURE REVIEW

Cervical cancer and related complications is a public health problem, according to WHO (2011). It is estimated that 500,000 new cases occur every year worldwide, the majority (80%) being in the developing world and therefore making cervical cancer one of the big threats to women lives. In sub-Saharan African Countries have the world's highest age-standardized death rates from invasive cervical cancer, such as 67 per 100 000 people in Harare, Zimbabwe and 40.8 per 100 000 in Kampala, Uganda. Data from hospital-based registers in Nairobi Kenya have indicated that cancer of the cervix accounted for 70–80% of all cancers of the genital tract.(11)

Tanzania has a population of 10.97 million women aged 15 years and older who are at risk of developing cervical cancer and current estimates indicate that, in Tanzania, every year 7515 women are diagnosed with cervical cancer and 6009 die from the disease(10). Cervical cancer ranks as the most frequent cancer among women in Tanzania, and the most frequent cancer among women between 15 and 44 years of age with age specific incidence rate of 34 per 100,000. Worst still the projected number of cervical cancer deaths in 2025 is 9923 per year if specific measures are not put in place. Something has to be done to reduce this number of new cases and deaths(1).

The incidence of cervical cancer can be reduced as much as 80% if the quality, coverage, and follow-up of screening are high**(10)**. In most developed countries, women are advised to have their first smear test soon after becoming sexually active and subsequently once every 1–5 years (12). Screening for cervical cancer aims at detecting precancerous lesions before they progress to invasive cancer. Since cervical cancer is uncommon before 30 years of age WHO recommends that screening should be done at 30 years and above. For high risks groups like HIV infected women screening can be done earlier when they are 25 years older and above(13).

Guidelines, protocols and alogarithms are intended for use by health providers as reference guide for cervical cancer screening, as a guidance to support effective planning, implementation and monitoring of comprehensive cervical cancer prevention and control. Studies conducted in different low resource countries show that most health facilities lack guidelines. (11,14,15). However in Finland there was low rates of cervical cancer incidence and mortality and the disease is no longer a problem. This success was attributed by quality guidelines and policies on cervical cancer screening (16).

Schedule for cervical cancer screening should be performed at least once for every woman in the target age group where most benefit can be achieved at 30-49yrs. HPV testing, cytology and VIA are recommended screening tests. Women who test negative with VIA or cytology the interval for re screening should be 3-5yrs. Women who test negative with HPV testing re screening should be done at a minimum 5 years interval. If cancer is suspected in women who is attended screening they should not be treated but should be referred to a facility for a diagnosis and treatment of cancer. (5,14,17,18)

Screening every 10 years can reduce cervical cancer burden by 40-60%; every five years 85%; every three years 91%; and yearly 94%. Even a single lifetime screening at age 35 linked with effective treatment would reduce the incidence of cervical cancer by 26-32%.(7,8,19,20).The tests available for cervical cancer screening include: cytology (Pap smear and liquid based cytology), HPV DNA test, Visual Inspection with acetic acid (VIA) and Visual inspection with Lugol's iodine (VILI). So far the only test with proven effectiveness in decreasing cancer rates in large population based screening is the pap smear. The other tests have only shown good efficiency in research settings and there is no concrete evidence on their effectiveness in a large population.(10,13,21)

Visual Inspection with acetic acid (VIA) involves applying 3 to 5% of acetic acid into the cervix then examining it with the naked eye with the aid of a light source. A positive test is defined by presence of aceto white region in the cervical transformation zone. The method has moderate sensitivity ranging from 67 to 79% and low specificity ranging from 49 to 86% compared to cytology which has a higher sensitivity.

A cross sectional study done in Zimbabwe showed that compared to cytology VIA had a higher sensitivity of 77% Vs 43% and lower specificity of 64% Vs 91%(13,22).
Having health facilities with strong capacity on provision of cervical cancer services is essential to reduce mortality and morbidity due to complications related cancer of cervix. This can be achieved by ensuring that equipment and supplies for provision of screening services as well as trained providers are available at the facility.

Studies conducted in different regions in Africa on assessment of health facilities on provision of cervical cancer screening shows varying different results like lack of screening services, low utilization of available screening services, lack of trained personnel and sometimes available personnel such as medical officer and gynecologist were not involved in screening. This is an indication that a gap exist in the readiness of health facilities on provision of cervical cancer screening services. (11,21,23–25)

Availability basic equipment and supplies to health facilities providing cervical cancer screening and having trained cervical cancer screening providers, is of great importance since one of the major barriers to provide screening services is lack of basic equipment and supplies to our facilities. Availability of essential equipment and supplies varies among health facilities from primary facility to tertiary facility.

In the United States, the incidence of cervical cancer has fallen by 75 percent over last 40 years and the mortality from cervical cancer in the UK has reduced by 40% between 1979 and 1995.This success is explained as the attribution to the availability of equipment and increased uptake of women participating in the cervical screening program as a results of increased awareness amongst women from health education and the media, reduced anxiety around having a smear taken, and the financial incentives to general practitioners for achieving higher coverage targets within their populations .

On the contrary, a nationwide screening initiative in Mexico, failed to reduce mortality rates from cervical cancer, because of low coverage to the target population .In a recent report, it is shown that only 5% women in low income countries have undergone a Pap smear tests (26–28). In Tanzania as incidence by the fact that in Ocean Road Cancer Institute alone in 2006 there were 955 cases of cervical cancer, which rose to 1288 cases in 2008 and by 2011 the cervical cancer cases increased to 1881.This may contributed by lack of facilities and equipments for screening. (29)

Providers Knowledge on cervical cancer screening is an important component to quality services provided to clients in cervical cancer screening. Cross sectional studies conducted on awareness and knowledge about cervical cancer among health care providers in developing countries showed that most of them had varied knowledge level about cervical cancer.

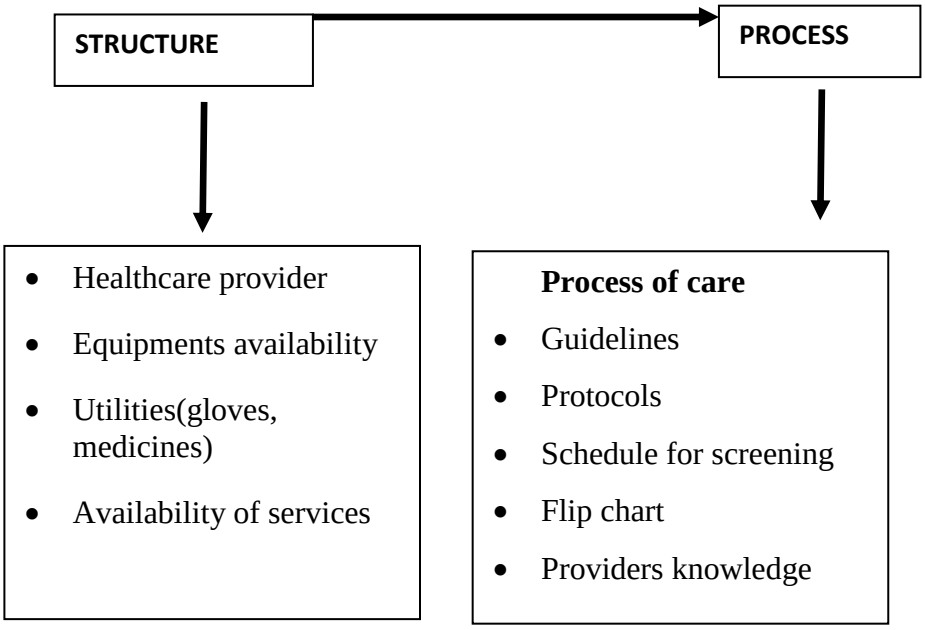
In Pakistan awareness and knowledge about cervical cancer among health care providers revealed that 62% of them believed that virus is the cause of cervical cancer whereas 61% attribute the cause to HPV , (30). In Tanzania most nurses (60.6%) correctly identified sexual intercourse as a mode of transmission of HPV, while the majority (more than 80.0%) identified kissing, body fluids, drinking unsafe water, mother to child transmission and air droplets as non modes of transmission. Multiple sexual partners and history of HPV infection was identified by 47.4% and 43.1% respectively as risks for developing cervical cancer by the respondents. (31)

Functional referral system is very important to assure continuity and improved quality of care at all levels of healthcare system .Especially for developing countries, strengthening such systems is important to use the available scarce resources. In these countries, the most common reasons for referral is lack of qualified personnel and equipment. Studies done in different developing countries indicated that more than one quarter of the patients were not satisfied with the referral system .Especially delay in finding immediate support after referred is the reason for this dissatisfaction. (32,33)

An efficient referral system is an essential component of a high quality, comprehensive cervical cancer prevention and control program, clients receiving cervical cancer screening will be referred using the existing national referral system and forms. It is recommended that a referral form has a second page or tear-away section that facilitates feedback to the referring health facility. These national referral forms should be available at all levels of health facilities and service providers should be made aware of the existing referral forms(10).

CONCEPTUAL FRAMEWORK FOR ASSESMENT OF HEALTH FACILITY READINESS

Modified Donabedian's (1980) framework, the structure can mean human, physical, and financial resources. For example, medical tools are a typical example of the structure. The process is a set of activities e.g., treatment plans that go on within and between practitioners and patients. The outcome is the change in patient's health status that can be attributed to given care.



PROBLEM STATEMENT

Cervical cancer remains the leading malignancy among women in Tanzania. The World Health Organization (2010) documented Zambia and Tanzania to have the highest incidence of cancer of the cervix in sub-Saharan Africa. It is therefore one of the most important public health disease.

The high prevalence of cervical cancer in Tanzania has continued despite several government interventional program and the situation may even worsen hence raising queries as to whether facilities on cervical cancer are easily available, readiness or knowledge and materials of cervical cancer screening is inadequate .

Tanzania Government is committed to provide screening tests by providing funds and equipment to 14 facilities in Kinondoni Dar es salaam**,** but it is still unknown to what extent those facilities are efficiently performing screening. This study aimed at assessing availability of service guidelines of cervical cancer screening, availability of functional equipment and supplies as well as provider's knowledge on cervical cancer screening and establishing current readiness in provision of screening services in order to inform program managers and other stakeholders about the situation so as to come up with workable solution.

RATIONALE

Cervical cancer and related complications are among the leading cause of cancer related mortality and morbidity in the country. However, few number of health facilities are providing cervical cancer screening, so there is a need to assess these facilities readiness on provision cervical cancer screening services.

The study findings provides information on the readiness of public health facilities in provision of cervical cancer screening services, addressing the key deficit areas existing in the facilities towards provision care. This study will be of value to policy makers, health system managers and other stakeholders working to reduce cervical cancer burden, on areas to invest more, or strengthening on cervical cancer services in the public health facilities of Tanzania.

RESEARCH QUESTION

How **ready** are the public health facilities for provision of cervical cancer screening services in Kinondoni Municipality from August 2017 to October 2017.

OBJECTIVES

Broad objectives

To assess public health facilities readiness on provision of cervical cancer screening services in Kinondoni municipality

Specific objectives

1) To determine the availability of working guidelines for cancer screening in public facility
2) To asses availability of functional equipment, and supplies in public health facilities on provision of cervical cancer screening.
3) To access provider's level of knowledge on cervical cancer screening in public health facilities.
4) To assess adherence to MOHCDEC guidelines for referral of cancer cases in public health facilities providing of cervical cancer screening.

METHODOLOGY

Study design

Descriptive Cross sectional study.

Study setting

Kinondoni Municipality which is the northernmost of three municipalities in Dar es Salaam, Tanzania, the others being Temeke (to the far Southeast) and Ilala . To the east is the Indian Ocean, to the north and west the Pwani Region of Tanzania. The area of Kinondoni is 531 km².the latest population census of 2012 showed that population of Kinondoni is 1,775,049: 914,247 female and 860,802 male. (NBS2012)

Administratively, Kinondoni District is broken into 4 divisions, 27 different wards, and 113 sub-wards, Kinondoni has 163 health facilities, 136 privates, 27 public health facilities, 14 public facilities provide cervical cancer screening and 3 private facilities. Cervical cancer screening in Kinondoni has been supported by government and Management and Development for Health Tanzania (MDH).

The study covered fourteen health facilities in Kinondoni municipality namely: Mwananyamala hospital, Lugalo hospital, Magomeni health centre, Tandale health centre, Bunju dispensary, Kijitonyama dispensary, Makongo juu dispensary, Hananasifu dispensary, Ununio dispensary, Kawe dispensary, Madale dispensary, Mwenge dispensary, Kunduchi dispensary, Oyesterbay police dispensary.

Study population

Public Health facilities of Kinondoni municipal providing cancer screening

Health workers in public health facilities of Kinondoni providing cancer screening services at RCH and CTC.

Sample size

The sample size was calculated using the knowledge of causes of cervical cancer amongst nurses in Tanzania. Estimated sample size was calculated by the formula below:

$$n = \frac{Z^2 P(1-P)}{E^2}$$

Where n= the minimum sample size required, z =level of confidence which is **90%** therefore z is 1.96, Ɛ=maximum likely error which is 10%, and p=proportion of 60% of health care providers having knowledge on cervical cancer (Urasa et al2011)

Therefore,

$n = \frac{Z^2 P(1-P)}{E^2}$ where: n= Sample size , Z= 90% Confidence Interval (1.96)

P= Past experience/previous studies prevalence

E= Error margin (10%)

Therefore $n = \frac{(1.96)^2 \times 0.6(1-0.6)}{(0.1)^2}$

$= \frac{3.8416 \times 0.6 \times 0.4}{0.01} = \frac{0.9219}{0.01} = 92.2$

Adjusting for 10% non respondents gives sample size 101

n=102

Therefore the sample size will be 102 medical personnel in different categories.

Sampling technique

Purposive sampling technique was used whereby all cervical cancer providers and selected RCH and CTC workers who were available in public health facilities was consecutively recruited until the sample size is reached. The study involved 7 selected medical personnel

from each of the dispensaries, and health centres and 10 from the two hospitals. They were identified from records as well as guidance from the facility administrators. Two hospitals and two health centers were purposively selected for the study; however 23 dispensaries were listed out of which 10 were selected by simple random sampling so as to eliminate bias. Data was collected for 1 month after ethical clearance.

Data management

The questionnaire was adopted from similar study (firdawek at al2014), checklist was adopted from Tanzania cervical cancer service delivery guideline both **were** pre-tested prior to the actual data collection and some adjustments were made. Training was given data collectors. Strict supervision was conducted by the investigator and supervisor throughout the data collection period and the filled questionnaires were checked for completeness and consistency at the spot by data collectors and investigator.

Data collection

Data was collected using a structured questionnaires and a checklist. Cervical cancer screening providers and selected RCH and CTC workers recruited for the study and those who met the inclusion criteria were provided detailed information about the aim of the study and asked for voluntary informed consent. Information from eligible health worker who consented for the study was collected by completing the semi-structured questionnaire administered by trained research assistants. The research assistants were Doctor and nurse who was trained on how to collect information from the participants prior to start of data collection. The questionnaire collected socio-demographic information, knowledge of medical staff about cervical cancer screening as well as the general status of cervical cancer screening in Kinondoni district.

A checklist was used to collect all the information on availability of equipment, supplies, furniture and infrastructure used for cervical cancer services provision. The same checklist used to collect information on the treatment, counseling and screening, Availability of guidelines and patients who were referred due to complications of cancer. These data was obtained from the Health Management Information System (HMIS), and local registry book.

Data analysis and variable scoring procedure

The collected questionnaires form 105 health workers was checked manually for its completeness, coded and entered into statistical package software (SPSS 23.0). Data cleaning was done then descriptive frequency distribution of the socio demographic and variables used to assess knowledge on cervical cancer screening.

Knowledge on the aetiology organism, had 4 responses (HPV virus, bacteria, fungus and don't know) those who said HPV virus were correct and those said other responses was incorrect (scored 1 as correct and 0 as incorrect). Regarding cervical cancer transmission knowledge participant who said sex intercourse were knowledgeable (correct) and those said yes for oral-faecal skin to skin and blood contact were not knowledgeable and scored 0.Regarding who is affected by HPV infection respondents who said both sex are affected with HPV virus were correct and scored 1.

Knowledge on age to start screening had three responses (any age group, older age and 9-13 years), health workers who said 9-13 years and older age had a correct score of 1 and those said any age group were scored as incorrect 0. Knowledge on time to start screening had 3 responses (<30 years, < 30 years if HIV+ and 30-49 years) correct responses were <30 years if HIV+ and 30-49 years. Knowledge on the screening interval: participant who said yearly if HIV+ and every 5 years if using PAP were knowledgeable scored1.

Knowledge on symptoms of cervical cancer there were 7 symptoms assessed (multiple responses questions): bleeding after sexual intercourse, inter menstrual bleeding, painful coitus, offensive vaginal discharge, unexplained weight loss, anaemia and cervix swelling. Every participant who said yes at least 4 of the symptoms were regarded as knowledgeable on cervical cancer symptoms.

Knowledge on risk factors associated with cervical cancer was assessed. Smoking, early sex long term use of oral contraceptive, multiple partners, multi parity and suppressed immunity, every risk factor had score of 1 for yes and 0 for no. Score of at least 3 risk factors and above was regarded as sufficient knowledge.

Finally overall knowledge on cervical cancer was computed which consisted: knowledge on etiology, transmission, age to start screening, who is affected, screening interval, risk factors,

clinical manifestation and prevention. Composite variable was made and total overall mean score calculated to be 9.55. Health workers who scored above mean were categorized as having sufficient knowledge on cervical cancer screening. Association was done between mean knowledge score versus socio demographic groups at CI of 95%.

The national cervical cancer facility readiness checklist was used to assess the following

1) Functional equipment for screening and treatment consistently present in past 3 months and present
2) Trained providers (at least 5 in hospital and health centre, 1 in dispensary)
3) Facility has a schedule for screening test
4) Adherence for referral system
5) Having good record system of screening data of atleast3 months and present
6) Availability of infrastructure.

Inclusion criteria

Health medical personnel working in RCH and CTC clinic in Kinondoni district

Exclusion criteria

Private health facilities

Ethical consideration

The ethical clearance for the study was obtained from the Senate Research and Publication Committee for Muhimbili University of Health and Allied Sciences (MUHAS). Permission to conduct the study was obtained from Kinondoni municipal administration where the study was conducted. Written informed consent was obtained from the participants after being informed about the purpose of the study. Participants were informed on benefits of participating in the study and there were no health risks that are associated with participating in this study. Participants were informed that they have the right to withdraw from the study any time they wish. The participant's information was kept confidential.

RESULTS

Fourteen health facilities were assessed on their readiness to provide Comprehensive Cervical Cancer screening and treatment. A total 105 health providers were recruited in this study and their knowledge on cervical cancer was assessed.

Table 1: Social demographic distribution of participants (n=105)

Characteristics	Frequency (%)
Sex	
Male	18 (17.1)
Female	87 (82.9)
Carders Category	
Nurses	79 (75.2)
Public Health Nurse	2 (1.9)
Clinical Assistant	3 (2.9)
Doctors	21 (20)
Qualification	
Certificates	45 (42.9)
Diploma	52 (49.5)
Degree	8 (7.6)
Working experience	
< 1 year	9 (8.6)
1 – 5 years	37 (35.2)
6 – 10 years	27 (25.7)
>10 years	32 (30.5)

More than three quarters were female 87(82.9). Majority of the participants were nurses with 79(75.2%) followed by Doctors 21(20.0%). About half 52(49.5%) of the health personnel had diploma level Table 1 above.

Availability of Facility readiness components

Only Three out of 14 health facilities had working guidelines on Comprehensive cervical cancer screening and treatment. All facilities had flip chart and none had displayed protocol (Table 2).

Table 2: Functional Instruments and supply for cervical cancer screening (n=14)

Facility resources	Number of health facilities (%)
Infrastructure	
Patient waiting area	12 (85.7)
File storage room	9 (64.3)
Procedure room	12 (85.7)
Changing room	4 (28.6)
Staff room	6 (42.9)
Sink with running water	9 (64.3)
All infrastructure available	4 (28.5)
Equipment	
Autoclave for sterilization	10 (71.4)
Torch	11 (78.6)
Speculum	13 (92.8)
Small basin for instruments	14 (100)
Sponge forceps	13 (92.9)
Instruments trolley	7 (50)
Adjustable spanner	5 (35.7)
All equipment available	3 (21.4)
Benches	14 (100)
Stool	14 (100)
Locks for clinical records	14 (100)
All available.	14 (100)

Consumables	
Gloves	13 (92.9)
Alcohol solution	10 (71.4)
Closed shoes	14 (100)
Acetic acids	13 (92.9)
Chlorine 0.5%	12 (85.7)
Savlon solution	13 (92.9)
Swabs + cotton balls	8 (57.1)
Register book	14 (100)
Client card	11 (78.6)
Referral forms	6 (42.9)
Specimen caps with lids	13 (92.9)
Tapes and labels	13 (92.9)
Drapes	3 (21.4)
Time watch	5 (35.7)
Wooden spatula	14 (100)
Large plastic buckets for decontamination	8 (57.1)
All supplies available	3 (21.4)

Out of 14 health facilities studied three facilities had all available infrastructure, equipment, furniture and consumables for the cervical cancer screening, cry therapy machines and carbon dioxide tanks.

Table 3: Frequency and percentage distribution of knowledge of respondents about HPV infection, screening time and interval for screening (n=105)

Variable	Frequency (%)
HPV virus as biological cause of cervical cancer	
Yes	73 (69.5)
No	32 (30.5)
***Sexual intercourse as risk for HPV transmission**	
Yes	60 (82.2)
No	13 (17.8)
***Aware of 9-13yrs as correct age for HPV vaccine**	
Yes	59 (80.8)
No	14 (19.2)
***Both male and female are infected by HPV**	
Yes	15 (20.5)
No	58 (79.5)
***Is HPV Preventable**	
Yes	62 (84.9)
No	11 (15.1)
Time to start screening	
30-49yrs or <30yrs if hiv+	
Yes	77 (73.3)
No	28 (26.7)
Screening interval	
Yearly if HIV+ or every 5yrs using pap	
Yes	92 (87.6)
No	13 (12.4)

***n=73**

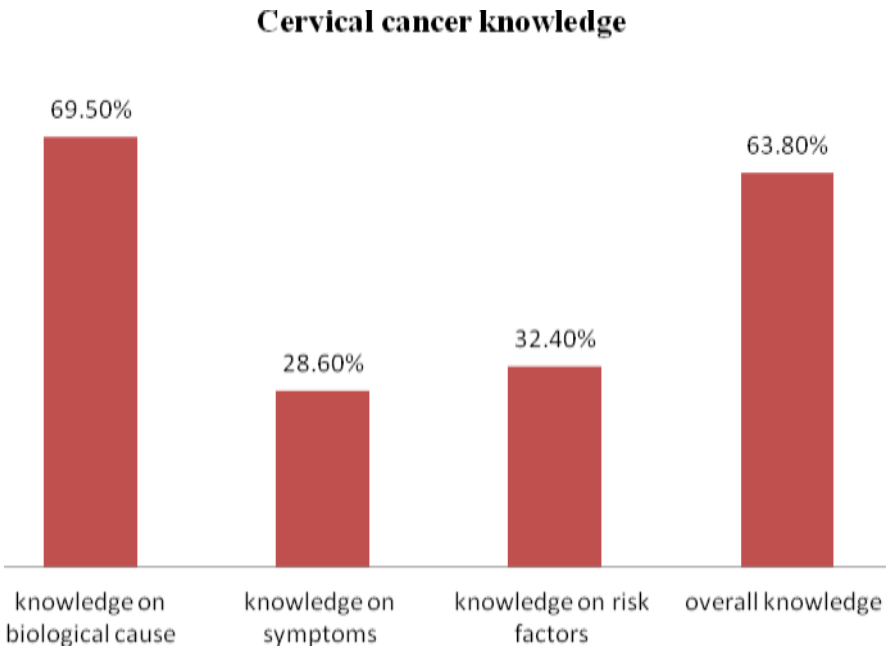
More than two third (69.5%) of the participants were aware that cervical cancer is caused by virus. Among the respondents who said biological cause was virus, 60(82.2%) knew that the cause was HPV. Regarding who is affected by HPV 15(20.5%) correctly responded both sex are affected while high proportion (79.5%) had insufficient knowledge.

Table 4: Frequency and percentage distribution of knowledge of respondent's cervical cancer risk factors and clinical presentation (n=105)

Variable	Frequency (%)
Risk factors	
Smoking	24 (22.9)
Early sex	59 (56.2)
Long term use of oral contraceptive	9 (8.6)
Multiple partners	65 (61.9)
Multi parity	28 (26.7)
Suppressed immunity	35 (33.3)
Any of the above	97 (92.4)
Clinical manifestation	
Bleeding after sexual-intercourse	79 (75.2)
Inter menstrual bleeding	39 (37.1)
Painful coitus	50 (47.6)
Offensive vaginal discharge	29 (27.6)
Unexplained weight loss	11 (10.5)
Anemia	23 (21.9)
Cervix swelling	23 (21.9)
Any of the above	98 (93.3)

Overall knowledge on cervical cancer risk factor was low among the health personnel. Regarding knowledge clinical manifestation on cervical cancer, bleeding after sex was the mostly known symptoms (75.2%). Higher proportion 94(89.5%) of the participants were not aware that cervical cancer is associated with weight loss. Having multiple partners and long term use of oral contraceptive as risk factors for cervical cancer was not known to the participants by 73.3% and 91.4%.

Figure 1: Percentage distribution of cervical cancer overall knowledge



Overall knowledge on cervical cancer was sufficient(63.8%)biological cause knowledge being leading sufficient(69.5%) and symptom knowledge being insufficient(28.6%).

Table 5: Association of cervical cancer screening knowledge with socio demographic characteristics data presented as n=105 (%)

	Sufficient Knowledge on cervical cancer screening			
Characteristics	**Yes**	**No**	**Total**	**P value**
Sex				
Male	11(61.1)	7(38.9)	18	0.496
Female	56(64.4)	31(35.6)	87	
Cadre Category				
Nurses	44(55.7)	35(44.3)	79	
Clinical Assistant &Public Health Nurse	3(60.0)	2(40.0)	5	0.004
Doctors	20(95.2)	1(4.8)	21	
Qualification				
Certificates	18(40.0)	27(60.0)	45	
Diploma	41(78.8)	11(21.2)	52	< 0.001
Degree	8(100.0)	0(0.0)	8	
Working experience				
≤ 5 years	27(58.7)	19(41.3)	46	0.414
>5 years	40(67.8)	19(32.2)	59	
Overall knowledge	**67(63.8)**	**38(36.2)**	**105**	

Overall knowledge on cervical cancer was high which included knowledge on biological cause, transmission, symptoms and risk factors, Significant high proportion of the general doctors were having sufficient knowledge on cervical cancer screening as compared to nurses ($p<0.001$). Working experience had influence on knowledge on cervical cancer screening.

Table 6: Reported use to MOHCDEC guidelines for referral of cervical cancer patients in public health facilities (n= 14)

Referral system for cervical cancer cases	Frequency (%)
Availability of referral forms	
Cervical cancer referral forms	0 (0)
Internal referral forms	6 (42.9)
Referral slips	14 (100)
Referral patients records	11 (78.6)
External referral slips	8 (57.1)
Referral reasons	
Lack of trained man power	1 (7.1)
Lack of equipments	1 (7.1)
Further management	11 (78.7)
Lack of trained man power & lack of equipments	1 (7.1)

All of the fourteen public health facilities studied had no cervical cancer referral forms however more than half (57.1%) had external referral slips.78.7% of the practitioner stated further management as the main reasons for referral.

DISCUSSION

This study was conducted at the time of a National-wide campaign to inaugurate HPV vaccination of adolescent girls in Tanzania and after almost a decade of introduction of Cervical Cancer Screening and Treatment program in Public Health Facilities. The current study shows that almost all the study facilities had cervical screening services in place. Nevertheless, almost all the facilities with screening programs lacked the necessary items to run the program smoothly.

Facility readiness for cervical cancer screening is crucial for the effectiveness of service delivery and treatment or referral of suspected Cervical Cancer cases (13) . In places where cancer screening has been effective, the advanced disease has been reduced very markedly (16) . Lack of readiness for Cervical Cancer Screening in Dar es Salaam could indicate more burdens of advanced disease cases in the community. The lack of facility readiness for cervical cancer screening has been observed in other developing countries. In Nigeria, revealed that only 4.8% had all the necessary screening requirements(23). A similar low readiness was observed in Ethiopia where there were absence of cervical cancer treatment ,register and protocol by 97%(34).

This study shows that eighteen participants had attended cervical cancer screening training.. This can lead to sub optimal services and care, There is a need for a government to strengthen in-service training and retain health workers at their respective facility. Ten facilities was not ready but providing cervical cancer screening, where by one facility were not ready and not providing cervical cancer screening .May be it could be due low budget to equip these facilities.

Guidelines and protocols are intended for use by health providers as reference guide for cervical cancer screening, as a guidance to support effective planning, implementation and monitoring of comprehensive cervical cancer prevention and control.

Current study results indicated lack of guidelines for comprehensive screening, diagnosis and management of cervical cancer and trained staff. This can be due to unequal and inconstant

supply of materials to facilities by the government. Only three facilities out of 14 studied had working guideline.

However lack of guidelines in facilities was observed in other countries; Ethiopia, Malawi, and Nigeria (11,15,23,35). Improving this will support effective planning, implementation and monitoring of comprehensive cervical cancer prevention and control as a result high coverage of cervical cancer screening.

Availability of basic equipment and supplies to health facilities providing cervical cancer screening is of great importance since one of the major barriers to provide screening services is lack of basic equipment and supplies to our facilities.

Current study shows that all facilities had cervical cancer screening structure. This is similar to study done in ECSA where all facilities had structures by 95% but they were lack of some infrastructure ,equipment, furniture's and supplies (11) .This study also shared same results with Studies conducted in Malawi, Ethiopia ,Nigeria (15,23,35) where There was a wide gap in constant supply of equipment and supplies in facilities providing comprehensive cervical cancer screening. There is a need of developing countries government to make sure that there is constant presence of supplies and equipments to health facilities providing cervical cancer screening.

This facility based cross sectional study has attempted to identify the knowledge towards cervical cancer screening among health service providers in Kinondoni municipality.

This study revealed the varied knowledge about cervical cancer screening among health service providers in the study population. The overall knowledge was sufficient 63.8% among participants. However the study found that more than half(79.5%) health service providers were not aware that both male and female are infected by HPV, also insufficient knowledge were on symptoms and risk factors (28.6%,32.4%). This may be contributed by lack of training.

More than two third of participants had sufficient knowledge on screening age and screening interval with (73.3%) and (87.6%) respectively. Knowledge of cervical cancer documented in this study finding was consistent with the finding in Addis Ababa , china and Tanzania (28,30,31,35) .In these countries studies depicted over all knowledge was good but in China there were insufficient knowledge on risk factors.

The biological cause of cervical carcinoma mentioned correctly in this study was human papilloma virus (69.5%) ,This finding is same with the finding in a study done in Ethiopia where more than half of the respondents knew that almost all of cervical patients have human papilloma virus(36).And also the study done in Pakistan showed that, majority (61%) of health care workers knew Human papilloma virus as the cause of cervical cancer and smoking as risk factor was reported in very low levels 7% (30).

Knowing biological cause is one of the important elements in prevention of cervical cancer. The respondents who were correctly able to identify HPV infection as cause of cervical cancer were further assessed about their knowledge about HPV itself. From all the respondents who identified HPV as a cause of cervical cancer more than three quarters (82.2%) mentioned sexual intercourse as a mode of transmission. This finding was nearly similar from the results observed in Addis Ababa where more than half (88.7%) of respondents identified as a mode of transmission. (36) This similarities can be explained by participants who were health service providers in Kinondoni and Addis Ababa in providing cervical cancer screening service that increased their cervical cancer screening knowledge.

Current study shows that knowledge on symptoms and risk factors were insuficient28.6% and 32%,this was different with study done in Turkey (37). The results in study done in turkey indicated that less than half nurses (46.5%) knew all risk factors and symptoms of cervical cancer screening .Screening knowledge in this study was sufficient (73.3%). This finding was different with the qualitative finding, that most health care workers had low knowledge of cervical cancer screening type in Niger delta university and Turkey (37,38)

Overall knowledge in this study was sufficient 63.8%.

This could be because of participants being health workers, study setting which was urban where information from different media is higher and sensitization of screening services is more. Moreover during this study period it was a time of a national inauguration of HPV compain and awareness was higher to the health providers.

An effective referral network enables timely access and continuity of care. Cervical cancer referral forms and functioning communication system need to be in place to ensure an effective referral system. None of the facility had cervical cancer referral form, Eight (57.1%) facilities had external referral slip and eleven (78.6%) of them kept records of referred patients. This indicated that almost all facilities were not applying in line with the national guideline and WHO recommendation; because most facilities were not equipped. This study had highlighted the emphasis given to patients and value of keeping records which is important for good follow up and trend analysis of the disease. The major reasons for referral were further management , lack of qualified professional and equipment) as indicated in other developing countries (18,33,39). Few facilities received feedback on referred patients and it was not always and was not documented, shared result in study done in Ethiopia where there were absence of uniform recording referred patient and provision of feedback(34).

Strength of this study tools used were previously tested and adopted from national cervical cancer screening and WHO guidelines. It is one of the few studies conducted in this area therefore; it will provide important information for those who are interested in this area. Moreover this study explored knowledge gap of health care providers towards cervical Cancer screening at Kinondoni municipal.

Study Limitation: The study did not include private health facilities. Un availability of trained health care providers.

CONCLUSION

Facility readiness for comprehensive cervical cancer screening and treatment is low among public health facilities in Dar es Salaaam. Inspite of higher screening knowledge on Cervical Cancer among health care workers the great majority were lacking training on Cervical cancer screening.

The study showed that there were lack of equipment and supplies. The health system strengthening including provision of national guidelines, protocols for screening cervical cancer, cervical cancer referral forms, and training of providers and supply of essential equipment are urgently needed for cancer service provision in Kinondoni.

RECOMENDATION

- The government needs to train and retain health workers and make equal allocation according to needs.
- The government should make sure there is equally and constant supply of equipments to all facilities providing cervical cancer screening.
- Since health providers play vital role in the prevention of cervical cancer through educating individuals and community, MOCDGEC should consider appropriate training programs for health providers who had no previous training to gain more knowledge about this area.
- The referral system should be encouraged in areas of using cervical cancer referral form, keeping records and monitoring system should be strengthened in areas of feedback mechanism.

REFERENCES

1. GLOBOCAN. WHO technical specifications. IARC. 2008;
2. Edition F. Global Cancer. 2008;(700).
3. World Health Organization. The Global Burden of Disease: 2004 update. 2004 Updat [Internet]. 2008;146. Available from:http://www.who.int/healthinfo/global_burden_disease/2004_report_update/en/index.html
4. Ngoma T, Muwonge R, Mwaiselage J, Kawegere J, Bukori P, Sankaranarayanan R. International Journal of Gynecology and Obstetrics Evaluation of cervical visual inspection screening in Dar es Salaam , Tanzania. Int J Gynecol Obstet [Internet]. 2010;109(2):100–4. Available from: http://dx.doi.org/10.1016/j.ijgo.2009.11.025
5. Sankaranarayanan R, Rajkumar R, Esmy PO, Fayette JM, Shanthakumary S, Frappart L, et al. Effectiveness, safety and acceptability of "see and treat" with cryotherapy by nurses in a cervical screening study in India. Br J Cancer [Internet]. 2007;96(5):738–43. Available from: http://dx.doi.org/10.1038/sj.bjc.6603633
6. Global Guidance For Cervical Cancer Prevention and Control October 2009. 2009;(October).
7. Goldie SJ, Gaffikin L, Goldhaber-fiebert JD, Gordillo-tobar A, Levin C, Wright TC. Cost-Effectiveness of Cervical-Cancer Screening in Five Developing Countries. 2005;
8. Mandelblatt JS, Lawrence WF, Gaffikin L, Kobchitt K, Lumbiganon P, Warakamin S, et al. Costs and Benefits of Different Strategies to Screen for Cervical Cancer in Less-Developed Countries. 2002;94(19).
9. Action CC. New Options for Cervical Cancer Screening and Treatment in Low-Resource Settings. ACCP. 2007;
10. Welfare S. Tanzania Service Delivery Guidelines for Cervical Cancer Prevention and Control. 2011;(May).
11. Chirenje ZM, Rusakaniko S, Kirumbi L, Ngwalle EW, Makuta-Tlebere P, Kaggwa S, et al. Situation analysis for cervical cancer diagnosis and treatment in east, central and southern African countries. Bull World Health Organ [Internet]. 2001;79(2):127–32.

Available from:
http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=2566349&tool=pmcentrez&rendertype=abstract

12. Sankaranarayanan R, Budukh AM, Rajkumar R. Effective screening programmes for cervical cancer in low- and middle-income developing countries. Bull World Health Organ. 2001;79(10):954–62.
13. World Health Organization. Comprehensive Cervical Cancer Control. WHO Libr Cat Data. 2006;284.
14. Sherris J, Wittet S, Kleine A, Sellors J, Luciani S, Sankaranarayanan R, et al. Evidence-Based, Alternative Cervical Cancer Screening Approaches in Low-Resource Settings Author(s): Evidence-Based, Alternative Cervical Cancer Screening Approaches in Low-Resource Settings. Source Int Perspect Sex Reprod Heal [Internet]. 2009;35(3):147–52. Available from: http://www.jstor.org/stable/40344261%5Cnhttp://about.jstor.org/terms
15. Maseko FC, Chirwa ML, Muula AS. Health systems challenges in cervical cancer prevention program in Malawi. Glob Health Action. 2015;8(1).
16. Organization WH, Office R. Strengthening cervical cancer prevention in Europe Meeting of policy-makers and programme managers. 2007;(May):29–31.
17. Nahvijou A, Hadji M, Marnani AB, Tourang F, Bayat N, Weiderpass E, et al. A Systematic Review of Economic Aspects of Cervical Cancer Screening Strategies Worldwide: Discrepancy between Economic Analysis and Policymaking. Asian Pac J Cancer Prev [Internet]. 2014;15(19):8229–37. Available from: http://www.ncbi.nlm.nih.gov/pubmed/25339011
18. Shiferaw N, Salvador-Davila G, Kassahun K, Brooks MI, Weldegebreal T, Tilahun Y, et al. The Single-Visit Approach as a Cervical Cancer Prevention Strategy Among Women With HIV in Ethiopia: Successes and Lessons Learned. Glob Heal Sci Pract [Internet]. 2016;4(1):87–98. Available from: http://europepmc.org/articles/PMC4807751/?report=abstract

19. Perkins R, Langrish S, Stern L. Impact of patient adherence and test performance on the cost-effectiveness of cervical cancer screening in developing countries: the case of Honduras. Women's Heal … [Internet]. 2010;20(1):1–11. Available from: http://www.sciencedirect.com/science/article/pii/S1049386709001029
20. Association BM. Screening For Squamous Cervical Cancer. Br Med J [Internet]. 1989;293(6548):659–64. Available from: http://www.jstor.org/stable/29524477
21. Abiodun OA, Fatungase OK, Awosile JO. An a ssessment of women ' s awareness and knowledge about cervical cancer and screening and the barriers to cervical screening in Ogun State , Nigeria . 2013;10(3):52–8.
22. Cuzick J, Clavel C, Petry K, Meijer CJLM, Hoyer H, Ratnam S, et al. Overview of the European and North American studies on HPV testing in primary cervical cancer screening. 2006;1101(October 2005):1095–101.
23. Ndie M and. Assessment of health facilities providing cervical cancer screening services in Nasarawa Local Government Area of Kano State , Nigeria. Int Res J public enviromental Heal. 2016;3(February):28–31.
24. Anorlu RI. Cervical cancer : the sub-Saharan African perspective. 2008;16(32):41–9.
25. Irwin T, Peters KE, Pyra M, Traoré F. Implementing visual cervical cancer screening in Senegal : a cross-sectional study of risk factors and prevalence highlighting service utilization barriers. 2017;59–67.
26. Adewole IF, Benedet JL, Crain BT, Follen M. Evolving a strategic approach to cervical cancer control in Africa. Gynecol Oncol. 2005;99(3 SUPPL.):209–12.
27. Phongsavan K, Phengsavanh A, Wahlström R, Marions L. Safety, feasibility, and acceptability of visual inspection with acetic acid and immediate treatment with cryotherapy in rural Laos. Int J Gynecol Obstet [Internet]. 2011;114(3):268–72. Available from: http://dx.doi.org/10.1016/j.ijgo.2011.03.009
28. Leung SS, Leung I. Cervical cancer screening: knowledge, health perception and attendance rate among Hong Kong Chinese women. Int J Womens Health [Internet]. 2010;2:221–8. Available from: http://www.ncbi.nlm.nih.gov/pubmed/21072314%5Cnhttp://www.pubmedcentral.nih.g

ov/articlerender.fcgi?artid=PMC2971734

29. ORCI. Facts About Ocean Road Cancer Institute Building Capacity for Cancer Services in Tanzania Working in Partnership With All Stakeholders To Fight Cancer. 2014;(January).
30. Ali SF, Ayub S, Manzoor NF, Azim S, Afif M, Akhtar N, et al. Knowledge and Awareness about Cervical Cancer and Its Prevention amongst Interns and Nursing Staff in Tertiary Care Hospitals in Karachi , Pakistan. 2010;5(6):1–6.
31. Urasa M, Darj E. Knowledge of cervical cancer and screening practices of nurses at a regional hospital in Tanzania. Afr Health Sci. 2011;11(1):48–57.
32. Kadhim Abutiheen AA. Clients' satisfaction with referral system in Karbala. Am J Appl Sci. 2013;11(2):216–22.
33. Afsar HA, Younus M. Patient Referral at the Grass-roots Level in Pakistan. Nat Sci [Internet]. 2004;2(4):18–27. Available from: http://www.sciencepub.org%5Cneditor@sciencepub.net
34. Wondimu YT. Cervical Cancer : Assessment of Diagnosis and Treatment Facili- Ties in Public Health Institutions in Addis Ababa , Ethiopia. 2015;53(2):65–74.
35. Gelibo T, Getachew T, Bekele A, Defar A, Amenu K, Taddesse M, et al. Availability and readiness of services for cancer care at health facilities in Ethiopia: Implication for action. Ethiop J Heal Dev. 2017;31(Specialissue1).
36. firdawek. No Title. Assess Cerv cancer Relat Serv Provid Knowl. 2014;
37. Ertem G. Awareness of cervical cancer risk factors and screening behaviour among nurses in a rural region of turkey. Asian Pacific J Cancer Prev. 2009;10(5):735–8.
38. Owoeye IOG, Ibrahim IA. Knowledge and attitude towards cervical cancer screening among female students and staff in a tertiary institution in the Niger Delta. Int J Med Biomed Res. 2013;2(1):48–56.
39. Yeates KE, Amoatey C. DECEMBER 2016 Volume 2, Issue 6. 2016;2(6).

APPENDIX 1: Questionnaire for medical personnel

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES (MUHAS)

Dear Respondent,

This comes to seek your assistance by giving responses to help me conduct a study entitled: "**Assesement of public health facilities readiness for provision of cervical cancer services in Kinondoni district**. Your responses will be held with utmost confidentiality and will be used for only academic purposes. Thank you

PART A: DEMOGRAPHIC DETAILS

1. Gender

☐ Male ☐ Female

2. Job category

☐ Nursing ☐ Public Health Nurse

☐ Clinical Asistant ☐ Doctor

☐ Others (specify).....

3. Qualification

☐ Certificate holder ☐ Diploma holder

☐ Degree holder ☐ Masters degree holder

☐ Other (please specify).....

4. Working Experience

☐ Less than 1 year ☐ 1 to 5 years

☐ 6 to 10 years ☐ More than 10 years

PART B: KNOWLEDGE ON CERVICAL CANCER

5. What is the biological organism causing cervical cancer infection ?

☐ Bacteria ☐ Virus ☐ Fungus
☐ Parasites ☐ I don't know

6. What is the name of the etiologic agent for cervical cancer infection?

☐ HPV ☐ HSV
☐ HIV ☐ I don't know

7. The infection is transmitted by (Multiple responses acceptable)

☐ Oro fecal ☐ Sexual Intercourse ☐ Blood contact
☐ Skin to skin contact ☐ I don't know

8. Who can become infected by the etiologic agent?

☐ Only female ☐ Only male
☐ Both ☐ I don't know

9. Identify the signs and symptoms which you think related to cervical cancer (Multiple responses acceptable)

☐ Bleeding after intercourse or douching ☐ Painful coitus
☐ Inter-menstrual bleeding ☐ Unexplained
☐ weight loss
☐ Offensive or Blood stained vaginal discharge ☐ Anaemia
☐ Swelling of cervix ☐ I don't know

10. Is cervical cancer infection preventable?

☐ Yes ☐ No ☐ I don't know

11. What are the risk factors of cervical cancer?

12. Smoking ☐ ☐ Multiple sexual partners

☐ Early sexual debut ☐ Multiparity

☐ Long term use of contraceptive pill ☐ Suppressed immunity

☐ I don't know

13. Which age group is recommended by WHO (2013) for HPV vaccine?

☐ Any age group ☐ Older age ☐ I don't know

☐ 9–13 year old girls who have not yet become sexually active

14. How many doses and for how long should the vaccine be taken?

☐ 2/4 month ☐ 3/6 month

☐ 3/9 month ☐ 5/10 month ☐ I don't know

15. Which one of the following cervical cancer screening methods do you know?

☐ Polar probe ☐ HPV testing ☐ Fluid sampling

☐ Peculoscopy ☐ Cervicography ☐ Neuromedical systems

☐ Conventional exfoliative cervicovaginal cytology (pap) smear

☐ Visual Inspection of cervix after applying Lugol's iodine (VILI) or acetic acid(VIA)

☐ Laser induced fluorescence

☐ Automated cervical screening technics

☐ I don't know

16. At what age is women first invited for cervical cancer screening according to WHO(2013)?(Multiple responses acceptable)

☐ Women <30 years of age ☐ At minimum women 30-49 years of age

☐ <30 years of age + HIV-infected or living in a high HIV prevalence area

☐ I don't know

17. At what intervals should a woman get screening according to WHO (2013)? (Multiple responses acceptable)

☐ Yearly ☐ Every 3 years

Every 10 years, if using HPV test ☐ I don't know

18. Which of the following diagnosis methods do you know? (Multiple responses acceptable)

☐ Biopsy ☐ Cold knife conisation

☐ Colposcopy

☐ Endocervical curettage

I don't know ☐

19. What is your source of cervical cancer information?

☐ Undergraduate school ☐ Media ☐ Self study

☐ Colleague ☐ Seminars

☐ Special lectures/training

☐ Other (specify).....

20. How many years have you been providing cervical cancer services?.....

21. What kind of training do you think is important to improve the service (practical, theoretical?)

.....

22. In general, what kind of problems you have observed related to cervical cancer services in your hospital?

    .....

23. In general, what suggestions do you forward for improving cervical cancer related services in your hospital?

.....

Thank you for your cooperation

APPENDIX II

CHECK LIST FOR HEALTH FACILITIES READINESS

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES (MUHAS)

Dear Respondent,

This comes to seek your assistance by giving responses to help me conduct a study entitled: "**Assessment of public health facilities readiness for provision of cervical cancer services in Kinondoni district**. Your responses will be held with utmost confidentiality and will be used for only academic purposes. Thank you

1. **Health facility**..... **Date**.....

2. Human resources

☐ A certified staff in VIA and cryotherapy ☐ A nurse/nurse assistant

3. Infrastructure

☐ A designated area for patient waiting And or group education

☐ An area for supplies and files storage

☐ A bathroom for client's

☐ A staff room

☐ A bathroom for staff

☐ A sink with tap/running/rain water

☐ sepate examination & procedure room OR a large room with privacy screens/ curtains

☐ A curtained are for clients to dress & undress

4. Equipments

☐ One carbon dioxide tank

☐ One cryotherapy

☐ Cytology brush (for cleaning cryo unit water)

☐ One autoclave or other sterilization equipment

☐ Torch light or halogen lamp

☐ Speculum (10)

☐ Small basins for instruments /supplies

☐ Sponge forceps

☐ Instrument trolley

☐ Adjustable spanner

5. Furnishing

- ☐ Benches/chairs for waiting area
- ☐ For at least 8 people
- ☐ One stool with wheels or chair
- ☐ One filer with locks for clinical records
- ☐ Shell for supplies or drugs
- ☐ Large plastic buckets for decontamination of specula instruments
- ☐ Trash bin with plastic bag for non contaminated materials

6. Supplies

Personal protection equipments

- ☐ Non sterile gloves (appropriate size
- ☐ Utility gloves for handling decontaminated
- ☐ Instruments
- ☐ Plastic apron for instrument processing
- ☐ Isopropyl alcohol (60-80%)
- ☐ Closed shoes/boots
- ☐ Acetic acid (3-5%)
- ☐ Monsels solution

Solutions

- ☐ Chlorine solution 0.5%
- ☐ Alcohol based hand sanitizer o or soap
- ☐ Cider (2-4% gluta adehyde) and preparation of chlorine solution
- ☐ Savlon

Stationary

- ☐ swabs/cotton balls/ gauze cut in small
- ☐ Register
- ☐ Monthly summary forms
- ☐ Clients card
- ☐ Post-Cryotherapy instruction forms
- ☐ Referral forms

Medications

- ☐ Panadol, ibuprofen

Others

- ☐ Specimen cups with lids
- ☐ Tape/labels
- ☐ Time/watch
- ☐ K-Y jelly/lubrication
- ☐ wooden spatulas or condoms
- ☐ Drapes/sheets
- ☐ Large cotton-cotton pieces
- ☐ Smal; cotton swabs
- ☐ Towels or proper towel

ESSENTIAL NEEDS FOR VIA AND CRYOTHERAPY SERVICES PROVISION

ITEMS	**Amount**	**Functioning**	**Non functioning**
Counselling area			
Privacy			
Table for writing			
Chairs			
Equipment/Supplies			
Gynecological examination couch—with stirrups	1		
Good light source (Torch or halogen lamp)	1		
Instrument tray	1		
Trolley	1		
Stools	1		
Privacy screens	adequate coverage		
Sheets and gowns	4		
Mackintosh	2		
Trash bin for non-infectious materials	1		
Trash bin with plastic bag liner for infectious materials (biohazard bags)	1		
Buckets for decontamination of specula	1		
Bucket with soap	1		
Bucket for clean water	1		
Chlorine 0.5% (Jik–diluted)	2 litres		
60-90% isopropyl or ethyl alcohol	1 litre		
Utility gloves for handling decontaminated instruments	2		
Plastic apron—for instrument processing and preparation of chlorine solution (optional)	1		
Small autoclave/sterilizer	1		
Soap or hand sanitizer	1		
Pelvic Exam/VIA Procedure			
Equipment/Supplies			
Specula: graves, metal bivalve specula (16 medium, 3 large, 1 long	20		

narrow)			
Non-sterile gloves (small, medium, large)	400		
Vinegar 5% (acetic acid)	1 litre		
Large roll of cotton	1 roll		
Wood sticks for cotton swabs	300		
Specimen cups with lids	5		
Kidney dish	1		
Tape (labels)	1 roll		
Large rolls of non-sterile gauze	1		
K-Y jelly	2 tubes		
Condoms	5		
Wood spatulas	20		
Timer or watch	1		
Sponge holder forceps	2		
Punch biopsy forceps (district level and above)—would also need formalin and path forms			
Cervical Cytology (for cases where SCJ cannot be visualized)			
Extended-tip wooden or plastic spatula	5		
Glass slide with frosted edge	5		
Fixative solution			
Cervical cytology forms	5		

Cryotherapy Procedure—(Supplies in Addition to VIA Supplies)			
Gas Cylinder–CO2 (15 or 25 kg)	2		
Average 15–18 treatments per 15 kg cylinder			
Average 22–26 treatments per 25 kg cylinder			
Estimate VIA-positive rate 10-15% (initially)			
Estimate 85% of VIA-positive eligible for cryotherapy, yields high estimate of approximately 13 out of 100 will require cryotherapy			
Adjustable spanner	1		
Cryotherapy unit with cryotips	2		
Gas cylinder adaptor	2		
Cidex (2-4% glutaraldehyde) for HLD; other			

options include alcohol, boil or autoclave			
Monsel's solution or silver nitrate sticks for bleeding			
Pathology forms	100		
Cidex (2–4% glutaraldehyde)	100cc		
Monsel's solution—500 cc bottle for homeostasis'	1		

Referral system for cervical cancer

Question	**Response**	
	Yes	**No**
Do you have an internal referral slip?		
Do you keep records of referred patients?		
Do you have an external referral slip?		
Where do you normally refer patients?		
Hospital		
Private clinic		
Other(specify)		
What is the main reason for referral?		
Lack of trained manpower		
Lack of equipments/materials		
Patient's request		
Other (specify).....		

General information (focal person for cervical cancer related services)

For how long have you been working here? _____

How many patients come for cervical cancer services per month or year in your hospital?

For screening_____

For diagnosis_____

For treatment_____

Is there cervical cancer register in your hospital?_____, if No why?

_____

Is there cervical cancer screening, diagnosis and treatment protocol or guideline in your hospital?_____If no why? _____

Are there cervical cancer referral forms (log) ----------