ADDIS ABABA UNIVERSITY
COLLEGE OF HEALTH SCIENCES
SCHOOL OF PUBLIC HEALTH

ASSESSMENT OF CERVICAL CANCER SERVICES AND CERVICAL CANCER RELATED KNOWLEDGE OF HEALTH SERVICE PROVIDERS IN PUBLIC HEALTH FACILITIES IN ADDIS ABABA

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List of Acronyms

AAHB…….Addis Ababa Health Bureau

ART…….Antiretroviral Therapy

EC …….Endocervical curettage

ECSA ……..East, Central and Southern African

FMOH ……..Federal Ministry of Health

HPV……..Human Papilloma Virus

ICC……Invasive Cervical Cancer

LEEP…… Loop electrosurgical excision procedure

SPSS ……Statistical Package for Social Sciences

SSA……..Sub-Saharan Africa

STI ……...Sexual Transmitted Infection

VIA……..Visual inspection with Acetic Acid

VILI…….Visual Inspection with Lugol Iodine

VLP……..Virus Like Particle

WHO ……World Health Organization

Abstract

Background: Human papiloma virus (HPV), which is mostly acquired by sexual intercourse, is a necessary cause of cervical cancer. Every year more than over quarter of a million women die from cervical cancer and because of poor access to screening and treatment services, large majority of these deaths occur in women living in low- and middle-income countries. In Ethiopia, cervical cancer ranks as the most frequent cancer among women and every year nearly three and half thousands women die with cervical cancer.Majorty of the women had poor knowledge about cervical cancer and cervical cancer screening practice.

Objective: To assess cervical cancer services and cervical cancer related knowledge of health service providers in public health facilities in Addis Ababa.

Method: A facility-based cross sectional study accompanied by observational assessment was conducted from September 2013-September 2014 in public health facilities in Addis Ababa. A pre-tested, structured and semi-structured questionnaire and a checklist were used to collect data. The data was collected from 5 randomly selected health centers and 3 purposively selected hospitals. A total of 309 health service providers were included in the assessment of their knowledge related to cervical cancer. Data was analyzed using SPSS version 21. The chi-square test was used to look for an association between cervical cancer knowledge and socio-demographic variables.

Result: Two of the three hospitals included in the study had cervical cancer screening services Visual inspection with acetic acid (VIA), and precancerous treatment cryotherapy and Loop electrosurgical excision procedure (LEEP).One third of the hospital had cervical cancer diagnosis service punch biopsy and cancer treatment. All the hospitals had trained health professionals and basic facilities, materials, and equipments for the available cervical cancer services. Of all the respondents who consider cervical cancer had biological cause, 192 (62.2%) said virus and 79 (25.6 %) said bacteria. Regarding mode of transmission, they said that it could be transmitted through sexual intercourse 274 (88.7%) and blood contact 45(21%). Majority, 289 (93.5. %) of the respondents said cervical cancer was a preventable disease. Out of those who considered cervical cancer preventable by vaccination, only 121(39.2%) identified correctly the recommended age for HPV vaccine. Having multiple sexual partners 257 (83.2%) and post coital bleeding 251(81.2%), were the most mentioned risk factor and clinical manifestation of cervical cancer respectively. Majority of the respondents were aware of the correct time to start screening

291(70.5%) and only small percents 95(25.9%) knew screening intervals. Knowledge about cervical cancer was higher in general practitioner and above (X^2 = 20.93, P=0.000) and health officers and degree nurses (X^2 = 5.90, P=0.015) than diploma nurses. Female had better knowledge about cervical cancer than male (X^2 = 8.4, P=0.003). But overall, 165 (53.4%) of health providers scored below the mean knowledge level score about cervical cancer. All the facilities had internal and external referral slips for communicating of referred patients and also kept their records. Absence of trained man power and necessary facilities were the major reasons for referral

Conclusion and Recommendation: All the hospitals had trained health providers and screening, diagnosis and treatment infrastructures for the available cervical cancer services but the services were not available at one point. Majority of health professionals in service providing facilities knew the biological cause, mode of transmission, risk factors, clinical presentations, screening methods and time to start and prevention methods of cervical cancer. But most did not know HPV vaccine, the recommended age group and the recommended number of doses and over all time taken, screening intervals and the precancerous treatment methods. The government should expand the full cervical cancer services to be available at least in these hospitals (at one point).Training should be considered for health providers who had no previous training to gain more knowledge about this area.

1. Introduction

1.1 Background

Human papiloma virus (HPV), which is mostly acquired by sexual intercourse, is a necessary cause of cervical cancer. Only certain types of human papilloma viruses play role in cervical carcinogenesis and oncogenic types 16 and 18 are the most frequently detected[1, 2]. Most HPV infections resolve spontaneously but, persistent infection with specific types of HPV may lead to precancerous lesions. If there is a delay in treatment, these lesions may progress to cervical cancer. The peak incidence of HPV infection occurs in adolescents and young women, while cervical cancer typically follows 20–30 years later [1, 3].

HPV is not a sufficient cause and other cofactors are necessary for progression from cervical HPV infection to cancer. From different studies the following cofactors were identified: tobacco smoking, high parity, long-term hormonal contraceptive use, micronutrients deficiency and co-infection with HIV or other STIs including herpes simplex virus type-2 and Chlamydia trachomatis [3, 4] .

Cervical cancer is the second most common cancer in women worldwide. More than 85% of the global burden occurs in developing countries and most are diagnosed when they have advanced disease. Since it usually takes 10–20 years for precursor lesions to develop into invasive cervical cancer, most cervical cancers can be prevented by early detection and treatment of precancerous lesions [1, 5].Most health facilities in East, Central and Southern African (ECSA) countries had the basic infrastructure to perform cervical screening, but a small percentage of women were used a screening service. The major reasons for this low utilization were lack of policy guidelines, infrequent supply of basic materials, and lack of qualified health professionals[6].In most developing countries, finding one radiation machine was difficult and if presented, one machine served for several millions of people[7]. Functional referral system is very important to assure continuity and improved quality of care at all levels of healthcare system.Especialy for developing countries, strengthening such systems is important to use the available scarce resources. In these countries, the most common reasons for referral were lack of qualified health personnel and equipment [8-10].

In Ethiopia there is no national epidemiological study on cervical cancer magnitude and associated factors. But, anecdotal reports suggest that cervical cancer is the commonest female malignant disease and has been a crucial burden to the Ethiopian health delivery system. The national reproductive health strategy of Ethiopia points out that there is a national interest to address problems related with all types of the reproductive organ cancers; however, there is no organized reproductive organ cancers education, screening, prevention, treatment or palliative care program. Readily available established teaching hospitals, interest among international and local organizations and foundations to finance cancer prevention and control programs are believed to be the golden opportunities to implement such programs[11, 12].

1.2 Statement of the Problem

Greater than 500,000 new cases of cervical cancer and more than 270, 000 women die from cervical cancer, which contains 9% of female cancer deaths, every year. Because of poor access to screening and treatment services, more than 85% of these deaths occur in women living in low- and middle-income countries. Cervical cancer contributes over 2.7 million years of life lost among women between the ages of 25 and 64 worldwide, some 2.4 million of which occur in developing areas and only 0.3 million in developed countries[5, 13].

In Sub-Saharan Africa (SSA), invasive cervical cancer incidence (ICC) is one of the highest in the world with an age-standardized incidence rate of 31.0 per 100 000 women. In these countries cervical cancer screening coverage ranges from 14.0% in rural areas to 20.2% in urban areas**.** Moreover, most of the women in these countries come in the health facility in advanced stage of the disease and because of limited treatment options; they have faced for more complication and shorten their lifetime [13, 14].

In Ethiopia, cervical cancer ranks as the most frequent cancer among women. It was estimated that every year 4,648 and 3,235 women diagnosed and die with cervical cancer respectively. HPV 16 and18 are attributed to 90.2% of ICC in Ethiopia[15].A community based cross – sectional study done on women in North West Ethiopia had showed that 78.7% of them had heard about cervical cancer and a small proportion of them (31%) had good knowledge about the disease[16]**.**Another facility based study done on reproductive health clients in Addis Ababa had showed that 81.2% had never heard of Pap smear screening and minimal proportion of them (6.5%) had ever had a Pap smear test[17].

When we compare cervical cancer screening coverage between developing and developed countries, it is very low in the former (19 and 63% respectively).Limited access to health services, limited or no screening programs, limited or non-existent awareness about cervical cancer screening among populations and health workers, limited or no access to diagnostics and laboratories, poor referral and follow up were believed for low coverage in developing countries[18]. Therefore, to fill such gap it was crucial to undergo assessment of cervical cancer related knowledge of health service providers and cervical cancer services in public health facilities in Addis Ababa.

1.3 Rationale of the study

Comprehensive cervical cancer prevention and control activities need multidisplinary sectors[5].Health facilities or health professionals are one of the key actors which play vital role in the delivery of cancer care. The status of cervical cancer service among health facilities will greatly affect the fight against cervical cancer. To aid planning of services for the prevention and control of cervical cancer, assessment of cervical cancer services and cervical cancer related knowledge of health service providers in public health facilities in Addis Ababa was carried out. To my information there is lack of such kind of study in our context. So, the findings from this study will be useful for program implementation related to cervical cancer and it can also be used as a base line for further study in this area.

2. Literature review

2.1Clinical manifestation of cervical cancer

The most common symptoms and signs of invasive cervical cancer are: minute or profuse abnormal vaginal bleeding (leucorrhea), inter-menstrual bleeding, bleeding after sexual intercourse or douching, painful coitus, a unilateral pelvic pain which radiates to the hip or thigh, lower abdominal pain, anemia, weight loss, weakness and enlargement, irregularity, and a firm or hard consistency of the cervix and eventually of the adjacent structures[1, 19].

2.2 Risk factors for cervical cancer

The following cofactors were identified for the occurrence of cervical cancer: tobacco smoking, high parity, long-term hormonal contraceptive use, nutrients deficiency (diets don't include enough fruits and vegetables) and co-infection with HIV or other STIs including herpes simplex virus type-2 and Chlamydia trachomatis [3, 4] .

2.3 Cervical cancer prevention and control

Since a comprehensive cervical cancer prevention and control approach is made up of several key components ranging from community education, social mobilization, vaccination, screening, and treatment to palliative care, it is important to include representatives from different disciplines[5].

2.3.1 HPV vaccine

There are two types of HPV vaccine that are applied for the prevention of cervical cancer in most countries worldwide. These are Cervarix, a bivalent HPV-16/18 VLP vaccine and Gardasil, quadrivalent HPV-6/11/16/18 VLP vaccine. Both vaccines require 3-doses administered over a period of 6 months .Though there is variation in age of sexual debut among countries, WHO recommended target group for vaccination is 9–13 year old girls who have not yet become sexually active[5, 20]. Although minimizing burden of cervical cancer by preventing HPV infection through HPV vaccination is believed to be cost effective, the issue of affordability and ensuring sustainability is a critical challenge for implementing HPV vaccine programme in developing countries[21].

2.3.2 Screening

Arranged screening is more cost-effective than opportunistic screening, making better use of available resources and ensuring that the greatest number of women will benefit. There are three

types of cervical cancer tests. These are: (1) Conventional (Pap) and liquid based cytology (LBC) (2) Visual inspection of the cervix with acetic acid (VIA) or lugol's iodine(VILI) and (3) HPV test. The following are the criteria for age and frequency of cervical cancer screening:

1. Women younger than 30 years of age should not undergo screening except for women known to be HIV-infected or living in a high HIV prevalence area.
2. At a minimum, a national program should prioritize women who are between 30–49 years old for screening.
3. The screening interval (frequency) should not be less than 5 years (and not less than 10 years, if using an HPV test)[5].

2.3.3 Diagnosis

Coloscopy

Coloscopy is the examination of the cervix, vagina and vulva with a colposcope, which provides illumination and magnification, allowing the cellular patterns in the epithelial layer and surrounding blood vessels to be examined. It is used as a diagnostic tool on patients with a positive screen test. Coloscopy has a high sensitivity (around 85%) and a specificity of about 70% for the detection of precancerous lesions and cancer. It is used to:(1) visually evaluate precancerous and cancerous lesions;(2) help define the extent of lesions;(3)guide biopsies of areas that appear abnormal; and (4) assist treatment with Cryotherapy or LEEP[1].

Biopsy

Biopsy is the removal of small areas of the cervix for histopathological diagnosis. It should be done only with colposcopic assistance. With a punch biopsy forceps one or more small pieces of tissue (1–3 mm across) are removed from the abnormal areas of the cervix identified by Coloscopy. Bleeding is usually minimal. Biopsy performed with the aid of a colposcope is the standard method for diagnosis of cervical precancerous and preclinical invasive cancer[1].

Endocervical curettage

If a woman has a positive Pap test, but no abnormal areas are observed with Coloscopy, there may be a lesion in the cervical canal. In this case, the endocervix can be examined with a special speculum and a sample of cells can be obtained with an endocervical curette for microscopic diagnosis. Endocervical curettage is a simple procedure, in which some of the surface cells are gently scraped from the cervical canal[1].

2.3.4 Treatment of precancerous lesion

Treatment methods may be ablative (destroying abnormal tissues by heating or freezing) or excision (surgically removing abnormal tissues).

Cryotherapy

Cryotherapy eliminates precancerous areas on the cervix by freezing them. This relatively simple procedure takes about 15 minutes and can be performed on an outpatient basis. Cryotherapy is highly effective for the treatment of small lesions, but for larger lesions the cure rate is below 80%. Because the area of the cervix that is frozen has very few nerve endings, cryosurgery is generally associated only with some cramping or mild pain. [1]

Loop electrosurgical excision procedure (LEEP)

LEEP, also called large loop excision of the transformation zone (LLETZ), is the removal of abnormal areas from the cervix using a thin heated wire. LEEP aims to remove both the lesion and the entire transformation zone. LEEP serves a double purpose: it treats the lesion, and at the same time, produces a specimen for pathological examination. It is successful in eradicating precancerous in more than 90% of cases.[1]

Cold knife conization

Cold knife conization is both a diagnostic and treatment tool used to detect and treat abnormalities of the cervix. It is a procedure that is usually performed after a precancerous condition is found on cervical biopsy. It also may be performed if there is an abnormality detected on your Pap test or if the result of your cervical biopsy and coloscopy do not adequately explain the result of your abnormal Pap test. It is the removal of a cone-shaped area from the cervix, including portions of the outer (ectocervix) and inner cervix (endocervix). Conization is recommended for the treatment of dysplasia when outpatient treatment is not feasible or not accessible. It is a rather extensive operation, involving removal of a large area of the cervix with a scalpel, and is usually done under general or regional (spinal or epidural) anesthesia. The woman's desire to have more children also has to be taken into account, as conization may result in cervical stenosis or incompetence in a few women.[1]

2.4 Knowledge of health care providers related to cervical cancer

Many 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. A study conducted in Pakistan on awareness and knowledge about cervical cancer among health care providers revealed that 62% said virus as a cause of cervical cancer and 61% said the virus HPV.[22] Another study conducted among Cameroonian health workers revealed that 60% said the virus HPV.[23]In a study done in Thailand showed, 36% of nurses and 55.5% of doctors were aware the HPV subtypes.[24] Concerning mode of transmission of HPV infection, the study conducted in Pakistan, 60.6 % replied by sexual intercourse and27.7% by direct genital contact and in Tanzania 89% replied by sexual intercourse and10% by blood contact[22, 25]. Related to knowledge about cervical cancer risk factors, a survey conducted on knowledge about cervical cancer on different health workers in Africa and Asia countries depicted that, 7% in Tanzania,11.5% in India,26% in Pakistan,40% in Uganda,55%Ghana,58% in Cameron and 77.8 in Thailand were able to identify the most common risk factors[22-28]. Regarding the clinical presentation of cervical cancer, 57.8% replied as offensive vaginal discharge and73.4% post coital bleeding in Ghana, 20% replied as offensive vaginal discharge and 3% post coital bleeding in Pakistan, and 53.3% replied as offensive vaginal discharge and46% post coital bleeding in Tanzania.[22, 25, 28] Related to HPV vaccines, 9% in Pakistan, 22.6% in Tanzania and 25.3% of Nigeria respondents had heard of the HPV vaccines.[22, 25, 29].As means of HPV infection prevention, 27% replied by vaccination and 48% by condom in Tanzania and 44% by vaccination in Cameron and33% by condom in Nigeria.[23, 25, 29] Regarding cervical cancer screening methods,16% replied Pap smear and 4.4%VIA in Ghana, 38% replied Pap smear and 47%VIA in Cameron , and 83 % replied Pap smear in Uganda.[23, 27, 28].A study conducted in Tanzania on knowledge of cervical cancer and screening practices among nurses revealed that , 70.8% radiotherapy, 32.1% surgery and23.4% chemotherapy was the common form of treatment options identified by the nurses.[25]

2.5 Cervical cancer service

A comprehensive cervical cancer prevention and control approach is made up of several key components ranging from community education, social mobilization, vaccination, screening, and treatment to palliative care[5]. Control of the burden of cervical cancer by preventing HPV infection through primary prevention (HPVvaccination) is believed to be cost effective, affordability and sustainability issues are a critical challenges for implementing HPV vaccine programme in developing countries[21, 30]. Cervical cancer screening which is one of the secondary prevention of cervical cancer is alternative solution to solve such problems and also very important in developing countries where health seeking behavior is poor and advanced treatment of cases is very difficult. By single or repeated screening of women with visual inspection or HPV DNA testing at the age of 35 years had believed to reduce the lifetime risk of cervical cancer by 25 to 36%[31]. Even if, this is the fact, cervical cancer screening has such advantage, facility based studies conducted in Nigeria on women attending the outpatient gynecological clinic, only 7% and 6.5% reproductive health clients in Addis Ababa have ever screened for the disease. The reasons explained for non utilization of services in these women were; ignorance, no gynecologic symptoms, absence of screening centre, don't know the place where it was done, perceived non necessity, faith in God, prohibitive cost, physician's non recommendation, and wait till older.[17, 32] A survey conducted on cervical cancer screening in 57 countries revealed that there was variation in cervical cancer screening coverage between developing and developed countries, it is very low in the former (19% and 63% respectively).Limited access to health services, limited or no screening programs, limited or non-existent awareness among populations and health workers, limited or no access to diagnostics and laboratories, poor referral and follow up were believed for low coverage in developing countries[18]. Another Study conducted in ECSA on situation analysis for cervical cancer diagnosis and treatment facilities indicated that they had the basic infrastructure to carry out cervical screening, but a small percentage of women were actually screened. Policy guidelines, infrequent supply of basic materials, and lack of qualified health professionals were the major reasons for low utilization of screening services.[6] A situational analysis on the level of capacity available for cervical cancer screening, diagnosis, treatment and palliative care in several Caribbean countries also depicted that limited capacity of cytology laboratories, radiotherapy capacity and human resources were the greatest challenges for a high screening

coverage and treatment[33]. A study conducted in India on human papillomavirus infection (HPV) and screening strategies for cervical cancer also indicated that lack of necessary infrastructure, quality control and poor sensitivity of cytology in developing countries were the obstacles for wide scale implementation of high quality cytology screening.[30] Another survey conducted on prevention of cervical cancer revealed that, limited government investment in health and inadequate financial resources for training and services were also the other barriers to successful screening programs in developing countries.[34]According to International Atomic Energy Agency report, in most developing countries, finding one radiation machine was difficult and if available, one machine served for several millions of people. [7]

2.6 Patient Referral system

Referral is a process in which a health worker at a one level of the health system, having insufficient resources (e.g., drugs, equipment, skills) to manage a clinical condition, seeks the assistance of a better or differently resourced facility at the same or higher level to assist in or take over the management of a client's case. Functional referral system is very important to assure continuity and improved quality of care at all levels of healthcare system.Especialy for developing countries, strengthening such systems is important to use the available scarce resources. In these countries, the most common reasons for referral were lack of qualified personnel and equipment.[8-10] 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 was the reason for this dissatisfaction.[8, 10, 35] Although proper recording is important for avoiding duplication of services, proper patient follow up and other analysis, their documentation was problematic in these countries[9]

To improve access to health services, the government of Ethiopia has established a three tier health service delivery system. Level one is a Woreda/District health system comprised of a primary hospital (to cover 60,000-100,000 people), health centers (1/15,000-25,000 population) and their satellite Health Posts (1/3,000-5,000 population) connected to each other by a referral system. The primary hospital, health centre and health posts form a Primary Health Care Unit (PHCU). Level two is a General Hospital covering a population of 1-1.5 million people; and level three is a Specialized Hospital covering a population of 3.5-5 million people. In order to make this connection, formal and smooth referral slip is an essential part of the referral system.

As a result, the FMOH has prepared standard referral slip to be used by all health facilities to increase utilization of health care facilities at all levels, to assure continuity and improved quality of care at all levels and to strengthen the communication within the healthcare system[36, 37]

3. Objective

3.1 General objective:

- To assess cervical cancer services and cervical cancer related knowledge of health service providers in public health facilities in Addis Ababa .

3.2 Specific objectives:

- To assess the availability of **logistic** for the available cervical cancer services in the selected public hospitals in Addis Ababa
- To assess health service providers **knowledge** related to cervical cancer in public health facilities in Addis Ababa
- To describe the **communication(referral)** system of the selected public hospitals in Addis Ababa

4. Method

4.1 Study area and period

The study was conducted in Addis Ababa, which is the capital city of Ethiopia. Administratively, the city is divided into ten sub-cities. There are 48 hospitals and more than 35 health centers. Of 48 hospitals, 13 hospitals are public, in Addis Ababa. Among 13 public hospitals ,Black lion specialized hospital is the only one which gives cervical cancer treatment and St.paulos Hospital Millennium Medical College and Zewditu hospitals are the one which give cervical cancer screening and cervical precancerous treatment. The study was conducted from September 2013-September 2014.

4.2 Study design

Facility based cross sectional study design with quantitative and qualitative nature was used

4.3 Population

Source population – All public health facilities in Addis Ababa, who were on service for the academic year of 2013/2014.

Study population – Selected public health facilities in Addis Ababa, who were on service for the academic year of 2013/2014.

Inclusion criteria- Those selected public health facilities working at the data collection period.

Exclusion criteria-For the assessment of cervical cancer services, the five health centers were excluded and for the assessment of cervical cancer related knowledge of health service providers , those health professionals who were working in the selected health facilities and accounted less than six months in that facilities, in the data collection period were excluded.

4.4 Sample size and sampling procedure

For the assessment of the cervical cancer services, cervical cancer screening, diagnosis and treatment, purposively the three hospitals which gave cervical cancer services were selected. For the assessment of health service providers knowledge on cervical cancer, firstly, out of ten sub-cities in Addis Ababa, randomly five sub-cities were selected and by simple random sampling one health center from each were selected and all health service providers working in the three purposively selected hospitals, and in the five health centers who were believed to have direct or related involvement in the care of cervical cancer patients were included in the study.

4.5 Data collection procedures (Instrument, personnel)

Instrument

A structured and semi-structured self-administered questionnaire was used to assess the knowledge of health service providers related to cervical cancer and a checklist was used to assess the availability of cervical cancer service facilities and referral facility. Both instruments had developed or designed by reviewing available relevant literature or adopting previous similar or related studies instrument and WHO guidelines. The questionnaire had: background information, cervical cancer related knowledge questions. The self-administered questionnaire was pre tested on health care providers working in gynecology unit, MCH unit, and ART clinic who were working in Gandhi Memorial hospital in Addis Ababa.

The checklist contained: facilities available for cervical cancer screening, diagnosing and treatment, availabilities of material or instrument, professional training and referral facility.

Personnel

Three Bsc nurses who had previous data collection experience and one Bsc nurse who had previous supervision experience was used as data collector and supervisor respectively. Two days training were given about the purpose of the study, data collection tools, contents and ethical procedures.

4.6 Variables of the study

Age, sex, religion, marital status, specialty, work experience, knowledge about cervical cancer among health professionals, source of information for cervical cancer, availability of logistics for cervical cancer services, and referral (communication) system

4.7 Operational definitions

Cervical cancer services: cervical cancer screening, diagnosis and treatment

Logistics: Cervical cancer screening, diagnosis and treatment equipments, supplies and physical Facilities.

Referral: is a process in which a health worker at a one level of the health system, having insufficient resources (e.g., drugs, equipment, skills) to manage a clinical condition, seeks the assistance of a better or differently resourced facility at the same or higher level to assist in or take over the management of a client's case.

Good level of knowledge: Individuals who scored >=21.3 knowledge score about cervical cancer

Poor level of knowledge: Individuals who scored<21.3 knowledge score about cervical cancer

4.8 Data analysis procedures

Data was coded and entered using Epi Info version 3.5.3 and analysis performed using SPSS version 21. The chi-square test was used to look for an association between cervical cancer knowledge and socio-demographic variables. P-values < 0.05 were considered significant.

The overall knowledge of the respondents was assessed using the mean score of the outcome as a cut-off value (21.3). For each question, a score of one was given to correct answer and score of zero was given to the incorrect and I do not know answers. The overall knowledge score was obtained by summing these responses. The composite score was dichotomized using mean obtained from the data. Individuals who scored >=21.3 knowledge score about cervical cancer was classified as having good level of knowledge and those who scored <21.3 knowledge score about cervical cancer was classified as having poor level of knowledge.

4.9 Data quality management

The questionnaire was pre-tested prior to the actual data collection and some adjustments were made. Those who had previous experience with data collection and supervision and Bsc background nurses were used as data collector and supervisor. Training was given for both data collectors and supervisor. 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 supervisor.

4.10 Ethical consideration

Ethical clearance was obtained from Addis Ababa University, College of Health Sciences, Research and Ethics Committee of the School of Public Health and AAHB. A formal letter of cooperation was obtained from each concerned bodies. Informed Consent was obtained from each respondent. Confidentiality of information was kept.

4.11 Dissemination of results

The finding of the research will be submitted to the concerned bodies like to the School of Public Health, Addis Ababa Health Bureau, etc. Efforts will also be made to disseminate the findings through presentation to conferences, seminars and publication.

5. Results

5.1 Assessment of services

5.1.1 Cervical cancer services

Among cervical cancer screening services, VIA/VILI were given in the two of the three hospitals and among cervical cancer diagnosis methods, punch biopsy were given in one of the three hospitals. Cryotherapy and LEEP were the two precancerous cervical cancers given in the two of the three hospitals. All of the hospitals offered major surgical services and only one hospital offered chemotherapy and radiotherapy service. All the hospitals had different units like obstetric-gynecology, radiotherapy, ART for the available different cervical cancer services.

5.1.2 Training situation of health providers on cervical cancer services

All hospitals had from two to thirteen trained health providers for the available cervical cancer services. Using these trained health providers they gave VIA for 859, punch biopsy for 520 and LEEP for 20 patients per year. (Table 1)

Table 1: Training situation of health providers on cervical cancer services, Addis Ababa, 2014

Type of training	Number of providers trained			
	Obstetrician-Gynecologist	Nurse	HO	Midwifery
VIA/VILI	9	4	1	4
Punch biopsy	2	-	-	-
Cryotherapy	9	4	1	4
LEEP	6	2	-	-

5.1.3. Screening, diagnosis and precancerous treatment facilities, materials and equipments

All the hospitals had private rooms and facilities like soap and water for washing hands, examination table covered by clean paper or cloth to perform pelvic examination. They also had materials and equipments like cleaning materials, stationeries, specula of different sizes, forceps, , to perform the available cervical cancer services.(Table 2)

Table 2: Screening, diagnostic and treatment facilities, materials and equipments available in the three hospitals, Addis Ababa, 2014

Facilities , materials and equipments		Hospitals (no.)
1	soap and water for washing hands	3
2	light source to examine the cervix	3
3	examination table covered by clean paper or cloth	3
4	disposable or high-level disinfected examination gloves	3
5	specula of different sizes, high-level disinfected	3
6	small container of warm water to lubricate and warm speculum	-
7	Cotton swabs	3
8	dilute acetic acid solution (3–5%) or white vinegar	2
9	Lugol's iodine solution	2
10	0.5% chlorine solution for decontaminating instruments	3
11	normal saline solution	3
12	Forceps	1
13	Colposcope	1
14	General or regional anesthesia	1
15	specimen containers with 10% formalin	1
16	cryosurgery unit with adequate gas supply	2
17	Reliable power supply	3
18	electrosurgical generator and electrode handle	1
19	non-conducting speculum, preferably with side retractors	1
20	wire electrodes of several sizes	1
21	coagulating/ball electrode	1
22	smoke evacuator	1
23	needles and suture material	3

5.2 Assessment of health providers knowledge related to cervical cancer

5.2.1 Socio-demographic characteristics of the respondents

Of the 343 questionnaires distributed, 309 were completed and returned, giving a response rate of 90 %. The mean age of the respondents was 29.2 (SD±7.2) years. Most of the respondents were female 207(67%).The majority of respondents 191(61.8%) were single in marital status and 222(71.8%) were orthodox religion followers. Diploma nurses 80(25.9%) and degree nurses 99 (32%) accounted majority of respondents. The mean duration of working experience of the respondents was 6.2 (SD±6.7) years. (Table3)

Table 3: Socio-demographic characteristics of the respondents, Addis Ababa, 2014

Variable	Frequency	Percent
Age groups(years)		
20-29	210	67.9
30-39	66	21.4
40-49	21	6.8
50-59	12	3.9
Sex		
Female	207	67
Male	102	33
Marital status		
Single	186	60.2
Married	123	39.8
Religion		
Orthodox	222	71.8
Muslim	28	9.1
Protestant	59	19.1
Professional level		
Obstetrician and Gynecologist(Ob-Gyn)	6	1.9
Internist	3	1
General practitioner (Gp)	45	21
Health officer(Ho)	34	11
Diploma nurse	80	25.9
Degree nurse	99	32
Diploma midwifery	37	12
Degree midwifery	34	11
Work experience(years)		
1-9	255	82.5
10-19	32	10.4
20-29	13	4.2
30-39	9	2.9

5.2.2 Knowledge of health service providers about HPV infection,

Of all the respondents who consider cervical cancer had biological cause, 192 (62.2%) said virus and 79 (25.6 %) said bacteria. Among the respondents who said the biological cause was virus, 182 (58.9%) said HPV. Concerning the question who was infected by HPV, 157 (50.8%) correctly said both sex and 146 (47.2%) said only female. Regarding mode of transmission, 274 (88.7%) of them said that it could be transmitted through sexual intercourse and 45(21%) of them said that it could be transmitted blood contact. Majority of the respondents, 289(93.5%) said cervical cancer was a preventable disease. Of all 185 (59.9 %) of respondents said that it could be prevented by abstinence and 120 (38.9%) respondents said that it could be prevented by vaccination. Of all the respondents who consider cervical cancer infection could be prevented by vaccination, 121(39.2%) correctly responded the recommended age group for HPV vaccine which was 9–13 year old girls who have not yet become sexually active and only 39(12.6%) knew correctly the recommended number of doses (three doses per six month). (Table 4)

Table 4: Frequency and Percentage distribution of knowledge of respondents about HPV infection, , Addis Ababa, 2014

Variable	Frequency	Percent
Biological cause		
Virus	192	62.1
Bacteria	79	25.6
Fungus	5	1.6
Ido not know	33	10.7
Transmission		
Sexual intercourse	274	88.7
Oro-fecal	9	2.9
Skin-to-skin-contact	30	9.7
Blood contact	45	21
I do not know	30	9.7
Prevention		
Abstinence	185	59.9
Vaccination	120	38.9
Condom	137	44.3
I do not know	24	8.1
Age for HPV vaccine		
Any age group	85	27.5
Girls not sexually active	121	39.2
Older age	32	10.4
I do not know	71	23

5.2.3 Knowledge of health service providers about cervical cancer risk factors and clinical presentations

Having multiple sexual partners 257 (83.2%) and early sexual debut 168 (54.4%) were the most commonly mentioned risk factors for cervical cancer. As well the most commonly reported clinical manifestations for cervical cancer were bleeding after intercourse 251 (81.2%) and offensive or blood stained vaginal discharge 215 (69.6%).(Table 5).

Table 5: Frequency and Percentage distribution of knowledge of respondents cervical cancer risk factors and clinical presentations, Addis Ababa, 2014

Variable	Frequency	Percent
Risk Factors		
Smoking	158	51.1
Multiple sexual partners	257	83.2
Multi parity	100	32.4
Early sexual debut	168	54.4
Long term use of contraceptive pill	117	37.9
Suppressed immunity	141	45.6
I do not know	12	3.9
Clinical manifestations		
Bleeding after intercourse/douching	251	81.2
Inter –menstrual bleeding	126	40.8
Painful coitus	172	55.7
Vaginal discharge	215	69.6
Unexplained weight loss	125	40.5
Anemia	157	50.8
Swelling of cervix	128	41.4
I do not know	8	2.6

5.2.4 Knowledge of health service providers about cervical cancer screening, diagnosis and treatment options

Cervical cancer screening, early diagnosis and treatment are the secondary and tertiary prevention options. Pap smear 232(75.1%), biopsy 262(84.8%), cryotherapy108 (35%) and chemotherapy 205 (66.3) were the most frequently answered screening, diagnosis, precancerous and cancer treatment respectively. Majority of the respondents ,291 (70.5%) were aware of the correct time to start screening, women younger than 30 years plus HIV infected and women between 30-49 years and only small percents ,95(25.9%) knew the correct screening intervals, every 5 years and every 10 years if HPV test done.(Table 6).

Table 6: Frequency and Percentage distribution of knowledge of respondents about cervical cancer screening, diagnosis and treatment options, Addis Ababa, 2014

Variable	Frequency	Percent
Screening methods		
Blood test	40	12.9
VIA or VILI	156	50.5
Pap smear	232	75.1
HPV test	134	43.4
I do not know	15	4.9
Time of screening		
<30 years of age	85	27.5
<30 years of age +HIV infected	127	41.1
30-49 years	164	53.1
I do not know	37	12
Screening intervals		
Yearly	140	45.3
Every 3 years	90	29.1
Every 5 years	67	21.7
Every 10 years, if using HPV test	28	8.1
I do not know	42	13.6
Diagnosis methods		
Biopsy	262	84.8
Colposcopy	79	25.6
Endocervical curettage	118	38.2
Cold knife conization	45	14.6
I do not know	15	4.9
Precancerous and cancer treatment		
Cryotherapy	108	35
LEEP	85	27.5
Cold knife conization	48	15.5
Chemotherapy	205	66.3
Surgery	189	61.2
Radiotherapy	176	57
I do not know	12	3.9

5.2.5 Source of cervical cancer information

Regarding their source of information about cervical cancer, a small proportion of the respondents, 44(14.2) and 38(12.3) had attended special training and seminars sessions on cervical cancer respectively. Undergraduate class 148(47.9%), colleagues, 119(38.5%), self-study 100(32.4%), and media 81(26.2) were the other sources of cervical cancer information.

5.2.6 Association of cervical cancer knowledge and socio-demographic variables

Among the socio demographic variables, profession and sex had a statistically significant association with knowledge about cervical cancer.

General practitioner and above(X^2 = 20.93, P=0.000) and health officers and degree nurses(X^2 = 5.90, P=0.015) had higher knowledge about cervical cancer than diploma nurses. Female had better knowledge about cervical cancer than male(X^2 = 8.4, P=0.003) .Age, marital status and work experience had no a statistically significant association with knowledge about cervical cancer (Table 7)

Table 7: Association of cervical cancer knowledge and socio-demographic characteristics of the respondents, Addis Ababa, 2014

Variables	Good knowledge(n)	Poor knowledge(n)	X^2	P-value
Profession				
Gp and above	21	3	20.93	0.000
HO and degree nurse	83	85	5.9	0.015
Diploma nurse	40	77		
Work experience(years)				
1-9	120	135		
10-19	15	17	0.03	0.866
20-29	6	7	0.05	0.825
30-39	3	6	0.22	0.637
Age (years)				
20-29	91	119		
30-39	36	30	2.11	0.146
40-49	14	7	3.30	0.069
50-59	3	9	0.90	0.342
Marital status				
Married	57	66	0.00	0.966
Single	87	99		
Sex				
Female	84	123	8.4	0.003
Male	60	42		

5.3 Referral (communication) systems

Regarding referral (communication) system, these Hospitals communicated mainly through referral slips. All the hospitals had internal and external referral slips and all of them kept records of referred patients. They referred patients not only to other public health facilities but also to private health institutions. Absence of trained man power and absence of necessary facilities was the major reasons for referral. Even if all the hospitals gave and received feedback on referred patients, it was not always and timely. The major reasons for delay or absence were unavailability of monitoring system, and neglecting its importance.

6. Discussion

All the hospitals had trained health providers and screening, diagnosis and treatment infrastructures for the available cervical cancer services. All the facilities had internal and external referral slips for communicating of referred patients. Absence of trained man power and absence of necessary facilities were the major reasons for referral.

Majority of the respondents knew the biological cause of cervical cancer, one of mode of transmission, through sexual intercourse, and majority of them also said this disease could be prevented. Less than half of the respondents knew cervical cancer could be prevented by vaccination and majority of them did not know the recommended age group for HPV vaccine and the recommended number of doses and over all time taken. Most of the respondents were able to mention more than three risk factors and clinical presentations of cervical cancer. Most of the respondents knew more than one screening methods and also aware of the correct time to start screening. But only one quarter knew the correct screening intervals. Most of the respondents also did not know the precancerous treatment options.

The ratio of trained health professional especially general practitioner and above to population is still a problem in Ethiopia,(1:>50,000)[38]. In this study though there were trained health professionals for the available cervical cancer services, they engaged with plenty of other health services. Because of this the patients may be deprived from getting timely services and wasting extra resources. Though the presence of different facilities for cervical cancer services was available, the services were not available at one facility. This might be one of the reasons for missed opportunity. These dispersed services might also be additional reasons for low utilization of the services. A similar study in ECSA Countries shared this finding (6).

The majority of the respondents in this study, 62.1% said virus as biological cause for cervical cancer infection and 58.9 % mentioned HPVas the name of the virus. Similar results observed in Pakistan 62% said virus and 61% said HPV the name of the virus and in Cameron 60% said HPV the name of the virus (22, 23**)**.Regarding mode of transmission, 88.7% correctly answered sexual intercourse as one means. In this study majority of the respondents, (93.5%) said cervical cancer infection was a preventable disease and of these, 59.9 % said by sexual abstinence, 38.9% said

by vaccination and 44.3 % said by condom. Other similar studies in Cameron 44% by vaccination and 22% by vaccination , in Tanzania 48% by condom and in Nigeria 33.1% by condom , showed low awareness in this area(23,25,30) .Of the respondents who consider cervical cancer infection could be prevented by vaccination, only 39.2% identified correctly the recommended age for HPV vaccine and 72.8% did not know the recommended number of doses and over all time taken .This low result about the vaccine in this and other studies was not surprising in countries where this vaccine is not included in the routine EPI program. A large proportion of the respondents in this study were able to mention having multiple sexual partners and early sexual debut as risk factors as also indicated in studies in Cameron, Gana, India and Tanzania (23, 25, 26, 28). The most widely mentioned clinical manifestations were post-coital bleeding (81.2%) and offensive or blood stained vaginal discharge(69.6%).Results from studies in Gana ,India ,Pakistan and Tanzania also support this finding (22,25,26,28). Limitation of services and work overload might prevent them from spending much time with patients and knowing their signs and symptoms. The most widely identified screening methods were Pap smear (75.1%) and VIA (50.5%). Majority of the respondents were aware of the correct time to start screening (70.5%) and only small percents (25.9%) knew screening intervals. Similarly studies in Pakistan, Uganda, Cameron, Gana, and Tanzania (22, 23, 25, 27, 28).This finding was expected in developing countries like Ethiopia where there is no national screening policy, presence of limited screening services and the service given only to certain clients .It was critical not to be aware about VIA by the majority of the respondents since it is less costly and simple to perform. Although, precancerous treatment is the best options especially for resource limited countries where there is no good cancer treatment, only 35% mentioned cryotherapy and 27.5% LEEP as, precancerous treatment options. The majority of respondents knew that cervical cancer could be treated, 57% by radiotherapy, 61.2% by surgery and 66.3% by chemotherapy. There was also a significant association between professional background and knowledge of cervical cancer. General practitioners and above were more knowledgeable than nurses as also saw studies in Thailand (24). This variation might be due to the differences in the content of educational curricula and attending cervical cancer training and seminar sessions. There was no a significant association between age, work experience, marital status and knowledge of cervical cancer. This finding highlights what makes difference is how much attention given to recent information.

An effective referral network enables timely access and continuity of care by linking the service facility to the referral facility, laboratory, and diagnostic and treatment centers for cervical cancer. A referral protocol and functioning communication system need to be in place to ensure an effective referral system. All the facilities had referral slips and all of them kept records of referred patients. This indicated that they were applying in line with the guideline and WHO recommendation.(5,34) Related to referral conditions, this study had highlities the emphasis given to patients and value of keeping records. Good keeping of records also important for good follow up and trend analysis of the disease. The major reasons for referral were lack of qualified professional and equipment as indicated in other developing countries (8-10).

7. Strengths and Limitations of the study

Strengths of the study

- The tools were previously tested 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

Limitations of the study

- Since cervical cancer services are available only to the three hospitals, cervical cancer service results cannot be generalized to all public health facilities in Addis Ababa
- Self-administered questionnaire was used to assess knowledge level, but it was not the preferred one.

8. Conclusion

Although all cervical cancer services not available at one facility (at one point), cervical cancer screening, diagnosis, precancerous cervical cancer and cancer treatment services were given in the three hospitals. All the hospitals had trained health providers and screening, diagnosis and treatment infrastructures for the available cervical cancer services.

Majority of the respondents knew the biological cause, mode of transmission, risk factors, clinical presentations, screening methods and time to start and prevention methods of cervical cancer. But most of the respondents did not know HPV vaccine, the recommended age group and the recommended number of doses and over all time taken, screening intervals and the precancerous treatment methods.

All the facilities had internal and external referral slips for communicating of referred patients and also kept their records. Absence of trained man power and absence of necessary facilities were the major reasons for referral. Even if all the hospitals gave and received feedback on referred patients, it was not always.

9. Recommendation

- The government should expand the full cervical cancer services to be available at least in these hospitals (at one point).
- Since health providers play vital role in the prevention of cervical cancer through educating individuals, FMOH and AAHB 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 referral slips, keeping records and monitoring system should be strengthened in areas of feedback mechanism.
- Also recommend further research in the status of cervical cancer services by including strategic issues and patient issues together.

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Annex

1. Questionnaire

ADDIS ABABA UNIVERSITY

COLLEGE OF HEALTH SCIENCES

SCHOOL OF PUBLIC HEALTH

Informed consent

Good morning/afternoon! My name is _____. I am a data collector in a survey that will be conducted to **assess cervical cancer services and cervical cancer related knowledge of health service providers in public health facilities in Addis Ababa** by the collaboration of Addis Ababa University**.** If you are willing to participate, you will not write your name and your response will be kept confidentially and it will only be used for this research purpose. Your participation in this study is completely on voluntary basis; you have the right to participate or not to participate, you have the right not to answer any questions that you don't want to answer and you have the right to refuse to do so at any time during the interview. However, your honest answer to these questions is very important to identify problems related to cervical cancer service and it also helps to take appropriate measures. It would take 20-30 minutes to complete the questionnaire. If you want any further information, you can contact the following research team.

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Are you willing to participate?

Yes ☐ No ☐

Questionnaire Code_____ Date _____

Name of data collector_____Signature_____

Checked by: Name of supervisor/investigator _____Signature_____

I.Socio-demographic profile of the respondent

S.no.	Question	Response
101	Age	_____years
102	Sex	1. Male 2. Female
103	Marital status	1. Single 2. Married 3. Widow/er 4. Divorced 5. Separated
104	Religion	1. Orthodox 2. Muslim 3. Catholic 4. Protestant 5. Other(Specify) _____
105	Background/specialty	1. Obs-Gyn 2. GP 3. Internist 4. Radiotherapist 5. Health officer 6. Nurse(diploma,Bsc) 7. Midwifery(diploma,Bsc) 8. Other(Specify _____
106	Work experience	_____years

II.Knowledge on cervical cancer

107	What is the biologic Organism causing cervical cancer infection?	1. Bacteria 2. Virus 3. Fungus 4. Parasite 5. I Don't Know
108	What is the name of the etiologic agent for cervical cancer infection?	1. HPV 2. HSV 3. HIV 4. I Don't Know
109	The infection is transmitted by (Multiple responses acceptable)	1. Oro-fecal 2. Sexual intercourse 3. Skin to skin contact 4. Blood contact 5. I Don't Know
110	Who can become infected by the etiologic agent?	1. Only female 2. Only male 3. Both 4. I Don't Know
111	Identify the signs and symptoms which you think related to cervical cancer (Multiple responses acceptable)	1. Bleeding after intercourse or douching 2. Inter-menstrual bleeding 3. Painful coitus 4. Offensive or Blood stained vaginal discharge 5. unexplained weight loss 6. Anemia 7. Swelling of cervix 8. I Don't know

112	What are the risk factors of cervical cancer?(Multiple responses acceptable)	1. Smoking 2. Multiple sexual partners 3. Multiparty 4. Early sexual debut 5. Long term use of the contraceptive pill 6. Suppressed immunity 7. I Don't Know
113	Is cervical cancer infection preventable?	1. Yes 2. No 3. I Don't Know
114	If yes to Q.113, which one can be the prevention method?	1. Sexual abstinence 2. condom use 3. Vaccination 4. I Don't Know
115	Which age group is recommended by WHO(2013) for HPV vaccine?	1. Any age group 2. 9–13 year old girls who have not yet become sexually active 3. older age 4. I Don't Know
116	How many doses and for how long should the vaccine be taken?	1. 2/4month 2. 3/6month 3. 3/9month 4. 5/10month 5. I Don't Know
117	Which of the following screening method do	1. Blood Test 2. Visual inspection of the cervix

	you know?(Multiple responses acceptable)	with acetic acid (VIA) or lugol's iodine(VILI) 3. Conventional (Pap) and liquid based cytology (LBC) 4. HPV test 5. I Don't Know
118	At what age is women first invited for cervical cancer screening according to WHO(2013)?(Multiple responses acceptable)	1. Women<30 years of age 2. <30 years of age + HIV-infected or living in a high HIV prevalence area 3. At minimum women 30–49 years old 4. I Don't Know
119	At what intervals should a woman get screening according to WHO (2013)? (Multiple responses acceptable)	1. Yearly 2. Every 5 years 3. Every 10 years, if using HPV test 4. I Don't Know
120	Which of the following diagnosis methods do you know? (Multiple responses acceptable)	1. Biopsy 2. Colposcopy 3. Endocervical curettage 4. Cold knife conization 5. I Don't Know
121	Is cervical precancerous and cancer treatable?	1. Yes 2. No 3. I Don't Know
122	If yes to Q121, which one can be the treatment option? (Multiple responses acceptable)	1. Cryotherapy 2. Loop electrosurgical excision

		procedure (LEEP) 3. Cold knife conization 4. Chemotherapy 5. Surgery 6. Radiotherapy 7. I Don't Know
123	Where is your source of cervical cancer information?	1. Undergraduate school 2. Media 3. Colleagues 4. Self-study 5. Special lectures/training 6. Seminars/conference

III.Additional information

1. For how long have you been working here? _____

3. For how many years have you been providing cervical cancer related service (if any)_____

3. What kind of training have you ever attended (cervical cancer related on job training)?_____

_____

_____

4. Do you think that the training you have received is adequate to perform your duties?_____

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

_____

_____

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

_____

_____

_____

_____

_____

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

_____

_____

_____

_____

_____

Thank you very much for your cooperation!

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2. Checklist

Good morning/afternoon! My name is _____. I am a data collector in a survey that will be conducted to **assess cervical cancer services and cervical cancer related knowledge of health service providers in public health facilities in Addis Ababa** by the collaboration of Addis Ababa University. I would like to observe cervical cancer screening, diagnostic and treatment facilities, materials and equipments in the hospital. All information from this survey is confidential and is not mentioned with any facility name. You have also the right to refuse or order me to leave the room at any time of the observation.

Are you willing?

Yes ☐ No ☐

Date of observation _____

Name of data collector_____Signature_____

Checked by: Name of supervisor/investigator_____ Signature____

Assessment of services

Name of facility _____

1. Cervical cancer related services and units which give the services available in the institution

Type of service	Availability	
	Yes	No
Cervical cancer screening		
VIA/VILI		
Pap-smear		
HPV test		
Cervical cancer diagnosis		
Colposcopy		
Punch biopsy		
Cone biopsy		
ECC		
Cervical pre/cancer treatment		
Cryotherapy		
LEEP		
Cone biopsy		
Chemotherapy		

Surgery		
Radiotherapy		
Units		
Obstetric-Gynecology unit		
FP unit		
ANC unit		
Pathology unit		
Radiotherapy unit		
ART clinic		
Other specify----------		

2. Training situation

Type of training	Number of providers trained					
	Oby-Gyn	GP	Pathologist	Nurse	Midwifery	Other
VIA/VILI						
Pap-smear						
HPV test						
Colposcopy						
Punch biopsy						
Cone biopsy						
ECC						
LEEP						

Cryotherapy						
Radiotherapy						
Others specify_____						

3. Screening, diagnostic and treatment facilities, materials and equipments

Facilities , materials and equipments		**Available**		**Functional**	
		Yes	No	Yes	No
PELVIC EXAMINATION					
1	soap and water for washing hands				
2	light source to examine the cervix				
3	examination table covered by clean paper or cloth				
4	disposable or high-level disinfected examination gloves				
5	specula of different sizes, high-level disinfected (need not to be sterile)				
6	small container of warm water to lubricate and warm the speculum				
7	0.5% chlorine solution for decontaminating instruments and gloves.				

VISUAL SCREENING METHODS					
1	soap and water for washing hands				
2	a bright light source to examine the cervix				
3	a speculum, high-level disinfected (it need not be sterile)				
4	disposable or high-level disinfected examination gloves				
5	examination table covered by clean paper or cloth				
6	cotton-tipped swabs				
7	dilute acetic acid solution (3–5%) or white vinegar				
8	Lugol's iodine solution				
9	0.5% chlorine solution for decontaminating instruments and gloves				
PAP SMEAR					
1	soap and water for washing hands				
2	a light source to examine the cervix				
3	an examination table covered by clean paper or cloth				
4	a speculum, high-level disinfected (it need not be sterile)				
5	disposable or high-level disinfected examination gloves				
6 7	an extended-tip wooden or plastic spatula (or another device for sampling) a glass slide with frosted edge and pencil for labelling				

8	fixative solution				
9	small container of warm water to lubricate and warm the speculum				
10	0.5% chlorine solution for decontaminating instruments and gloves				
HPV TESTING					
1	a light source to examine the cervix				
2	an examination table covered by clean paper or cloth				
3	a speculum, high-level disinfected (it need not be sterile)				
4	disposable or high-level disinfected examination gloves				
5	small brush or soft swab				
6	small container with preservative solution				
7	small container of warm water to lubricate and warm the speculum				
8	0.5% chlorine solution for decontaminating instruments and gloves.				
COLPOSCOPY, PUNCH BIOPSY ENDOCERVICAL CURETTAGE, AND COLD KNIFE CONIZATION					
1	Vaginal speculum, high-level disinfected and sterile endocervical speculum				
2	General or regional anaesthesia				
3	normal saline solution				
4	iodine solution				

5	3–5% acetic acid				
6	Colposcope				
7	Monsel's paste				
8	punch biopsy forceps				
9	endocervical curette				
10	ring forceps				
11	Knife				
12	cotton swabs				
13	specimen bottles with 10% formalin				
14	pencil and labels				
CRYOTHERAPY					
1	speculum, high-level disinfected (it need not be sterile)				
2	disposable or high-level disinfected examination gloves (need not be sterile)				
3	cotton swabs for wiping the cervix				
4	normal saline solution				
5	colposcope, if used in the particular venue				
6	cryosurgery unit with adequate gas supply				

LOOP ELECTROSURGICAL EXCISION PROCEDURE (LEEP)					
1	Reliable power supply				
2	electrosurgical generator and electrode handle				
3	Colposcope				
4	non-conducting speculum, preferably with side retractors				
5	return electrode				
6	wire electrodes of several sizes				
7	coagulating/ball electrode				
8	smoke evacuator				
9	Forceps				
10	local anaesthetic: 1% or 2% lidocaine, with or without 1:100 000 epinephrine				
11	5-ml syringes with long 27-gauge needle				
12	bottles with normal saline and with 5% acetic acid				
13	Monsel's paste				
14	large swabs				
15	needles and suture material				
16	specimen containers with 10% formalin				

4. Referral systems for cervical cancer

S.no	Question	Response	
		Yes	No
1	Do you have an internal referral slip?		
2	Do you keep records of referred patients?		
3	Do you have an external referral slip?		
4	Where do you usually refer patients? 1. Hospital 2. Private clinic 3. other specify_____		
5	What is the main reason for referral? 1. Lack of trained man power 2. Lack of equipments/materials 3. Patients request 4. Other reasons_____		
6	Do you give and receive feed backs		
7	If yes to question 6, is it always and timely?		
8	If No to question 7, why? 1.Unavailability of monitoring system		

	2.Neglecting its importance 3. Work overload 4.Other		

5. General information (focal person for cervical cancer related services)

1. For how long have you been working here? _____
2. How many patients come for cervical cancer services per month or year in your hospital?
   For screening_____
   For diagnosis_____
   For treatment_____
3. Is there cervical cancer register in your hospital?_____,if No
   why?_____
   _____
   _____
4. Is there cervical cancer screening, diagnosis and treatment protocol or guideline in your hospital ?_____If no
   why?_____
   _____
   _____
5. Do you think that the training they have received is adequate to perform their duties?_____
6. In general, what kind of problems you have observed related to cervical cancer services in your hospital?
   _____
   _____
   _____

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

_____

_____

_____

_____

Thank you very much for your cooperation!