

Preventive Mechanisms and Treatment of Cervical Cancer in Ethiopia

Sara Kebede Tadesse*

Center for Gender Studies, Addis Ababa University, Ethiopia

Abstract

Background: Cervical cancer is the second most common cancer in women globally and a leading cause of death in developing countries especially Sub-Saharan Africa. Ethiopia has also been shown to share this high incidence rate of cervical cancer. Since preventive mechanisms are considered as one of the key elements in tackling the issue, this study mainly sought to uncover the status of primary preventive mechanisms and tertiary care in Ethiopia.

Methodology: To get an in-depth look at the preventive mechanisms, the study mainly employed a qualitative design. A total of 13 key informant interviews were conducted with staff and officials of relevant institutions. In addition, 10 interviews were held with cervical cancer patients that were attending care in Tikur Anbesa Hospital. A quantitative design has also been implemented in which 198 patients were surveyed.

Results: The study found that due to the inefficient attention paid to cervical cancer, prevention mechanisms and treatment were found to be largely inadequate and underdeveloped. The lack of proper data and other competing health care needs have been stated as the main reason behind the lack of attention paid to cervical cancer. Though steps are currently being taken to expand screening, pre-cancer treatment and invasive cancer treatment sites, the study found all the steps being taken to be in preliminary stages.

Conclusion: The current focus of Ethiopia on secondary prevention mechanism is not adequate to fully address the challenge cervical cancer poses. As an emerging health care issue, cervical cancer has to be prioritized so that the proper resources, policies and strategies can be put in place to address the issue in a comprehensive manner.

Keywords: Cervical cancer; Ethiopia; Primary and secondary prevention; Treatment

Abbreviations: FGAE: Family Guidance Association of Ethiopia; FMOH: Federal Ministry of Health; HIV/AIDS: Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome; HPV: Human Papilloma Virus; HSDP: Health Sector Development Program; IRB: Institutional Review Board; LEEP: Loop Electrosurgical Excision Procedure; SPSS: Statistical Package for the Social Sciences; UCSD: University of California San-Diego; UK: United Kingdom; VIA: Visual Inspection with Acetic Acid; WHO: World Health Organization

Introduction

Cervical cancer is one of the reproductive organ cancers found in women which commonly arises from the lower part of the uterus. Human Papillomavirus (HPV) has been established as the necessary cause (Etiology) of cervical cancer by several studies [1-3]. Though it is mainly transmitted sexually, it can also be transmitted through direct skin to skin contact of the genital areas [4].

Cervical cancer is considered as one of the most preventable cancers. The determination of the cause of cervical cancer, its slow progression coupled with the development of the first cancer vaccine; cervical cancer prophylactic vaccine, makes cervical cancer the most preventable cancer and one that can even be eradicated. Despite this fact however, considerable mortality rates are being recorded, particularly in developing countries [5].

There is a wide discrepancy in mortality and morbidity rates between developing and developed countries. The gaps have been widening in recent decades as screening and effective preventive strategies have led to a dramatic decline in the prevalence and mortality rates in developed countries. For instance, in the United States between 1955- 1992 the mortality rate for cervical cancer declined by nearly 70% and the rates have continued to drop by 3% annually. Similarly in the

United Kingdom, the rates of cervical cancer were lowered by 70% in 2008 compared to 30 years ago [6].

On the contrary, in developing countries, the number of deaths and morbidities from the disease has been on the rise. Cervical cancer is usually detected in advanced stages in these countries due to the lack of effective preventive mechanisms. An estimated 80% of all patients with cancer in developing countries are presented with advanced stages at their first consultation [7]. Moreover, according to a World Health Organization (WHO) estimate, the number of mortalities from cervical cancer is expected to rise from the current figure of 274,883 to 474,000 annually and over 95% of these deaths are expected to be from developing countries [6].

The number of cervical cancer cases is expected to double in Sub-Saharan Africa. In this region, the prevalence of cervical cancer is estimated to account for 34.5/100,000 of all cancers in women [8]. The high prevalence of cervical cancer is also evident in the case of Ethiopia. The WHO estimates a diagnosis of 4,648 cases and 3,235 deaths annually in the country. However, these statistics are considered as an underestimation of the actual number of cases. This underestimation is said to be attributed to lack of adequate diagnostic and reporting mechanisms [9]. Furthermore, according to an unpublished report

*Corresponding author: Sara Kebede Tadesse, M.Phil, Masters in Gender Studies, Center for Gender Studies, Addis Ababa University, Ethiopia, Tel: 251911-81-00-26; E-mail: sarinakebede@gmail.com

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from Tikur Anbessa radiotherapy unit, women make up 70% of the total cancer patients and from this number, cervical cancer patients are estimated to account for 30%.

As mentioned above, the decline in prevalence and mortality rates in developed countries are attributed to strong primary and secondary preventive mechanisms and tertiary care [6]. However, since previous studies in Ethiopia have not addressed this topic, the status of these preventive and treatment mechanisms remain unknown. Consequently, this study explored these variables to uncover what has been done in the preventive as well as treatment aspect.

Primary prevention mechanisms

Primary prevention mechanisms are measures taken to avert the onset of a given illness. These mechanisms aim to reduce the risk of exposure to a particular disease by reducing the disease causing agents in the environment. They target the entire population at risk despite the absence of signs and symptoms. These measures include passive and active immunization, education on safe sexual practice, awareness and counselling [10].

Secondary prevention mechanisms

Secondary prevention mechanisms are measures put in place for the identification and treatment of diseases that have not yet fully developed. Screening is considered as the most effective secondary prevention mechanism [10]. Screening for cervical cancer generally aim to detect precancerous lesions before they progress to invasive cervical cancer. The disease takes 10-15 years to develop, screening within this period allows for simple interventions to be carried out before cancerous and precancerous tumours progress to invasive cases [3]. Since cervical cancer is uncommon before the age of 30, WHO recommends screening to start from 30 years and above. For high risk groups like HIV infected women, screening can be done earlier starting from 25 and above. It is also indicated that, in low resource areas screening every 10 years or just once between the ages of 35-45 significantly reduce cervical cancer mortality. There are several screening techniques which include Cytology, HPV DNA tests, and Visual Inspection with Acetic Acid [11].

Tertiary care of cervical cancer

The treatment for cervical cancer is generally divided into treatment for pre-cancerous lesions and invasive cervical cancer. Different treatment modalities are used for pre-cancerous lesions which include Cryotherapy, Electrosurgical Excision Procedure (LEEP), and Cold Knife Conisation [12].

Treatment of invasive cervical cancer

The treatment options for invasive cervical cancer may include surgery, radiotherapy or a combination of both with or without chemotherapy. Radiation can be used to treat both early and late stages of cancer. The effective care and treatment of cervical cancer requires cancer treatment centers, tertiary hospitals, trained nurses and oncologists, efficient medical equipment and drugs, national guidelines and protocols [11]. However, low income countries like Ethiopia do not have these tools to effectively manage the disease.

Methodology

Study design

The study mainly employed a qualitative design but also included a descriptive cross sectional survey. In the qualitative design interviews

were held with cervical cancer patients from Tikur Anbessa Hospital and key informants from different organizations. In the quantitative aspect, 198 patients were involved in a survey.

The study area

The interviews and survey conducted with patients were held in Tikur Anbessa Hospital which is located in the capital city of Ethiopia. Tikur Anbessa serves as the main central hospital in Ethiopia and accepts referrals from all over the country. It was chosen as the study site because it is the only central referral hospital that has an oncology ward and that provides radiotherapy and chemotherapy treatments for cancer patients in Ethiopia. The oncology ward was established in 1997. Currently the recorded nurse's data from the cancer center indicate that the hospital has treated over 19,000 cancer patients thus far.

Study participants

The participants of this study were inpatients and outpatients of cervical cancer that were attending care at Tikur Anbessa Hospital in the gynecology and radiotherapy departments. All clinically diagnosed, subsequently confirmed, willing and physically able participants were included in the study. A total of one hundred ninety eight women diagnosed with cervical cancer were included. From these, 155 cases were from the radiotherapy department and 43 were from gynecology department. Out of the 198 participants, the study assessed 177 outpatients and 21 inpatients. Furthermore, medical personnel, government and non-governmental organizations (NGO's) working on cervical cancer were interviewed.

Sampling technique

A consecutive sampling technique was utilized to select the survey participants. This method was chosen for this research due to the unavailability of a sampling frame for the study population. Participants of the qualitative part of the study were chosen using a purposive sampling technique.

Research Instruments

Research instruments and data collection

A structured, pre-tested questionnaire was utilized for the quantitative part of the study. The questionnaire was initially prepared in English and translated to Amharic and finally translated back to English to confirm the validity of the translation. For qualitative data collection, in-depth interview guide was employed.

Quantitative data collection

The data was collected from April 15 - May 15, 2013. The quantitative data collection and supervision was carried out by two nurses who had previous data collection experience. The questionnaire was piloted on five women who were attending care at the gynecology and radiotherapy departments in Tikur Anbessa Hospital. Corrections on the questions as well as overall data collection procedure were made accordingly after the pilot phase was completed.

In-depth interviews were also carried out with the selected cervical cancer patients. Theme based questions and probing were utilized to ensure the attainment of a quality data. The prior method enabled the researcher to have an organized and focused questions while the latter aided in avoiding subjective interpretation of interviewees responses.

Key informant interviews were conducted with medical personnel, government and NGO's working on cervical cancer. This was done to

obtain adequate information regarding the status of primary, secondary and tertiary care in Ethiopia and the measures being taken to tackle the prevalence of the disease. Prior to interviews, explanation of the purpose and objectives of the study were made clear to the respective interviewees. Subsequently, the interviews proceeded with consent from all the informants.

Interviews were carried out with thirteen key informants. Seven informants were interviewed from Tikur Anbessa Hospital which included: the head of gynecology department, the head of oncology department, one gynecologist, two nurses from each department of data collection, the supervisor of the cancer registry section and a senior radiotherapist. In addition, staffs of three main non-governmental organizations working on cervical cancer namely Pathfinder International/Ethiopia, UCSD (University of San Diego California), Family Guidance Association of Ethiopia (FGAE) were interviewed.

Pathfinder International/Ethiopia is an international NGO that has been working in Ethiopia since 1993 on issues related to sexual and reproductive health. Pathfinder International/Ethiopia partners with local NGO's, the government of Ethiopia, different faith based and community based organizations by providing technical and financial support to disseminate its services. The organization supports the implementation of the National Health Sector Development Plan by working together with the Federal Ministry of Health in the four most populated regions of Ethiopia. It started working on cervical cancer in 2009 and has been providing screening and pre-cancer treatments for HIV positive women in many government health care facilities around the country.

Data was also gathered from University College of San Diego (UCSD). UCSD has been working in Ethiopia since 2005. It provides technical assistance for HIV prevention, care and treatment for the Uniformed Services of Ethiopia (USE). UCSD has been working on cervical cancer since late 2012 and it recently started giving screening and pre-cancerous treatments for HIV positive women in police and army hospitals in the capital of the country.

Established in 1966, FGAE is a local NGO that works in areas of providing reproductive and health services. It focuses on increasing access to family planning information and services for women. FGAE has been working on cervical cancer by providing screening with pap smear for over 10 years. In addition, it recently has started VIA (Visual Inspection with Acetic Acid) screening and pre-cancerous treatments in its clinics.

Information was also gathered from the Federal Ministry of Health

(FMoH) which is the federal governmental organization responsible for providing integrated health services for the public.

Data analysis

The quantitative data was entered, cleared and analysed using SPSS Version 19 for Windows. A descriptive analysis using scores, frequencies, percentages mean, median and range were calculated.

The qualitative data was transcribed and translated by the principal investigator. Then, analysis was conducted using thematic content analysis techniques. The qualitative data was analysed manually using codes. The codes were merged into categories and the themes were determined based on the combination of similar categories.

Ethical consideration

Ethical clearance was obtained from Addis Ababa University College of Health Science Institutional Review Board (IRB) in Tikur Anbessa on April 16, 2013.

To ensure full cooperation and understanding of the research aims by the participants, an information sheet and a consent form was prepared & administered by trained data collectors. The sheet contained information about the purpose of the study, confidentiality and the right of the respondents not to take part in the study. Participants signed the forms after all of the information was explained to them by the data collectors. Accordingly, the data collection process proceeded with a signed consent form from each participant.

Results and Discussions

Primary prevention

Awareness and vaccination in Ethiopia: Cancer prevention by and large has not been one of the areas of focus in developing countries. Competing health care needs such as TB, HIV and malaria have been the primary focus for most African countries for the past two decades [13]. Similar focus is also observed in the case of Ethiopia. According to an official from the FMoH, for the past 15 years, the FMoH allocated priority and budget to address the challenges posed by communicable diseases. Consequently, the attention given to cancer was reported to be minimal.

In regards to the issue of awareness, all of the key informant interviewees agreed that there was a lack of awareness of cervical cancer among the general public. This was also demonstrated in the data obtained from the questionnaire. As can be seen in the Figure 1, out of the total 198 respondents in the survey, only (21.7 %) heard

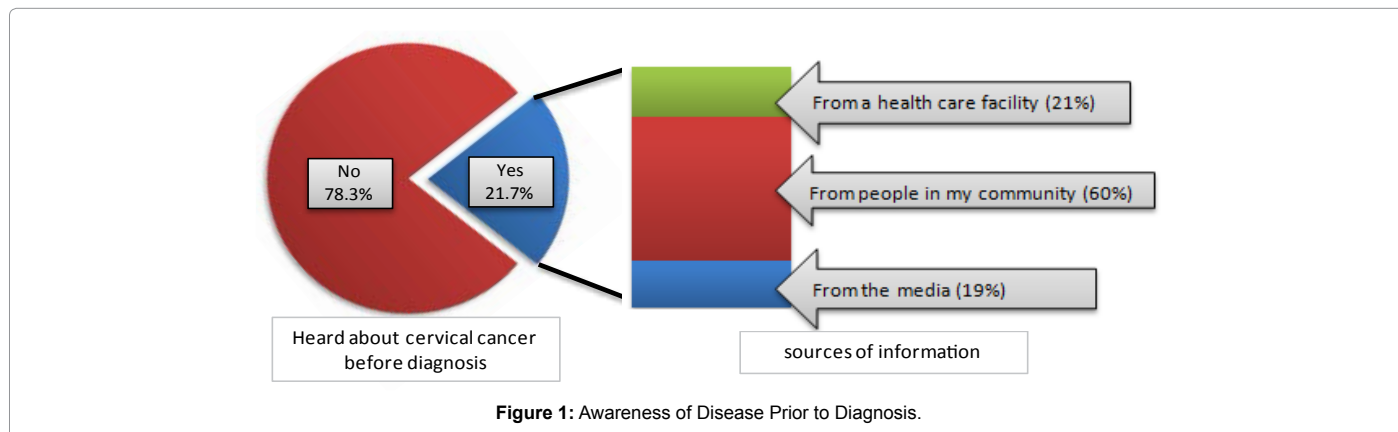


Figure 1: Awareness of Disease Prior to Diagnosis.

about cervical cancer prior to their diagnosis. In addition, when those who heard about cervical cancer were asked about their source of information more than half (60%) reported hearing about the disease from their respective communities.

This shows the general lack of awareness of the disease and the quality of information is put into question as the majority of the participants heard about the disease from their communities. People in different communities are likely to pass on incomplete or biased information. This was corroborated by the data from in-depth interviews conducted with cervical cancer patients. According to the interviewees, only three of the respondents knew about cervical cancer prior to their diagnosis. However, all three participants thought that the disease was not preventable.

All of the key informant interviewees were against creating mass awareness without the provision of proper treatment facilities. It was further added by FMOH official that, awareness creation is going to be carried out in parallel with the establishment of screening and pre-cancer treatment sites which are currently in progress. Since the expansion of these sites is in the initial phase, it was reported that awareness creation is being held back for the time being.

Awareness is a very crucial instrument for the overall prevention and care of cervical cancer. The general lack of awareness observed in the study highly compromises women's abilities to protect themselves from HPV infection. Traditional practices that expose women to cervical cancer such as early marriage and high parity are prevalent in Ethiopia. Awareness raising activities designed to educate people in areas where these practices are prevalent can have a significant impact in reducing the infection of HPV.

The other factor related to lack of awareness is delayed health seeking behavior. Due to the lack of information women have in regards to the disease, as shown in Table 1, most people in the study population waited an average of five months before seeking care. As illustrated on Table 2, out of the 140 cases that did not go to a health care facility right away, majority of the cases stated "not thinking it was serious" (42.5%) and "embarrassment because of symptoms" (22.9%) as the two main reasons. Women have to go through significant delay in the diagnostic and treatment pathway as a result of insufficient medical personnel and treatment facilities, thus this delay in addition to the delays women face in health care facilities minimizes their chances of an early diagnosis.

Vaccination: Though HPV vaccine was approved in 49 countries in 2006, the high cost of the vaccine has made the availability in many developing countries impossible. The vaccine requires three doses to be fully effective and it costs up to 300-500 USD to get the full dose. The vaccine is given to young girls between the ages of 9-13 and a secondary target group which are referred to as the "catch up population" from

Time Span from Observing Symptoms to Visiting Health Care Facility		
	Frequency	Percent
2 weeks - 1 month	29	14.60%
2 months-3 months	46	23.20%
4 months - 6 months	34	17.20%
7 months - 1 year	27	13.60%
More than 1 year	4	2.00%
Right away	58	29.30%
Average	5 Months	
Minimum	2 weeks	
Maximum	2 Years	

Table 1: The Duration from Initial Symptoms to visit to a Health Care Facility.

Reasons for not Seeking Care Right Away		
	Numbers	Percent
Didn't think it was serious	65	42.50%
Embarrassed because of symptoms	35	22.90%
Financial constraint	26	17.00%
Went to faith based institution	12	7.80%
Lack of health care facilities	8	5.20%
Sought a traditional medicine	7	4.60%
Total	153	100.00%

Table 2: Reasons for Not Seeking Health Care after Observing Symptoms.

ages 16-26. The second target group is for girls who missed HPV vaccination and who are not yet exposed to HPV [4,10].

However, the dissemination of the vaccine in the context of Ethiopia is regarded as impossible according to an official from FMOH. As per the interview, even though Ethiopia is part of the Global Vaccine Alliance which works to subsidize vaccine costs in developing countries, the country still cannot afford the vaccine. Through this alliance, the vaccine cost is reduced to 4.60 dollars per dose which require the government to incur a cost of about 15 dollars for three doses per individual.

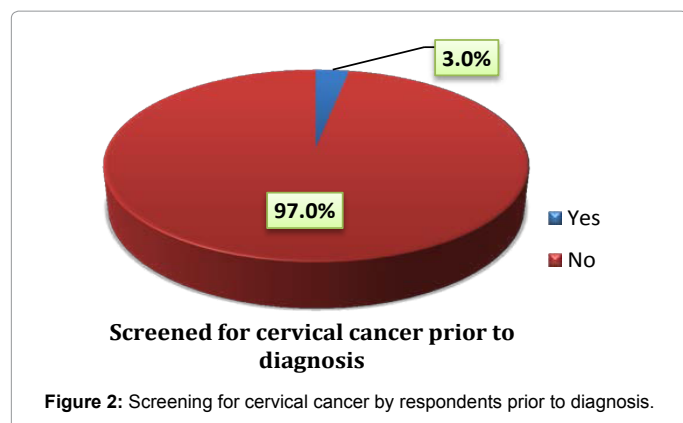
Apart from the high cost of the vaccine, hidden infrastructural costs such as strengthening cold chain systems and training of human resources were also mentioned as another difficult challenge. Thus, studying these costs was put as an important pre- requisite before being able to consider introducing the vaccine in Ethiopia. Even if decisions are made to introduce the vaccine, there is only a plan to include the first age group (9-13). It was also stated by the FMOH interviewees that due to other competing health care needs of the country, the government is more focused on widening screening services as discussed in the section below.

Secondary prevention

In regards to secondary prevention, even though screening is regarded as an effective early detection tool, it has not been widely disseminated in developing countries for a number of reasons which include financial and infrastructural challenges. Similarly in Ethiopia, screening has not been extensively practiced. In previous years, screening with pap smear was the only mechanism employed and it was used in very few health care facilities usually located in urban areas. Additionally, the few existing services were underutilized due to the lack of awareness of the public. This lack of screening was also observed in the current study; as seen in Figure 2, only 3% reported being screened. Moreover, all six participants who were screened asserted that they had pap smear test done after observing symptoms. This means that the population received a diagnostic and not a routine screening.

As mentioned earlier, priority is placed on screening; this is believed to be the best mechanism in the Ethiopian context. As per the interviewees from FMOH, pap smear and other screening mechanisms mentioned in the literature cannot be implemented on a wide scale in the country. Accordingly, VIA (Visual Inspection with Acetic Acid) has been chosen as the most cost effective method to provide screening for the general public.

Pathfinder International/Ethiopia has taken the lead in introducing new screening and pre-cancer treatments. It has strengthened the capacities of university hospitals in five regions of the country. It is also currently giving screening and pre-cancer treatments for HIV positive women in 14 hospitals located in 4 regions and one city council.



Using these facilities and their trained personnel's as training sites, other nongovernmental organizations have also started providing screening services. FGAE started giving VIA screening service in 2012 and has reported screening 600 people using VIA so far. UCSD and Tikur Anbessa Hospital have also started giving the service. However, according to an interview with the head nurse from Tikur Anbessa Hospital various challenges are encountered in the process of running the service. According to the interviewee, lack of sufficient trained personnel, lack of budget and equipment, lack of sufficient time for training, lack of space and even lack of water has resulted in the discontinuation of the service.

Currently, the FMOH is planning to expand and provide screening and pre-cancer treatments in 118 treatment facilities around the country. However, many constraints such as financial and human development constraints were raised as the main challenged in implementing the expansion. Additionally, due to the extensive lack of awareness and misconception surrounding the disease women might not be receptive to screening and pre-cancer treatments. Thus, large scale awareness creation was put as a crucial pre- requisite for the success of the utilization of these services.

The initiative taken by the government as well as the relevant stakeholders in regards to the plans of site expansion for screening and treatment facilities is a very encouraging step for the prevention aspect. However, the success of the implementation of these plans to a larger extent lies on the public. Women reported refusing being screened once they heard about the possible side effects of pre- cancer treatments. Since women are generally unaware of the disease, the services may not be widely utilized. Considering the magnitude of the disease in the country, provision of sufficient space and counseling services are a necessity.

Pre-cancer treatment

In Ethiopia, pre-cancer treatments have only been introduced since 2010. In previous years, screening was ineffective in preventing cancer since it was not linked to pre-cancer treatment. The head of the reproductive health unit at FGAE stated, due to the lack of pre-cancer treatments in the country, patients with abnormal pap smears in previous years were followed up until their lesion was big enough for an operation and patients received radical treatments such as a removal of the uterus.

According to the above interviewees, Cryotherapy has been cited as the safest, easiest and most cost effective pre- cancer treatment for Ethiopia. Since the procedure can be done by nurses

and does not require sophisticated equipment, it is believed that it can be implemented in most areas around the country. Pathfinder International/Ethiopia is currently giving the services in the 14 sites around the country for HIV positive women. In addition, FGAE and UCSD have also started giving Cryotherapy services. According to an official from FMOH, plans are made to include Cryotherapy treatments alongside screening services in the 118 expansion sites. LEEP & Cold Knife Conization are put as long term plans of the ministry of health of the country. However, Pathfinder International/Ethiopia reports using these services as second line treatment for pre-cancer cases in the 14 cites. In addition, according to the interview with the head of gynecology in Tikur Anbessa, though LEEP is not available Conization is used as a third line of treatment in Tikur Anbessa.

Cancer treatment

Treatment of cancer involves cases that have advanced to invasive stages. This line of care is an intricate form of care that require the involvement of many qualified oncology staff and well equipped centered which are not widely available in Ethiopia. The cancer center in Tikur Anbessa Hospital has been giving treatment services since 1997, however, it still remains the only cancer center in the country. Due to this fact, the hospital faces multifaceted challenges in many regards. The lack of oncology specialists, the shortage of treatment equipment's, the lack of maintenance engineers for radiotherapy machines and overwhelming number of cases are just some of the problems faced by the center. According to the head of oncology at Tikur Anbessa, on top of the challenges mentioned above, the other major challenge faced is the lack of hospital beds. There are only 16 beds for all cancer patients, which has contributed to the significant delay of the treatment for patients. Though these realities were apparent for more than 15 years, the conditions have not improved.

Some initiatives are being taken to improve the shortage of cancer treatment centers. As per the interviewees, plans to expand cancer centers in 5 regions of the country are currently underway. Moreover, according to the head of the gynecology center in Tikur Anbessa, doctors are currently being trained for the field of Gynecology Oncology.

Attention to non-communicable diseases, particularly cancer, was given due attention in regards to policy only since 2009/10. Cervical cancer was not included in prior strategies issues by FMOH such as the Reproductive Health Strategy and Health Sector Development Program (HSDP). However, cervical cancer was included HSDP in 2010/11-2014/15. In Addition, in 2010/11 a non-communicable strategic framework was developed to address four major areas; heart disease, diabetes, respiratory disease and cancer. This frame work has three pillar areas; prevention, treatment and care.

Apart from the focus on communicable disease in the previous years, the lack of attention given to the cancer issue in general has been attributed to a lack of well-organized cancer data. According to the interview with the supervisor of the Addis Ababa Cancer Registry Center in Tikur Anbessa, the Cancer Registry was only put in place in December of 2011. In previous years cancer data was recorded informally by nurses who worked in the cancer center. The Cancer Registry currently records data in Addis Ababa from 2 government hospitals and 10 private hospitals. Since its establishment in 2011 up to the time of data collection, it has recorded 4,106 cancer cases of all types in Addis Ababa. Among all registered cases, cervical cancer was the second in incidence next to breast cancer. Cervical cancer accounted for 11.35% out of all the cancer cases and 16.3% out of the

female cancer cases. In addition, the registry showed that out of all the cases women constituted (69.4%) while man constituted (30.6%) (Addis Ababa Cancer Registry, 2011).

While the establishment of a Cancer Registry is a leap forward in terms of providing information on the incidence of cancer, the Registry only focuses on residents of Addis Ababa. This highly compromises the real incidence of cervical cancer in particular and cancer in general. When this issue was further explored with an interview with the FMOH it was stated that, the registry similar to the awareness issue is planned to be integrated with the cancer centers alongside the site expansion plan of the FMOH. However, the expansion of these sites are all in the preliminary stages and could take years before they are able to be fully functional, the real magnitude in the meanwhile will not be known. The lack of information in regards to the incidence of cancer undermines efforts to address the current dire circumstances properly. Apart from compromising policy makers' abilities to identify high incidence cases of cancer that deserve swift action, it also hinders the relevant stake holders from designing evidence based prevention and treatment programs for cancer.

Conclusion

Currently a lot of attention is placed on secondary prevention. Though that is an important component, primary prevention and tertiary care are also crucial parts of the overall prevention and care of cervical cancer. Even with the application of aggressive secondary prevention mechanisms, new cases will be diagnosed in the coming years, thus a secondary prevention centered approach will not be sufficient to address the issue of cervical cancer in a comprehensive manner. In addition, without the prospect of effective treatment option for invasive cases, cervical cancer will remain stigmatized among the wider public as a disease that cannot be cured. As pointed out in the previous sections, awareness creation to a large extent remains a lesser priority. However, without the appropriate public education and general stigma reduction in the wider public, the effectiveness of the services underway is put into question. A comprehensive approach that includes primary & secondary prevention and cancer care is crucial in addressing the issue of cervical cancer in particular and cancer in general.

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Authors' Contributions

Sara Kebede has initiated the conception of the research idea, the design, development of data collection tools analysis, interpretation of the data of the study and manuscript preparation author declares that there are no competing interests.

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