ADAMA SCIENCE AND TECHNOLOGY UNIVERSITY

OFFICE OF GRADUATE STUDIES

Assessment of Prevalence and Risk Factors for Cervical Precancerous Lesion and Cervical Cancer among Women Screened in Bishoftu General Hospital, Oromia Regional State, Ethiopia

A Thesis Submitted to the Department of Applied Biology

School of Applied Natural Science

in Partial Fulfillment of the Requirements for the Degree of Master in Biology

By

Demisu Abera

Adama, Ethiopia

September, 2017

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ID. NO GSU/0403/06

Advisor: Dr. Yeshiemebet Major

Adama, Ethiopia

September, 2017

Approval Sheet by Board of Examiners

We, the undersigned, members of the Board of Examiners of the final open defense by Demisu Abera have read and evaluated his thesis entitled "Assessment of Prevalence and Risk Factors for Cervical Precancerous Lesion and cervical cancer among Women Screened in Bishoftu General Hospital, Oromia Regional State, Ethiopia" and examined the candidate. This is, therefore, to certify that the thesis has been accepted in partial fulfillment of the requirement of the Degree of Masters in Biology.

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Declaration

I, the undersigned declared that this MSc thesis is my original work and has not been presented for a degree in any other university, and all source materials used for the thesis have been fully acknowledged.

Name of the student:- Demisu Abera

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This MSc thesis has been submitted for examination with my approval as thesis advisor.

Advisor Name:- Dr. Yeshiemebet Major

Signature _____

Date _____

Date of submission_____

Advisor's Approval Sheet

To: Biology department

Subject: Thesis Submission

This is to certify that the thesis entitled "Assessment of Prevalence and Risk factors for Cervical Precancerous Lesion and Cervical Cancer among Women Screened in Bishoftu General Hospital, Oromia Regional State, Ethiopia" submitted in partial fulfillment of the requirements for the degree of Master in Biology, the Graduate program of the department of Biology and has been carried out by Demisu Abera Id. No GSU- 0403/06 under my supervision. Therefore, I recommend that the student has fulfilled the requirements and hence hereby he can submit the thesis to the department.

_____ _____ _____

Name of Advisor Signature Date

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LIST OF ACRONYMS AND ABBREVIATIONS

ACCP……Alliance for cervical cancer

ACS……..American cancer society

AOR……..Adjusted Odds Ratio

ART……..Antiretroviral Therapy

CDC…….Center for disease control and prevention

CI……..Confidence Interval

CIN……...Cervical Intraepithelial Neoplasia

COR…….. Crude Odds Ratio

CSA……..Central Statistical Agency

DNA……..Deoxyribonucleic Acid

FMOH……..Federal Ministry of Health

HIV……..Human Immunodeficiency Virus

HPV…… Human papilloma virus

HSIL……..High Grade Squamous Intraepithelial Lesion

IARC……International Agency for Research

LEEP…….Loop Electrosurgical Excision Procedure

LSIL……..Low Grade Squamous Intraepithelial Lesion

LSP……..Life time Sexual partner

SCJ……Squamo columnar Junction

SIL……Squamous Intraepithelial Lesion

SPSS……....Statistical Packages for Social Sciences

STD……..Sexually Transmitted Disease

VIA……..Visual Inspection with Acetic Acid

WHO……World Health Organization

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ABSTRACT

Cervical cancer is the second most prevalent cancer among women in the developing countries including Ethiopia following breast cancer and the largest killer cancer among women in those countries. The most common factors that contribute for cervical cancer and hinder its prevention include inadequate knowledge about the disease, early initiation of sexual intercourse and having multiple sexual partners. Hospital based case control study was conducted from January to May 2017, with the aim of assessment of the prevalence of cervical precancerous lesion and associated risk factors among women screened in Bishoftu General Hospital. Bivariate and multivariate logistic regression analysis was conducted to examine the factors associated with pre cancer lesion and cervical cancer by using SPSS version 24. Being in the age group of 40-49 years increased the risk of developing cervical precancerous lesion by 4.77 times than being in age group of 21-29 years (COR=4.77, 95%CI (1.394-16.33). Women having history of sexually transmitted infections by 3.36 times more likely to develop cervical precancerous lesion than those who do not have history of sexual transmitted infection (COR=3.364, 95%CI (1.876-6.03)). Women who had two or more lifetime sexual partners increased the risk of developing cervical precancerous lesion by 2.477 times as compared with women who had one sexual partner (COR= 2.477, 95%CI (1.303-4.710)). Having greater than three history of abortion were significantly associated with cervical precancerous lesion as compared with those who did not have history of abortion (COR=9.705, 95% CI (3.642-25.861). Having irregular history of menstruation increased the risk of cervical precancerous lesion by 4.17 times as compared with those who have regular history of menstruation (COR=4.177, 95% CI (1.76-9.94). Generally for women aged 40-49 years, lifetime history of sexual transmitted infections, two or more lifetime sexual partners, early sexual intercourse, irregular menstruation cycle, positive HIV status, having history of abortion more than three and having history of smoking increase the risk of cervical precancerous lesion and were found significantly associated with cervical precancerous lesion. Therefore, women above the age of 30 years, with history of sexually transmitted infections and history of multiple sexual partners should be encouraged to be screened for cervical cancer.

Key words:- Cervical cancer, cervical precancerous lesion, HPV, risk factors, VIA

1. INTRODUCTION

1.1. Background of the study

Cervical precancerous lesion is a lesion that begins in the cell lining of the cervix and grows and replicate in an abnormal and uncontrolled way (IARC, 2005). The transformation zone or squamo columnar junction (SCJ) is the common place where cervical precancerous lesion starts to grow (IARC, 2005).

Cervical precancerous lesion is graded in to three cervical intraepithelial neoplastic (CIN) stages: CIN I, CIN II & CIN III. These abnormalities are either regress or progress gradually into cervical cancer (IARC, 2005). Cervical precancerous lesion is not yet cancer but there is a higher chance to become cancer if it is not treated timely. It may take 10 years or more to change into cancer, but occasionally this happens in less time (Pathfinder international, 2012). Single Cervical cancer is preventable in most cases and curable if identified and treated in its precancerous stage (WHO, 2015).

Cervical cancer is the second most prevalent cancer among women in the developing countries including Ethiopia, and the largest killer cancer among women in those countries (ACS, 2014). Epidemiological data and clinical studies provide evidence that cancer-causing human papilloma virus (HPV) type leading factors to chronic infection of the cervix. The relationship between HPV and cervical cancer, meets all the criteria of the International Agency for Research on Cancer (IARC), which must complied with to recognize the relationship between the factor and a cause of cancer (Bosch *et al*., 2002).

Statistically, the most significant risk factors responsible for the occurrence of human papilloma virus infection are very similar to the risk factors for cervical cancer (Bosch, 1996). These include age, early sexual initiation, high sexual activity, multiple sexual partners, history of abnormal Pap smears, venereal diseases and inflammatory changes within the vagina or vulva (Bosch *et al*., 2002). Others, of less importance, are smoking, use of oral contraceptives and number of previous pregnancies (Bosch, 1996; Bosch *et al*., 2002).

HPV is central to the development of cervical neoplasia and can be detected in 99.7% of cervical cancer. The two major histologic types of cervical cancer, adenocarcinoma and squamous cell

carcinoma, and the pre-invasive disease that corresponds with this histology's share many of the same risk factors. Most of these are associated with an increased risk of acquiring or having inappropriate compromised immune response to infection with HPV, the etiologic agent of most cervical cancer (Chen *et al*., 2011).

HPV infects the cells of the base layer of squamous epithelium of the cervix. Exposure of this layer occurs in the epithelial micro traumas due to sexual intercourse or an infection caused by various microorganisms. Peak prevalence of infections with human papilloma virus is between 20 and 25 years of age (Williamson, 2015). Positive test results were obtained in about 40% of women in this age group in the general population. In these patients cancer is rarely observed (Schiffman and Wentzensen, 2010).

The age at which cervical cancer occurs most frequently is similar worldwide. The greatest morbidity affects women aged 45-54 years (Michalska *et al*., 2009). Epidemiological studies of cervical cancer's risk factors underline the important role of sexual activity, both women and men in the development of changes in the cervix (Castellasague *et al*., 2002; Moscicki, 2005). The risk of HPV infection increases along increasing number of sexual partners. It was believed that the risk of developing cervical cancer is also higher if the first sexual intercourse took place before reaching age of 16 years. Early initiation of sex life means that the most observed form of HPV infection is a clinical form (Bosch *et al*., 2002). The scientists are divided regarding the impact of cigarette smoking on the possible development of the human papilloma virus infection, and thus the development of cervical cancer (Collins *et al*., 2010). Nevertheless, in the mucosa of female smokers, nicotine, and other substances with mutagenic properties were detected. There is a theory linking the presence of the above relationship with the transition state of local immune suppression. The substances are thought to facilitate the primary infection and promote cell changes caused by the presence of HPV (Bosch *et al*., 2002). Many reports indicate the existence of the relationship between the development of human papilloma virus infection and low financial status (Atara, 2012). It is associated with a deficiency of certain micronutrients in the diet. Secondly, low socioeconomic status also often related to poor living conditions and poor personal hygiene (Bosch *et al*., 2002). In addition, there is evidence that long-term, irregular use of hormonal contraception promotes the development of HPV infection. A significant increase in infection observed among women with endocrine disorders, pregnant and using oral hormonal contraception for multiple

years (Munoz and Bosch, 1995; Deligeroglou *et al*., 2003). The aim of this study was to assess the prevalence of HPV infection among women as well as risk factors for cervical cancer associated with HPV infection.

1.2. Statement of the problem

Cervical cancer is the second most prevalent cancer among women in the developing countries including Ethiopia following breast cancer and the largest killer cancer among women in those countries (Ali *et al*., 2012; ACS, 2014). In Ethiopia, every year 7095 women are diagnosed with cervical cancer and 4732 die from cervical cancer (IARC, 2014). The causes of high mortality rate and low survival rates are poor access to medical facilities, poor nutrition and co-morbid conditions and lack of screening practice at the early stage (Odida *et al*., 2002). Moreover, a study conducted in Addis Ababa showed that low knowledge about risk factors and prevention methods limit the cervical cancer screening practice (Eyerusalem, 2015). Study conducted in Jimma reported poor knowledge on cervical cancer and associated risk factors observed (Mesele *et al.,* 2015).

In Bishoftu the present study area, the magnitude and the prevalence of the precancerous lesion were also more as many women had increased exposure to the risk factors and great probabilities to be infected by HPV that can cause cervical precancerous lesion. The purpose of the present study was, therefore to assess the prevalence of cervical cancer and associated risk factors in the study area and to give recommendations on the ways through which the impact of this disease can be reduced by increasing awareness and screening practice.

1.3. Objectives of the study

1.3.1. General objective

The main objective of this study was to assess the prevalence of cervical precancerous lesion and factors associated with cervical precancerous lesion among women screened for cervical cancer in Bishoftu General Hospital.

1.3.2. Specific objectives

1. To identify risk factors associated with cervical precancerous lesion among women screened for cervical cancer in Bishoftu General Hospital and identify the prevalence of the cervical precancerous and cervical cancer in the study area

2. To identify women's key barriers to the prevention of cervical cancer
3. To identify the age at which the prevalence of cervical cancer is high in the study area.
4. To explain the roles of women and health professionals in reducing the impact of the disease

1.4. Research questions

This study addresses the following research questions:

1. What are the factors associated with cervical precancerous lesion among women screened for cervical cancer?
2. What are the key barriers to the prevention of cervical cancer among these women?
3. What is the prevalence of the disease in the study area?
4. At what age does the prevalence of cervical cancer is high in the study area? and why?
5. What is the role of women and health professionals in reducing the impact of the disease?

1.5. Significance of the study

Cervical cancer is a preventable disease; its prevention among other ways is through detection of early stages of the disease and treatment. Screening test for cervical precancerous and cancerous lesions using VIA has been a suitable low-cost and a feasible alternative modality for control of cervical cancer in resource poor setting. Detection of the premalignant lesions requires knowledge on the disease so that people are aware and hence have positive attitude towards practice of screening for premalignant cervical lesions.

1. To provide available information to authorities (all stakeholder) so that proper measures can be taken according to the results to save the lives of women victims by creating awareness and provide screening services.
2. To take an action in each risk factor to decrease the morbidity and mortality of cervical cancer
3. To assess the factors associated with cervical precancerous lesion that may strengthen the existing cervical cancer prevention and control programs.
4. To focus on prevalence of cervical cancer and risk factor for developing cancer since the problem become one of the major cause deaths in women in the study area as well as in the country.

5. At the end of this study recommendation was given to the concerned bodies and geared towards improving cervical cancer screening services.
6. There is no detailed study on the prevalence of cervical cancer and associated risk factors for developing cancer in the study area, so it fills the gaps and it will help as a base line for further researches.

1.6. Strength and limitation of the study

Strength

- ✓ By ensuring privacy during the completion of the questionnaire and using the anonymous self-administered survey, an attempt was made to minimize social desirable bias.
- ✓ Trained nurses were used for identification of cases and controls that increase the reliability the data.
- ✓ Including all women came to hospital for screening during study period as the study population are other major strength of this study.
- ✓ This study was conducted using case control study design among women screened for cervical cancer, and it could generate new ideas for further studies.
- ✓ Questionnaire was pre-tested and necessary modification was made, the principal investigator and supervisor were supervising the daily data collection activity.
- ✓ The study has tried to identify the knowledge, attitude, practice of cervical cancer screening and its associated factors.

Limitation

- ✓ Primarily the findings of this study may not be generalized to all women of Ethiopia as the socio-cultural situations around different area in Ethiopia vary greatly.
- ✓ In this study cases and controls were identified only using visual inspection with acetic acid, specificity of VIA is low.
- ✓ Respondents might not give their exact response towards a given question since the survey involved a sensitive matter. Therefore, the study could be affected by social desirability biases.

1.7. Conceptual framework

A conceptual framework used in research to outline possible courses of action or to present a preferred approach to an idea or thought. The conceptual framework (Fig. 1) below shows how socio-demographic characteristics, reproductive factors and lifestyle and sexual behavior factors that increase the risk HPV infection that cause precancerous lesion and progress to cervical cancer.

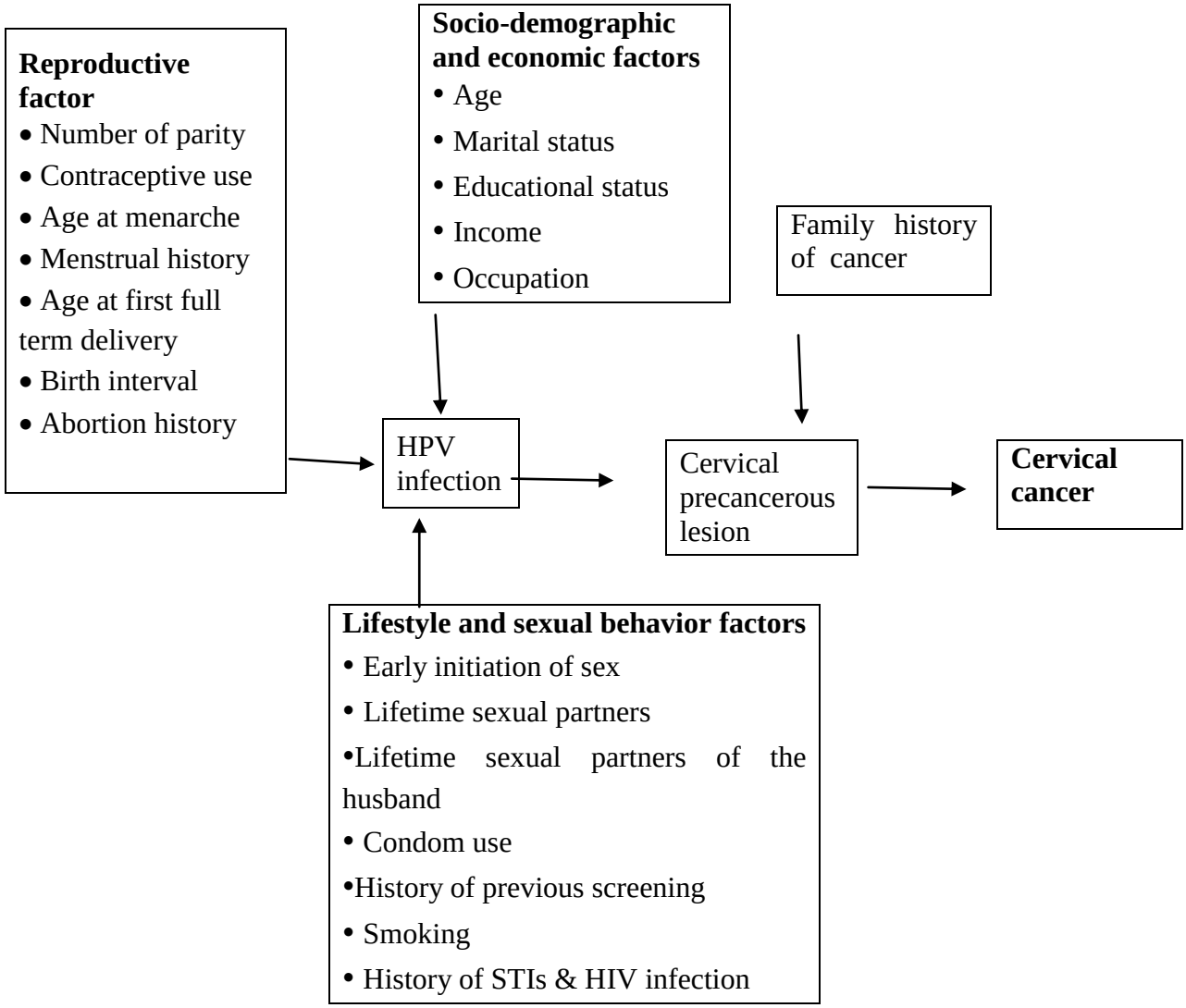

Figure 1. The conceptual framework describes the relationship between risk factors and cervical precancerous lesion (Michael, 2013; Zekariase et al., 2015).

2. LITERATURE REVIEW

2.1. Magnitude of cervical cancer

Worldwide, 874 million women aged 15 years and older are at risk of cervical cancer; 530,232 new cervical cancer cases were diagnosed and 275,008 cervical cancer deaths occur annually (Fig. 3). About 85% of the global cervical cancer burden occurs in less developed countries (Fig. 2) (Sanjosé *et al*., 2012). In Africa, according to most recent estimates, 80,400 women are diagnosed with cervical cancer every year and 50,300 die from the disease every year, the leading cause of cancer death. (IARC, 2014).

Cervical cancer is the most common malignancy in women and among cancers it is leading cause of mortality in Africa, while its prevalence varies by region where the highest is in sub-Saharan Africa and eastern region; in east Africa the annual number of deaths and new cases are 28,197 and 45,707 respectively (Sefinew, 2016). In Africa, the prevalence of HPV infection is 21.3%, with significant regional variation 33.6% in East Africa, 21.5% in West Africa and 21% in Southern Africa (WHO, 2015).

Ethiopia has a population of 27.19 million women aged 15 years and older who are at risk of developing cervical cancer. Every year 7095 women are diagnosed with cervical cancer and 4732 die from cervical cancer (IARC, 2014). In Ethiopia 534,000 women age of 15 year and above were reported to live with HIV and those are the most vulnerable to cervical cancer (Addis, 2010). Women living with HIV are more readily infected with certain types of HPV and more vulnerable to rapid development of the precancerous lesion than HIV negative women (Williamson, 2015).

A comparative cross-sectional study in North West Ethiopia revealed that higher prevalence of epithelial cell abnormality (17.8%) was observed in HIV positive women than HIV negative women 10.3% (Jean *et al*., 2015). Cross sectional study in southern Ethiopia shows that the prevalence of cervical precancerous lesion among HIV infected women is 22.1 % (Abel *et al.*, 2013).

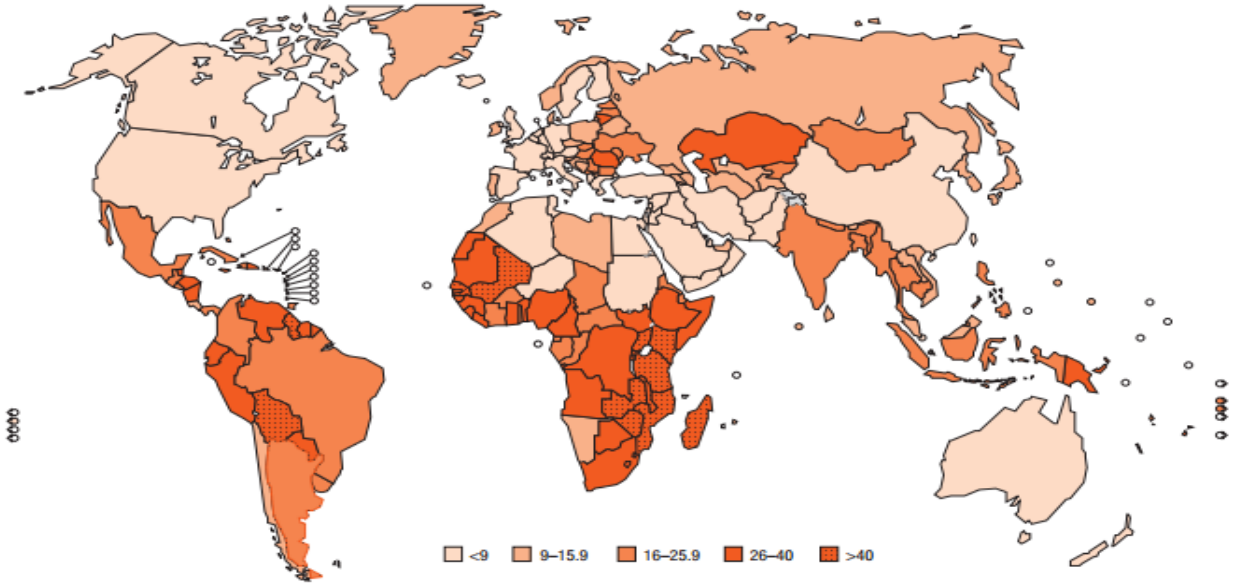

Figure 2. Estimated cervical cancer incidence worldwide

Source: IARC, WHO, GLOBOCAN, 2012.

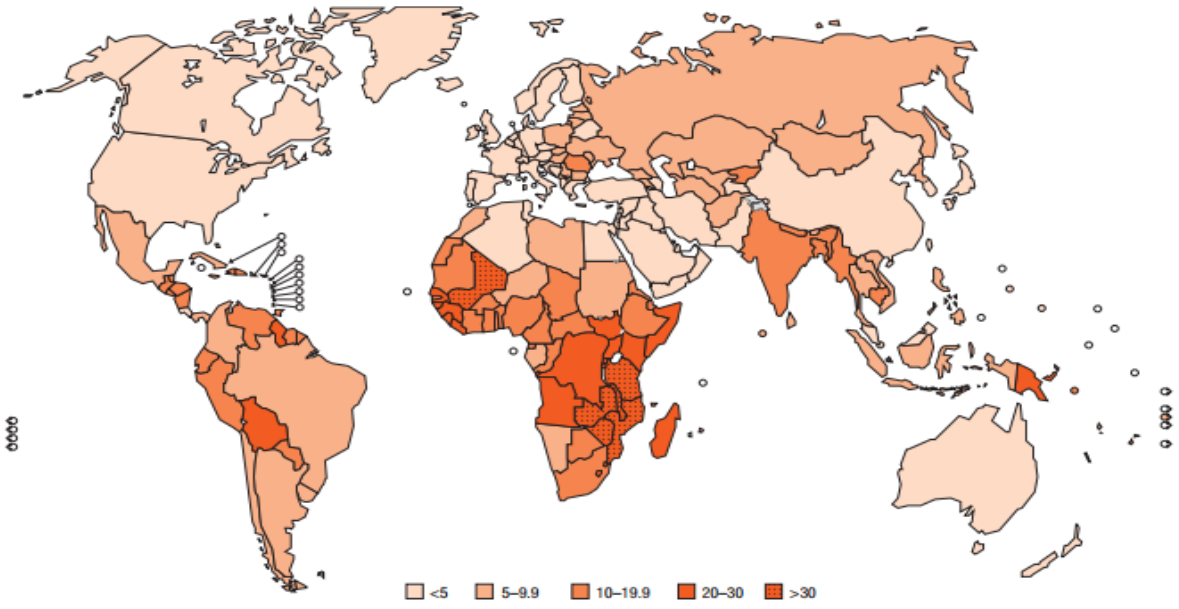

Figure 3. Estimated cervical cancer mortality worldwide

Source: IARC, WHO, GLOBOCAN, 2012

2.2. Lifestyle and sexual behavior factors

The main risk factor related with cervical cancer is human papilloma virus infection that generally occurs in sexual active individuals (IARC, 2014). Starting sexual activities from the age of 15 years in girls of Sub Saharan Africa is high and this predisposes such girls to high risk of cervical precancerous lesion (Ntekim, 2012). The HIV epidemic in the Sub Sahara countries has further increased the risk of cervical precancerous lesion as those infected have rapid progression of the disease and usually have poorer outcome (Ntekim, 2012; WHO, 2015). HIV-positive women have a higher possibility of cervical precancerous lesions than HIV negative women (Williamson, 2015).

A case-control study in South Africa shows that the association between HIV infection and abnormal cytology report of cervical neoplasia with adjusted odds ratios were 7.4 (95% CI=3.5-15.7) and 5.8 (95% CI=2.4-13.6) for LSIL and HSIL respectively as compared with non HIV infected women (Moodley *et al*., 2006). Study in Kenya shows that being on ART is protective, non-ART patients were 2.2 times more likely to have cervical precancerous lesion than those patients on ART (Peter *et al*., 2012). Given the efficacy of antiretroviral treatment (ART) and growing number of HIV positive women who are living longer, special attention was focused on screening and treatment for cervical precancerous lesion (Addis, 2010).

A case control study in Zimbabwe suggested that having more than one sexual partner, being HIV positive, early sexual debut (<15years) and history of any form of STI were significant risk factors for cervical precancerous lesion (Michael, 2013).

There are more than 100 different strains of HPV, one-third of them can be sexually transmitted, and two particular types HPV 16 and HPV 18 are strongly associated with cervical cancer (Faruk *et al*., 2014; WHO, 2014). Chronic HPV infection and cervical precancerous lesion are associated with other factors such as, age at first intercourse and number of sexual partners is most likely indicators of risk of HPV exposure rather than independent risk factors.

Study in Mali shows that having husband with more than two wives is risk factor for cervical cancer (Sine *et al*., 2002). Study in southwest Ethiopia shows that more than one husband and husband with more than one wife in lifetime was risk factor for invasive for cervical cancer but history of STI and early age at first sex not significantly associated (Mesele *et al*., 2015). Early age

at first coitus, showing maximum risk in women who reported their first intercourse at 12 years of age, compared to that of women at 18 years (Litan *et al*., 2002).

In Ethiopia 11% of young women had sexual intercourse before the age of 15 years old (CSAE, 2011). Age at first sex is an important indicator of exposure to sexual transmitted infection (STI) especially to HPV infection (Ribeiro *et al*., 2015). Young female who initiate sex at an early age face a higher risk of contracting an STI than young female who delay initiation of sexual activity (Nesrin *et al*., 2011). A case control study in Thailand revealed that decreasing age at first intercourse, increasing number of sexual partners, history of venereal disease and no history of previous screening are increasing the risk of cervical cancer (Saibua *et al*., 1998).

Women who ever had sexually transmitted infection risk factor for cervical cancer compared with out reproductive infection, and late commencement of sexual activity and use of barrier contraceptive method decreased risk for cervical cancer (Nesrin *et al*., 2011). Cross-sectional study in Jimma, Ethiopia shows initiation of sexual intercourse before the age of 16 years was a risk factor for developing cervical precancerous lesion (Zewdie *et al*., 2015). A study done in Brazil shows first sexual intercourse before 16 years of age was significantly associated with CIN I lesions or worse (Ribeiro *et al*., 2015). Promotion of use of condom can help in reducing the main risk factors transmission (Atara, 2012).

A cross sectional study reported that being positive HIV status, early sexual debut and previous pap smear screening, smoking are risk factors not significantly associated with cervical cancer (Niunda *et al*., 2014). Study in Nigeria reported that age at first sexual intercourse not significantly associated with cervical cancer screening positivity (Uzoma *et al*., 2014). A meta-analysis finding shows passive smoking increases 73% risk of cervical cancer among women who exposed (Xian *et al*., 2012). Study conducted in South Africa revealed that being HIV positive and low CD4 cell counts was significantly associated with cervical precancerous lesion and cervical cancer (Edward *et al*., 2013).

Cross sectional study in China shows presence of *Trichomonas vaginalis* infection, cervical inflammation and genital warts were risk factors for high-grade squamous intraepithelial lesions (Lixin *et al*., 2014). The presence of vaginal wall abnormalities was associated with screening positivity or invasive cancer diagnosis (Uzoma *et al*., 2013).

2.3. Reproductive health related factors

Long term oral and inject able contraceptive use possible risk factor for cervical cancer (Cibula *et al*., 2010). However, it is unclear whether this association is driven by hormonal contraceptive effect on carcinogenesis or on upstream subclinical end points of other risk factors (Cibula *et al*., 2010).

Exposure to genital human papilloma virus (HPV) was significantly related to contraceptive method; with condom use preventing or cures the infection. Long-term (> 5 years) use of oral contraceptive associate with cervical cancer and long term users of oral contraceptive deserve specific targeting for cervical cancer screening program (Cibula *et al*., 2010). A case control study in Nigeria shows that there is no significant association between hormonal contraceptives use and abnormal cervical epithelial cytology (Leonard *et al*., 2015). A cross sectional study among previously unscreened HIV infected women in Western Kenya shows that use of combined oral contraceptive and implant for 90 days preceding the study increase risk of CIN II.

Most women with children more than four resulting in worsening poverty and associated with increasing incidence of cervical cancer (Ntekim, 2012). Case control study in Thailand shows increasing number of live births increasing risk of cervical cancer (Saibua *et al*., 1998). A case control study in mail reported that risk factor for cervical cancer was parity more than ten children (Sine *et al*., 2002). Having history of bleeding after intercourse was risk factor squamous intraepithelial lesions (Lixin *et al*., 2014).

A case control study in Southwest Ethiopia show that having more than 4 children, age greater than 25 years at first full term delivery and old age were statistically significant associated with invasive cervical cancer (Mesele *et al*., 2015). Study among HIV-infected Nigerian women reviled that having five or more abortions were associated with screening positivity or invasive cancer diagnosis (Uzoma *et al*., 2013).

Being young age at first birth increases the risk of both cervical cancer and cervical intraepithelial neoplastic among grand multiparty women less than 50 years of age; Multi parity women and short birth interval associate with cervical intraepithelial neoplastic risk among postmenopausal grand (Hinkula *et al*., 2004). Spacing between two children less than 2 years and age at marriage less than 18 years are significantly associated with cervical cancer (Anita *et al*., 2015).

Study reported from Nigeria shows having five or more abortions increase cervical cancer screening positivity and multiple pregnancies shows no association (Uzoma *et al*., 2013). Cervical cancer runs in some families; women with history of her mother or sister with cervical cancer, the chance of developing the disease is 2 to 3 times than women without the family history (ACS, 2014).

2.4. Socio-demographic and economic factors

Many low-income women do not have ready access to adequate health care services and they may not be screened or treated for cervical precancerous lesion (Saibua *et al*., 1998). In India the incidence of cervical cancer was high (55%) in females belongs to the rural areas; this high incidence attributed due to low educational and socioeconomic status, ever smoking and reproductive behavior which contribute to the progress of the disease (Roopali *et al*., 2014). Illiteracy and low socioeconomic status are risk factors significantly associated with cervical cancer (Anita *et al*., 2015).

As the age of the patients increase, education got higher and being married or monogamy decreases risk for cervical cancer (Nesrin *et al*., 2011; Edward *et al., 2013*). Being in age group of 46–55 years was risk factor for high grade squamous intraepithelial lesions compared with the 25–35 age group and high education level (college and above compared with junior middle school or lower) was protective (Lixin *et al*., 2014). A study shows higher education and non-married women decrease risk of cervical cancer (Nesrin *et al*., 2011).

2.5. Cervical cancer prevention and screening

The primary prevention of cervical cancer is reduction of known risk factors and when available takes an anti-HPV vaccine. The most effective way to prevent cervical and other genital cancers would be a vaccine. Individuals would need to be immunized at early age before they are sexually active. Until a protective vaccine is widely available and accessible, primary prevention must focus on continuing to change sexual practices and other behaviors that increase a person risk of becoming infected (Pathfinder international, 2014).

Women already infected with HPV should be screened to determine whether they have early, easily treatable precancerous lesions. If lesions were found, they should be treated before they progress to cancer. Secondary prevention of cervical cancer is screening, early detection and treatment of precancerous lesion (Pathfinder international, 2014). According to the American cancer society,

cervical cancer screening begins three years after the initiation of vaginal intercourse. Screening should begin at 21 years of age and above (Debbie *et al*., 2012).

There are different methods of screening and treatment depends upon the availability of resources in a given setting. Screening with visual inspection with acetic acid (VIA) covers a wider section of the target groups; it is affordable and efficient for disease prediction; this procedure is usually simple and painless test and the results are provide immediately (WHO, 2015).

2.6. The Key Barriers to Cervical Cancer Prevention

The barriers to cervical screening encompass both personal and practical barriers. Personal barriers, comprising emotional barriers relating to the woman herself, include embarrassment, 'don't think I need a cervical smear test, and 'don't know where to go to get a cervical smear test. These barriers are supported by international research which noted other personal barriers such as:' concerns about having a male smear taker', 'fear of the screening process' and 'fear of what might be found' (Fylan, 1998; Ni Riain *et al.*, 2003; Walsh *et al.*, 2003; Walsh, 2006). Furthermore, 'uncertainty about what age to begin screening', 'fear of pain', considering oneself not to be at risk of developing cervical cancer, 'don't know what a cervical smear test is for, and previous negative experiences with the health service, are also deterrents to screening (Fylan, 1998; Ni Riain *et al*., 2003).

The practical barriers including: a lack of time, concerns about the cost of screening, unsuitable appointment times, a lack of access and fears about confidentiality (Ni Riain *et al*., 2003; Walsh *et al*., 2003; Walsh, 2006). As evident, these barriers to screening are typically related to a woman's lack of knowledge about secondary cervical cancer prevention; such as not knowing that a cervical smear test can help prevent cancer (Philips *et al*., 2003).

In addition, embarrassment, stigma and lowered self-esteem may also be felt with an 'abnormal' result, as the association between HPV and cervical cancer may be interpreted by some women as indicating promiscuity (IARC, 2005; Kitchener *et al*., 2006). Studies have demonstrated that improved communication, education and information on the primary and secondary prevention of cervical cancer, specifically regarding the transmission of HPV and the importance of cervical screening, increases the probability of screening by counteracting the anxieties and fears that are key barriers (IARC, 2005; Kitchener *et al*., 2006).

3. MATERIALS AND METHODS

3.1. Description of the study area

The study was conducted in Bishoftu General Hospital found in Bishoftu town. Bishoftu special zone is situated between 8° 43′-8° 45′ N latitude and 38° 056′-39° 01′ E longitude. It is located at a distance of 47 km South East of Addis Ababa (Fig. 4) with altitude ranges from1900-1995 meters above sea level. Thus, it belongs to Woina Dega Zone (Bishoftu town Administration Office, 2006).

Its average temperature and annual rainfall are 26.08^{0}C and 735 mm, respectively. According to the 1999 E.C census and population projection made for 2006 E.C up to the end of 2005 E.C, the town had a total population of 154,340 of which, 73,736 (48%) were male and 80,574 (52%) were female. In terms of age distribution 62% of the population were in the age range of 15-64 (Bishoftu town Administration Office, 2006).

Bishoftu special zone has 2 governmental Hospitals, 20 non-governmental (privet) clinics, 5 health centers, one malaria control center and one multi drug resistance TB clinic in Bishoftu Hospital. Out of the total health facilities, this study was conducted in Bishoftu General Hospital as it is the only Hospital that provides cervical cancer screening and treatment service in the area. Based on the national standard of the country the health coverage of Bishoftu Special zone was 85 % (Bishoftu Special zone health office 2017 report).

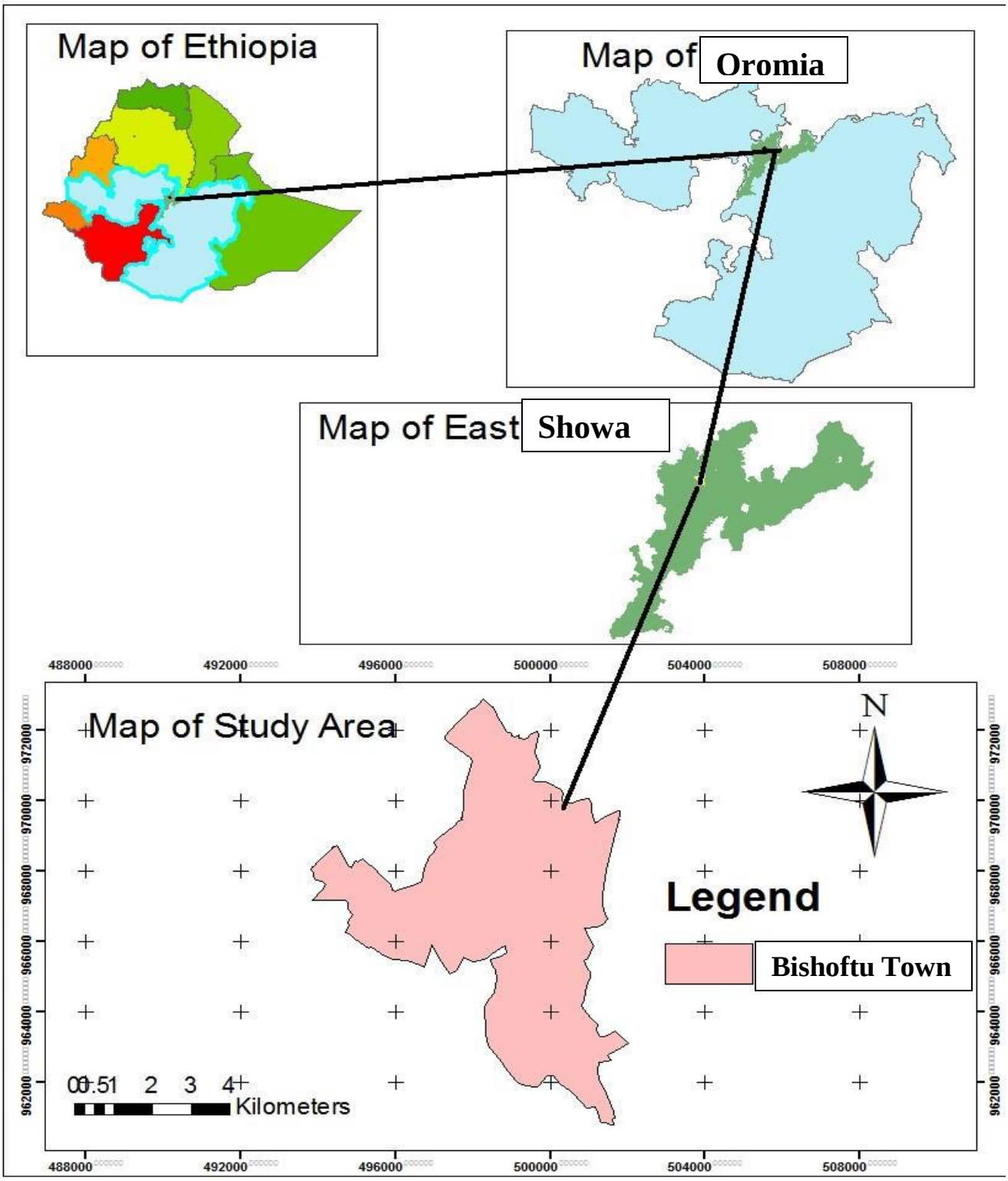

Figure 4. Geographical location of the study area

Source: Bishoftu town Administration Office, 2006.

3.2. Study design and study population

The study was conducted from January - May 2017 at Bishoftu General Hospital. Hospital based unmatched case-control study were designed to determine the prevalence and predicator of cervical precancerous lesion in study area and has two main parts. The first part of the study involved a retrospective study to determine the prevalence of cervical precancerous lesion and cervical cancer in the past six years (2012-2017) by using medical records of women screened in Bishoftu General Hospital. In the second part of this study, determine the current prevalence of cervical precancerous lesion and cervical cancer and to find out the associated risk factors, 317 women from 21-49 ages who attended cervical cancer screening center in Bishoftu General Hospital from January-May 2017 were selected purposively. Using structured and pretested questionnaires personal data of cervical cancer patient were collected. The questionnaire also used to gather clinical data such as HIV/AIDS and STDs history.

3.3. Eligibility criteria

Inclusion criteria:- Women who were screened for cervical precancerous lesion in Bishoftu Hospital using visual inspection with acetic acid, sexually active women with age ranging from 21-49 years.

Exclusion criteria:- Women who were very ill, have hysterectomy and pregnant women.

3.4. Case definition

Case: A case was women aged 21 to 49 years with positive VIA finding of aceto white lesion around squamo columnar junction of the cervix.

Control: A control was women aged 21 to 49 years with negative VIA finding of non aceto white lesion around squamo columnar junction of the cervix.

3.5. Sample size calculation

Sample size was calculated using double population proportion formula for four different variables (age, marital status, multiple sexual partner and early initiation of sexual intercourse) (Edward *et al*., 2013).

$$n = \left(\frac{r+1}{r}\right)\frac{(\bar{P})(1-\bar{P})(Z_{\beta}+Z_{\alpha/2})^2}{(P_1-P_2)^2}$$

Where: n = Sample size

r = Proportion of control to case

P_1 = Proportion of case exposed = $\frac{OR*P_2}{P_2*(OR-1)+1}$

P_2 = Proportion of control exposed

$\bar{P}$ = The average of case and control = $\frac{P_1+rP_2}{r+1}$

$Z_{\acute{\alpha}/2}$ = Probability that if the two samples differ this reflects a true difference in the two population (confidence level)

Z_{β}= Probability that if the two populations differ, the two samples will show a significant difference (power)

Sample size was calculated by taking the odds ratio of multiple sexual partners are 2 times more likely to have cervical cancer (Mesele *et al*., 2015), using 41.3% proportion of multiple sexual partners were exposed (CSA, 2014). Based on the assumptions; 95% level of confidence, 80% power and taking two to one ratio of controls to case (2:1). Using Epi info version 7 the total number of cases and controls are 108 and 216, respectively; adding non-response rate 10% then the final sample size was 120 cases and 240 controls.

Out of women Visiting Bishoftu Hospital for precancerous lesion screening during the study period, a total of 360 patients were selected by purposive sampling technique. Out of which 43 women; 15 cases and 28 controls refused to participate, which makes the non-response rate 11.9%. The reported reason for non-participation was lack of time for interview and lack of interest. Complete data obtained from 317 women, out of this 105 were cases of cervical precancerous lesion and 212 were controls.

3.6. Sampling procedure

To obtain a representative sample, all women screened in Bishoftu hospital during the study were selected purposively; where only cervical cancer screening using visual inspection with acetic acid is given, provide the service for all women (with HIV and non HIV women). Therefore, each study subject was sampled from all women screened during study period by purposive sampling and a total of 317 study subjects were included from which 105 were identify as case and 217 were control.

Cases were all women positive for VIA who screened during data collection period were included in the study until the required sample size obtained.

Controls selected alternatively from women negative for VIA who screened during data collection period.

3.7. Study variables

Dependent variable: Presence or absence of cervical precancerous lesion

Independent Variables:- age, marital status, educational status, contraceptive use, menstrual history, parity, age at first sex, lifetime sexual partners of the women, history of STDs, HIV infection, and history of smoking.

3.8. Operational definition

Aceto-white:- abnormal white area on cervix after application of 5% acetic acid indicating possible precancerous stages.

Positive for VIA: If there is aceto-whitish lesion on the area stained with 5% acetic acid solution and it is the character of precancerous lesion (WHO, 2011).

Negative for VIA: If there is no aceto-whitish lesion on the area stained with 5% acetic acid solution (WHO, 2011).

Cervical precancerous lesion: An abnormal cellular change located around the cervix, which was not progressed to cervical cancer (ACS, 2014).

Sexually active: Having at least one episode of sexual intercourse in their lifetime (WHO, 2015)

Multiple sexual partners: Having lifetime partners greater than two (CSA and FMOH, 2014). **Multi-parity**: Having parity greater than two (CSA and FMOH, 2014).

Early initiation of sex: Starting first sexual intercourse before the age of 18 years (Roopali *et al*., 2014).

3.9. Data collection techniques

3.9.1. Questionnaire survey

Data was collected using structured, pre-tested and anonymous questionnaire from January – May, 2017 from women who came to Bishoftu Hospital for cervical cancer screening. The collected personal data of patients was classified by socio-demographic and economic, reproductive, lifestyle and sexual behavior. The questionnaire was also used to gather clinical data such as HIV/AIDS & other STDs history.

The questionnaire was first prepared in English then translated to Amharic and Afan Oromo. Data was collected by 2 trained nurses that deliver cervical cancer screening service at the time of data collection. Data was collected from the clients after getting verbal consent through informed consent in the health facility. The researcher kept Confidentiality of the participants.

3.9.2. Medical record survey

The other part of this study comprise the analysis of the medical records of cervical cancer patients from the record office of Bishoftu General Hospital to determine the prevalence of precancerous lesion and cancer stage in the past six years (2012-2017).

3.10. Data quality management

To ensure the validity of the study, appropriate size and representative type of study units were selected and maximum effort was applied to minimize chances of bias using the following strategies. Pre-testing was conducted prior to data collection process. Based on the pre-test, questions were revised and edited with necessary modification. Questionnaires were prepared in English then translated to Amharic and Afan Oromo since our study populations includes all women who can speak different language and have different educational status so they can

understand the concept of the questions. This minimized the risk related with questionnaire translation.

3.11. Data Analysis

The collected data were entered into SPSS version 24 for statistical analysis. To describe the data in relation to relevant variables, odds ratio with their 95% confidence interval (CI) and P value was calculated to identify factors significantly associated with the precancerous lesions and presence and strength of association. Bivariate and multivariate logistic regression analysis carried out to control the confounding effect among the variables. Statistical significance of variables was declared if P value < 0.05.

3.12. Ethical considerations

Prior to study, ethical clearance were obtained from the ethical committee of Oromia health Bureau and official letter of co-operation was written to Bishoftu General Hospital. The respondents were informed about the objective and purpose of the study. Verbal consent was obtained from each study subjects through informed consent. Confidentiality of information was assured and informed that if they preferred not to continue, they can withdraw from the study any time they wish.

4. RESULTS

4.1. Prevalence of cervical precancerous lesion and cervical cancer among women screened in Bishoftu General Hospital from years (2012-2017)

The cervical precancerous lesion and cervical cancer screening practice was begin at the end of 2012 in Bishoftu General Hospital by screening only HIV positive women. Since then 2199 women was registered to be screened totally in the past six years (2012-2017) and 1843 (83.8%) women had negative result for precancerous lesion and cervical cancer while 356 (16.2%) women screened positive result with VIA test. Therefore, the prevalence of cervical cancer in the past six years in Bishoftu Hospital was 16.2% (Table-1**).**

The data obtained from the Hospital record office reported that precancerous lesion was more prevalent in women age group 50 years and above (25.5%) followed by women age between 40-49 years (17.5%). However, the prevalence of precancerous lesion and cervical cancer found less commonly observed in the age groups 20-29 (3.7%) (Table-1).

Table 1. Screening result of women in age distribution screened in Bishoftu General Hospital, Ethiopia from 2012-2017

Year	Age	Result		Total no of screened women
		Positive	Negative	
2012	20-29	-	5	5
	30-39	11	33	44
	40-49	6	7	13
	50 & above	-	1	1
Total		**17(27%)**	**46(73%)**	**63(100%)**
2013	20-29	1	4	5
	30-39	58	168	226
	40-49	19	86	105
	50 & above	-	-	-
Total		**78(23.2%)**	**258(76.8%)**	**336(100%)**
2014	20-29	-	25	25
	30-39	56	221	277
	40-49	16	99	115
	50 &above	7	15	22
Total		**79(18%)**	**360(82%)**	**439(100%)**
2015	20-29	1	8	9
	30-39	40	275	315
	40-49	22	104	126
	50 & above	1	11	12
Total		**64(13.9%)**	**398(86.1%)**	**462(100%)**
2016	20-29	-	38	38
	30-39	31	239	270
	40-49	25	117	142
	50 & above	12	35	47
Total		**68(13.7%)**	**429(86.3%)**	**497(100%)**
2017	20-29	3	50	53
	30-39	22	198	220
	40-49	19	90	109
	50 & above	6	14	20
Total		**50(12.4%)**	**352(87.6%)**	**402(100%)**
Total No		**356(16.2%)**	**1843 (83.8%)**	**2199**

Precancerous lesion had great probability to change into cancerous stage in the women 50 years and above followed by women aged from 40-49 years and in the women between 21-29 years with precancerous lesion, none of them changed in to cancerous stage. Totally from 356 women with positive result 213 (59.8%) were in the precancerous stage whereas the rest 143 (40.2%) were changed in to cancer (Table 2).

Table 2. Age distribution of precancerous lesion and cancer stage development among women screened in Bishoftu General Hospital, Ethiopia from 2012_2017

Age	Positive results	Precancerous stage		Cancer stage	
		No	Percentage	No	Percentage
21-29 years	5	5	100%	-	-
30-39 years	218	168	77.1%	50	22.9%
40-49 years	107	37	34.6%	70	65.4%
50 years & above	26	3	11.5%	23	88.5%
Total	**356**	**213**	**59.8%**	**143**	**40.2%**

4.1.1. Socio-demographic characteristics of the women

Precancerous lesion was more prevalent (25.5%) in the women aged 50 years and above where as less prevalence in the women aged between 20-29 years as its prevalence was 3.7%. In the case of educational status most women who are affected by precancerous lesion and cancer were illiterate (30.8%) and in their marital status precancerous and cancerous stage was more prevalent in divorced women (35.8%) followed by widowed women (22.1%). In relation to their residence, the prevalence of the case was more in women who came from rural area (23.5%) as compared with women came from town (13.4%) (Table-3).

Table 3. Socio-demographic characteristics of women screened for cervical cancer in Bishoftu General Hospital, Ethiopia from 2012-2017.

Variables	No of screened women	Result	
		Positive	Negative
Age(years)			
20-29	135	5(3.7%)	130(96.3%)
30-39	1352	218(16.1%)	1134(83.9%)
40-49	610	107(17.5%)	503(82.5%)
≥50	102	26(25.5%)	76(74.5%)
Educational status			
Illiterate	354	109(30.8%)	245(69.2%)
Primary and secondary school	1492	174(11.7%)	1318(88.3%)
Collage and above	353	73(20.7%)	280(79.3%)
Marital status			
Single	118	21(17.8%)	97(82.2%)
Married	1482	169(11.4%)	1313(88.6%)
Widowed	353	78(22.1%)	275(77.9%)
Divorced	246	88(35.8%)	158(64.2%)
Residence			
Rural	599	141(23.5%)	458(76.5%)
Town	1600	215(13.4%)	1385(86.6%)

4.1.2. Reproductive health related characteristics of women

The prevalence of precancerous lesion are more (20.3%) in the women who use hormonal contraceptives like pills, injectable and implant followed by women who use IUD (16.1%) whereas the prevalence of precancerous lesion in the women who did not use any contraceptives were found to be low (15.5%) (Table-4).

The data obtained from the hospital record showed that the prevalence of precancerous lesion was more in the women who reach menopause (26.9%), however, the prevalence found less in the women with regular menstrual bleeding pattern as its prevalence was 10.1% (Table-4).

Among the screened women in the past six years, the prevalence of precancerous lesion are more in the women who had more than four children (22.2%) whereas it was less prevalent in the women who did not had child (8.3%).

Table 4. Reproductive health related characteristics of women screened for cervical cancer in Bishoftu General Hospital, Ethiopia from 2012-2017.

Variables	No of screened women	Results	
		Positive	Negative
Contraceptive			
No	773	120(15.5%)	653(84.5%)
Condom	494	62(12.6%)	432(87.4%)
Hormonal(pills, injection, implant	577	117(20.3%)	460(79.7%)
IUD	355	57(16.1%)	298(83.9%)
Menstrual pattern			
Regular	953	96(10.1%)	857(89.9%)
Irregular	962	181(19.1%)	771(80.9%)
Menopause	294	79(26.9%)	215(73.1%)
No of children			
No	206	17(8.3%)	189(91.7%)
1-3	884	93(10.5%)	791(89.5%)
≥4	1109	246(22.2%)	863(77.8%)

4.1.3. Lifestyle and sexual behavioral characteristics of women

The data from the hospital record reported that women with history of smoking are more prevalent to precancerous lesion and cervical cancer (54.4%) than those who did not had history of smoking as it prevalence were 14.8%. Whereas precancerous lesion are found to be more prevalent (20.2%) in the women who began sexual intercourse at age between 15-17 years old followed by women who began sexual intercourse at early stage less than 15 years of age (15.5%). But the prevalence were found to be less in the women who begin their first sexual intercourse at the age above 18 years as its prevalence was (13.1%) (Table-5).

The data obtained from Bishoftu hospital reported that the prevalence of precancerous lesion was more in the women with STDs history (18.3%) than those with no STDs history (13.6%). In the past six years in Bishoftu Hospital, there were more women with HIV positive 1188 (54.1%) and out of HIV positive women 16.5% were positive for cervical cancer where as 15.6% were found to be precancerous positive even if they are HIV negative (Table-5).

The data from the hospital record reported that women that had two or more lifetime sexual partners in their lifetime were found to be more prevalent to precancerous lesion (18.7%) than those who had one lifetime sexual partner with 13.1% prevalence (Table-5).

Table 5. Lifestyle and sexual behavioral characteristics of women screened for cervical cancer in Bishoftu General Hospital, Ethiopia from 2012-2017.

Variable	No of screened women	Result of screening	
		Positive	Negative
Screening practice			
Yes	294	25(8.5%)	269(91.5%)
No	1905	331(17.4%)	1574(82.6%)
Ever history of smoking			
Yes	79	43(54.4%)	36(45.6%)
No	2120	313(14.8%)	1807(85.2%)
Age at first intercourse			
<15 years	825	128(15.5%)	697(84.5%)
15-17 years	677	137(20.2%)	540(79.8%)
≥18 years	697	91(13.1%)	606(86.9%)
Life time No of sexual partners			
One	982	129(13.1%)	853(85.9%)
Two or above	1217	227(18.7%)	990(81.3%)
Ever history of STDs			
Yes	1213	222(18.3%)	991(81.7%)
No	986	134(13.6%)	852(86.4%)
HIV status			
Positive	1188	196(16.5%)	992(83.5%)
Negative	1011	160(15.8%)	851(84.2%)
If HIV positive on ART			
Yes	1157	183(15.8%)	974(84.2%)
No	31	13(41.9%)	18(58.1%)

4.2. Socio-demographic characteristics of the respondents

From total number of respondents screened for cervical cancer, the prevalence of cervical precancerous was more in women between 40-49 years as its prevalence was 25.9%, while in women aged between 21-29 years the prevalence was less (7.7%). The prevalence of precancerous lesion in relation to educational status were found to be more in women who attend primary education (27.7%), however the prevalence of precancerous lesion were found to be less in women who attend college and above education (9.09%) (Table-6).

The data collected from questionnaire reported that prevalence of precancerous lesion were found to be more in divorced women (26.3%), in house wife women (26.4%) and in women who had monthly income less than 1000birr as its prevalence were (21.66%). Nevertheless, single women, governmental employee were less likely to have precancerous lesion (12%) (Table-6).

On bivariate analysis, socio-demographic factors between cases of cervical precancerous lesion and controls, there was no significant difference between cases and controls on difference in educational status, marital status, occupation, and income. However, being in age of 40-49 years were found to be significantly associated with cervical precancerous lesion as compare with those who were aged 21-29 years (COR= 4.77; 95 % CI (1.394-16.33, p=0.013)).

Table 6. Socio-demographic characteristics of respondents screened for cervical cancer in Bishoftu General Hospital, Ethiopia, 2017.

Variables	Case n(%)	Controls n(%)	Precancerous positive	COR(95% CI)	**P value**
Age(years)					
21-29	8(7.6%)	31(14.6%)	3(7.7%)	1.00	
30-39	29(27.6%)	91(42.9%)	21(17.5%)	2.008(1.113-3.622)	0.021*
40-49	68(64.8%)	90(42.5%)	41(25.9%)	4.77(1.394-16.33)	0.013*
Educational status					
No formal education	50(47.6%)	34(16%)	21(25%)	0.343(0.126-0.934)	0.36
Primary education	25(23.8%)	69(32.5%)	26(27.7%)	0.44(0.167-1.157)	0.96
Secondary/preparatory	21(20%)	74(34.9%)	14(14.7%)	0.867(0.311-2.418)	0.786
Collage or above	9(8.6%)	35(16.5%)	4(9.09%)	1.00	
Marital status					
Single	6(5.7%)	19(9%)	3(12%)	1.00	
Married	70(66.7%)	132(62.3)	40(19.8%)	2.619(0.642-10.683)	0.18
Widowed	16(15.2%)	36(17%)	12(23.07%)	1.446(0.649-3.221)	0.366
Divorced	13(12.4%)	25(11.8%)	10(26.3%)	1.19(0.452-3.135)	0.724
Occupation					
House wife	68(64.8%)	106(50%)	46(26.4%)	0.652(0.233-1.822)	0.414
Merchant	5(4.8%)	18(8.5%)	4(17.39%)	1.515(0.320-7.168)	0.600
Daily laborer	8(7.6%)	23(10.8%)	4(12.9%)	1.182(0.302-4.62)	0.810
Gov ‘tal employee	15(14.3%)	47(22.2%)	6(9.67%)	1.786(0.512-6.230)	0.363
Private /NGO	9(8.6%)	18(8.5%)	5(18.5%)	1.00	
Income per month					
≤ 1000 birr	41(39%)	79(37.3%)	26(21.66%)	0.571(0.122-2.680)	0.479
1001-3000	45(42.9%)	83(39.2%)	27(21.09%)	0.488(0.105-2.271)	0.300
3001-5000	16(15.2%)	37(17.5%)	10(18.87%)	0.614(0.120-3.146)	0.559
≥ 5000	3(2.9%)	13(6.1%)	2(12.5%)	1.00	

* Significantly associated with cervical precancerous lesion

4.3. Reproductive health characteristic of the respondents

Based on the data collected from the respondents, the prevalence of precancerous lesion were found to 25.7% in the women who use hormonal contraceptive, however with regard to menstruation history of the respondent, prevalence of precancerous lesion were found to be more in the women who had irregular menstruation history (32.8%) as compared with women with regular menstrual history (10.45%) (Table-7).

Women that had children more than four were found to be more prevalent to precancerous lesion as 22.58% were found to be precancerous positive but the prevalence of precancerous lesion were found to be less in the women who had no children (3.44%). Based on the age at which they gave birth , the precancerous lesion found to be more prevalent in the women who gave birth at age less than 18 years as its prevalence was 26.97% followed by women who gave birth at age ranged from 18-20 as its prevalence were 23.68% (Table-7).

The prevalence of precancerous lesion was high among women who had more than four times abortion history as its prevalence was 39.13%, whereas the prevalence in the women who did not have history of abortion was less as its prevalence was only 2.03% (Table-7).

On bivariate analysis, Having four or greater than four parity were significantly associated with cervical precancerous lesion and had more than 11.73 times to develop precancerous lesion as compared with those who did not gave birth (COR= 11.727, 95% CI (1.754-89.094, p=0.001)). Having greater than three history of abortion were significantly associated with cervical precancerous lesion and increased the risk of developing precancerous lesion by 9.7 times as compare with those who did not have history of abortion (COR=9.705, 95% CI (3.642-25.861, p=0.000)). Using hormonal contraceptive were significantly associated with cervical precancerous lesion and 2.88 times more likely to develop cervical cancer as compare with those who did not use any contraceptive (COR=2.88, 95% CI (1.424-5.859, p=0.003)). Women with irregular history of menstruation increased the risk of precancerous lesion and 4.17 times to develop precancerous lesion and were significantly associated with cervical precancerous lesion as compare with those who do have regular history of menstruation (COR=4.177, 95% CI (1.755-5.859, p=0.001)) (Table 7).

Table 7. Reproductive health related characteristics of respondents screened for cervical cancer in Bishoftu General Hospital, Ethiopia, 2017.

Variables	Case n(%)	Control n(%)	Precancerous positive	COR(CI 95%)	P value
Contraceptive					
No	20(19.04%)	57(26.9%)	12(15.58%)	1.00	
Condom	28(26.7%)	71(33.5%)	17(17.17%)	2.57(1.262-5.237)	0.009*
Hormonal	56(53.3%)	84(39.6%)	36(25.71%)	2.88(1.424-5.859)	0.003*
Menstrual history					
Regular	29(27.6%)	105(49.5%)	14(10.45%)	1.00	
Irregular	65(61.9%)	69(32.5%)	44(32.8%)	4.177(1.755-5.859)	0.001 *
Menopause	11(10.5%)	38(17.9%)	7(14.28%)	0.763(0.372-1.563)	0.459
No of Child					
No	7(6.7%)	22(10.4%)	1(3.44%)	1.00	
1-3	51(48.6%)	82(38.7%)	29(21.8%)	2.606(1.453-4.675)	0.017*
≥ 4	47(44.8%)	108(50.9%)	35(22.58%)	11.727(1.544-89.094)	0.001*
Abortion history					
No	43(40.9%)	105(49.5%)	3(2.03%)	1.00	
1-3	48(45.7%)	98(46.2%)	33(22.6%)	7.362(2.823-19.197)	0.000*
≥ 4	14(13.3%)	9(4.2%)	9(39.13%)	9.705(3.642-25.861)	0.000*
Family history of cervical cancer					
Yes	13(12.4%)	17(8.01%)	6(20%)	0.682(0.289-1.610)	0.382
No	92(87.6%)	195(91.98%)	59(20.55%)	1.00	
Age at first birth					
no	7(6.7%)	22(10.4%)	1(3.57%)	1.00	
<18	29(27.6%)	60(28.3%)	24(26.97%)	0.215(0.088-0.526)	0.001*
18-20	42(40%)	72(34%)	27(23.68%)	0.586(0.246-1.393)	0.226
>20	28(26.7%)	58(27.4%)	13(15.11%)	0.505(0.226-1.130)	0.096

* Significantly associated with cervical precancerous lesion

4.4. Lifestyle and sexual behavior of the respondents

Prevalence of the precancerous lesion were found to be more in the women who smoke cigarette as its prevalence was 30% than in the women who did not smoke cigarette as its prevalence was 19.86 %. However being married below 15 years of age were found to be more prevalent to precancerous lesion (41.85%) however the case were less prevalent in women who were married above 18 years (8.54%). Cervical precancerous lesion were found to be more prevalent in women that start sexual intercourse at age less than 15 years (39.02%), however it was less prevalent in women that start sexual contact at age above 18 years 8.6% (Table-8).

From the total study subject 27.48% of the respondent with STDs infection were found precancerous positive where as 12.33% of the respondent without STDs infection were found precancerous positive whereas the prevalence of precancerous lesion was more in HIV positive women (31.95%) as compared with women with HIV negative (7.43%). From those respondents who had history of HIV and STDs, they had life time sexual partner two or more and their cervical cancer prevalence were 30.89% but women with only one life time sexual partner had 4.76% precancerous lesion prevalence (Table-8).

On bivariate analysis, those women with history of smoking were 6.9 times more likely to have cervical precancerous lesion than those who did not have history of smoking (COR=6.906 with 95% CI (2.69-17.25, p=0.000)). History of STIs was significantly associated with cervical precancerous lesion than those with no history STIs and had the probability to cause precancerous lesion 3.36 times than those with no STIs history (COR=3.364 with 95% CI (1.876-6.03, P=0.000)). Having two or more other lifetime sexual partners were significantly associated with cervical precancerous lesion and had more than twice to cause precancerous lesion than those with only one sexual partner (COR=2.477 with 95% CI (1.303-4.70, p=0.006)). Positive HIV status were significantly associated with cervical precancerous lesion (COR=0.069 with 95% CI (0.024-0.195, p=0.000)). Age at first sexual intercourse of the respondent were significantly associated with cervical precancerous lesion than those who had sexual intercourse at late age (COR=0.197 with 95% CI (0.093-0.418, p=0.000)).

Table 8. Lifestyle and sexual behavior characteristics of respondents screened for cervical cancer in Bishoftu General Hospital, Ethiopia, 2017.

Variable	Case n(%)	Control n(%)	Precancerous positive	COR(CI 95%)	P value
history of smoke					
No	97(92.4%)	200(94.3%)	59(19.86%)	1.00	
Yes	8(7.6%)	12(5.7%)	6(30%)	6.906(2.690-17.725)	0.000*
Age 1st marriage					
single	6(5.7%)	19(9%)	4(16%)	1.00	
< 15 years	36(34.3%)	35(16.5%)	29(41.85%)	0.292(0.094-0.906)	0.033
15-17years	36(34.3%)	68(32.1%)	22(21.15%)	0.116(0.050-0.268)	0.000*
≥18years	27(25.7%)	90(42.5%)	10(8.54%)	0.318(0.139-0.727)	0.007*
Age at first sex					
< 15 years	37(35.2%)	45(21.2%)	32(39.02%)	0.197(0.093-0.418)	0.000*
15-17years	43(41%)	76(35.8%)	23(19.33%)	0.417(0.198-0.881)	0.022
≥18years	25(23.8%)	91(42.9%)	10(8.6%)	1.00	
History of STDs					
No	47(44.8%)	99(46.7%)	18(12.33%)	1.00	
Yes	58(55.2%)	113(53.3%)	47(27.48%)	3.364(1.876-6.031)	0.000 *
HIV Status					
Positive	58(55.2%)	111(52.4%)	54(31.95%)	0.069(0.024-0.195)	0.000*
Negative	47(44.8%)	101(47.6%	11(7.43%)	1.00	
LSP					
One	45(42.9%)	81(38.2%)	6(4.76%)	1.00	
Two and above	60(57.1%)	131(61.8%)	59(30.89%)	2.477(1.303-4.710)	0.003*

* Significantly associated with cervical precancerous lesion

5. DISCUSSION

This study revealed that age group of 40-49 years, history of STDs, staring sex before 15 years, having two or more lifetime sexual partners of the women were predictors of cervical precancerous lesion. Based on the data obtained from respondent, the prevalence of cervical precancerous lesion was more in women between 40-49 years and were found to be significantly associated with cervical precancerous lesion and had a probability to develop precancerous lesion 4.77 times as compared with those who are aged between 21-29 years old (COR= 4.77; 95 % CI (1.394-16.33, p=0.013)). This is similar with the study conducted in Addis Ababa, which reported that the peak incident of cervical cancer was aged group of 40-49 years 4.7 times more likely to develop cervical cancer than those with less than 40 years ((OR= 4.7; 95% CI= 2.3–9) (Sefinew, 2016). Another study conducted in Addis Ababa also showed being in age of 40-49 years were found to be significantly associated with cervical precancerous lesion as compared with those who are aged 30 - 39 years old (COR= 2.55 95 % CI (1.54- 4.23) (Hirut, 2016). It was also similar to the study finding conducted in southwestern Ethiopia where old age 40-59 years was found at risk for invasive cervical cancer compared to those less than 40 years (AOR=4.3; 95% CI=1.8-10.2) (Mesele *et al.*, 2016).

The age difference among the women screened for cervical cancer could be due to the long period exposure of HPV virus and due to cervical precancerous lesion takes time to develop (Pathfinder international, 2012). Most patients in developing countries including Ethiopia present late with advanced stage disease in which treatment may often involve multiple modalities including surgery, radiotherapy, chemotherapy, and has a markedly diminished chance of success. Several factors such as educational status, financial capability, location, presence of health care facilities determine the stage at which patients with cancer present to the health facility.

Among women visiting Bishoftu Hospital during the study period January –June 2017, socio-demographic factors between cases of cervical precancerous lesion and controls, there was no significant difference between cases and controls on difference in educational status, marital status, occupation, and income. This was similar to the study conducted in Addis Ababa, which reported that there was no significant difference between cases of cervical precancerous lesion and controls on difference in educational status, marital status, occupation, income and religion (Hirut, 2016).

The study conducted in southwestern Ethiopia also reported that socio-demographic was not significantly associated to the occurrence of precancerous lesion (Zewdie *et al*., 2015).

This study pointed out that women with cervical precancerous lesion was found with higher odds ratio of history of STDs than those with no history of STI (COR=3.364, 95% CI (1.876-6.03, P=0.000)) and 27.48% women found with precancerous positive, had history of STDs. Moreover, this is similar with finding of a study in Zimbabwe, where history of STDs was found as risk factors (AOR=3.10; p-value=0.02) as compared to not having any STDs (Michael, 2013). A study conducted in the southern Ethiopia also reported that women with history of STDs were more likely to develop cervical precancerous lesion than those with no history of STIs (AOR=2.30, 95% CI=1.23-4.29) (Abel *et al*., 2013). This study is also consistent with the study conducted in Addis Ababa where history of STDs was significantly associated with cervical precancerous lesion (COR=4.66 with 95% CI (2.61- 8.31)) and history of STDs of the husband found to be significantly associated with cervical precancerous lesion (COR=3.67 with 95% CI (1.80- 7.49)) (Hirut, 2016). The finding of this result were also found similar to study conducted in Jimma specialized Hospital where women who had history of sexual transmitted infection were three times more likely to have cervical precancerous lesion than those who did not have history of sexually transmitted infections (AOR=3.20, 95% CI (1.26-8.10)) (Mesele *et al*., 2015). This association may be because of the association of human papilloma virus with both STDs and cervical precancerous lesion (Anna-Lise, 2015).

Among the study subjects having two or more lifetime sexual partners were found to be significantly associated with cervical precancerous lesion as compared with those that had only one sexual partner (COR=2.477, 95% CI (1.303-4.7, P=0.003). This finding was supported by study carried out in the northwestern Ethiopia, which reported that women with history of multiple sexual partner in their life had higher risk of having cervical epithelial cell abnormalities when compared with history of one sexual partner (AOR 3.2, 95% CI:1.00-10) (Eyerusalem and Ayalew, 2015). The study conducted in southwestern Ethiopia also reported that women who had more than one husbands had higher risk of developing cervical cancer compared with those with one husband (OR= 2.0; 95% CI=1.0-3.9) (Mesele *et al*., 2015). The finding of this results was also similar to the study conducted in Addis Ababa where having two or more other lifetime sexual partners were significantly associated with cervical precancerous lesion than those who did not have other sexual

partner (COR=4.87; 95% CI (2.75- 8.63)) (Hirut, 2016). This finding was is consistent with a study conducted in southern Ethiopia among women living with HIV, showed that women who had one lifetime sexual partner were 67% less likely to develop precancerous cervical cancer lesion than those who had more than one life time sexual partners (Abel *et al* ., 2013). The risk of developing cervical precancerous lesion was higher because those women have a higher risk of acquiring HPV infection, which is the causative agent for cervical precancerous lesion and cervical cancer (WHO, 2015).

In this study sexual intercourse at early age before the age of 15 were found to be significantly associated with cervical precancerous lesion than those who begin sexual intercourse at late age above 18 years (COR= 0.197; 95% CI=0.093-0.418, P=0.000). This finding was consistent with study conducted in southwestern Ethiopia where early initiation of intercourse before16 years increased the risk of VIA positive by 2.2 time (COR=2.2, 95% CI=1.1-4.3) (Zewdie *et al*., 2013).

Early onset of sexual activity was thought to be associated with high risk because, during puberty, cervical tissue undergoes physiologic changes, transformation zone on the ectocervix was enlarged, and exposure to HPV at such times may facilitate infection that may make this area more vulnerable to development of dysplasia, a cervical squamous pre-cancer (WHO, 2014).

This study pointed out that women with Positive HIV status were significantly associated with cervical precancerous lesion (COR=0.069 with 95% CI (0.024- 0.195, p=0.000)). Therefore, the prevalence of precancerous lesion was more in HIV positive women as compared with women with HIV negative. Study conducted in northern Ethiopia also reported that HIV positive women were 3.6 times more likely to have precancerous cervical lesion compared to those with HIV negative women (AOR = 3.6; 95% CI (1.7- 7.7) (Zekariase *et al*., 2015). Another study conducted in southern Ethiopia also reported that women with HIV positive are more likely to cause precancerous cervical lesion than those with HIV negative (AOR=0.52, 95% CI: 0.35- 0.92) (Abel *et al*., 2013). According to the study conducted in southwestern Ethiopia, positive HIV status were significantly associated with cervical precancerous lesion (COR=2.24 with 95% CI (1.38- 3.64)) (Mesele *et al.*, 2015). The study conducted in Addis Ababa also reported that being positive HIV status were significantly associated with cervical precancerous lesion (COR=2.24 with 95% CI (1.38, 3.64)) (Hirut, 2016).

In Ethiopia 534,000 women age of 15 years and above living with HIV, those are the most vulnerable to cervical cancer (Addis, 2010). Women living with HIV are more readily infected with certain types of HPV and more vulnerable to rapid development of the precancerous lesion than HIV negative women (Williamson, 2015). According to WHO publication in areas where HIV was endemic, cervical cancer screening results may be positive for precancerous lesions in up to 15-20% of the target population (WHO, 2006).

In this study, women who had children more than four were found to be more vulnerable to precancerous lesion; however, the prevalence of precancerous lesion were found to be less in the women who had no children. Having four or greater than four parity were significantly associated with cervical precancerous lesion as compared with those who did not gave birth (COR= 11.727, 95% CI ((1.544-89.094, p=0.001)). This was similar with the studies conducted in Addis Ababa and southwestern Ethiopia which reported that having four or greater than four parity were significantly associated with cervical precancerous lesion as compared with those who did not gave birth (COR= 2.62, 95% CI (1.28- 5.35)) (Hirut, 2016), (AOR =10.3, 95% CI= 3.6–29.0) (Mesele *et al*., 2015) respectively. Most women with children more than four resulting in worsening poverty and associated with increasing incidence of cervical cancer (Ntekim, 2012). High parity is a good indicator of hormonal exposure and repeated cervical trauma, which could be predisposing to the infection (Sine *et al*., 2002).

The prevalence of precancerous lesion was more in women who had more abortion than women who did not have history of abortion. In this study having greater than three history of abortion were significantly associated with cervical precancerous lesion as compare with those who did not have history of abortion (COR=9.705, 95% CI (3.642-25.861, p=0.000)). This is similar to the study conducted in Addis Ababa where having greater than three history of abortion were significantly associated with cervical precancerous lesion as compared with those who did not have history of abortion (COR=2.46, 95% CI (1.02, 5.95)) (Hirut, 2016).

6. CONCLUSIONS AND RECOMMENDATIONS

6.1. Conclusions

The data obtained from Bishoftu General Hospital record office from years (2012-2017) showed 16.2% over all prevalence of precancerous lesion and prevalent in women age group 50 years and above followed by women age between 40-49 years. However, the prevalence was less commonly observed in the age groups 20-29 years. Precancerous lesion formed at early age between 21-29 years had reduced chance to change into cancerous stage whereas in the women 50 and above, there were great chance to converted into cancerous stage (88.5%) followed by age group between 40-49 years (65.4%). In the past six years cervical precancerous were more prevalent in illiterate (30.8%), divorced (35.8%), those that live in rural area (23.5%), who use hormonal contraceptive (20.03%), with parity more than four (22.2%), multi-sexual partner (18.7%) and in the women who begin sexual intercourse at age between 15-17years.

Among women visiting Bishoftu Hospital during the study period January –June 2017, there was no significant difference between cases and controls on difference in educational status, marital status, occupation, and income. However, cervical precancerous lesion was more prevalent in married and housewife women. Age group 40-49 years, life time history of sexual transmitted infections, two or more life time sexual partners, having children more than four, early sexual intercourse, irregular menstruation cycle, positive HIV status, having history of abortion more than three and having history of smoking were found significantly associated with cervical precancerous lesion.

In general, the prevalence of precancerous lesion in the past six years in the Bishoftu General Hospital were found to be 16.2% where as from the data obtained currently from questionnaire from January-May 2017, the prevalence of precancerous lesion increase to 20.5%.

Most of the women suggested that they do not have screening practice and most of them had negative attitude toward screening practice. This study can hint cervical cancer as an emerging public health problem in Ethiopia. Most people remain unaware of how they can reduce their modifiable risk of developing cervical cancers and very little has been done to change this by public health agencies in the country. Public health action could help prevent invasive cervical cancers by health education, early detection and treatment and in due time by vaccination so that future generations could be salvaged from the growing threat of invasive cervical cancer

Therefore, women above the age of 30 years, with history of sexually transmitted infections, history of multiple sexual partners and in general women with increased risk of infection should be encouraged to be screened for cervical cancer.

6.2. Recommendations

With respect to the findings and objectives of the study, some recommendations had been made at different levels. Stakeholders could therefore use the findings of this study geared towards improving cervical cancer screening and prevention services.

At federal and regional health offices level

- ✓ The MOH could play its part by increasing health care budgets and placing priority on cervical cancer prevention by establishing a national awareness campaign and establishing screening centers throughout the country that may increase the screening practice.

Health facilities and health professionals

- ✓ Health professional should give advice to women above the age of 30 years to be screened for cervical cancer.
- ✓ At a minimum, screening is recommended for every women 30-49 years of age at the interval of 5 years for women with negative VIA result but for VIA positive women follow up visit should be scheduled a one year period.

Researchers

- ✓ National level studies in the wider population needs to be conducted to identify and evaluate the risk factors associated with cervical precancerous lesion to find possible interpretation to change them.
- ✓ Studies should be conducted on the risk factors associated with precancerous lesion and HIV/AIDS, so that proper measures can be taken according to the results to save the lives of women victim by creating awareness and providing screening services.

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APPENDICES

Appendix 1

ADAMA SCIENCE AND TECHNOLGY UNIVERSITY

SCHOOL OF APPLIED NATURAL SCIENCES

PROGRAM OF APPLIED BIOLOGY

Appendix 1. Questionnaires used for data collection

Dear respondents,

This questionnaire administered for the survey on Prevalence and risk factors For Developing cervical precancerous lesion among women screened for cervical Cancer in Bishoftu General Hospital. The study may be advantageous in identifying prevalence and the risk factor for developing cervical cancer, so it is important to develop strategies that help to improve the prevention and control methods of cervical cancer. Since the quality and success of this study depends on the information you supply, you are kindly requested to provide your genuine response. I would like to assure you that your response will be used only for research purposes and all the genuine information obtained from you will be strictly kept confidential, your participation is surely voluntary. Thank you in advance for your cooperation and timely responses. No need to write your name.

THANK YOU!!!

Questionnaire (English Version)

General information

For each question, make a circle around the spelling that corresponds to the answer; fill the blanks with the answer or mark "x"or circle the letters.

1. Participant's code number: _____

CASE ☐ **CONTROL** ☐

I: Socio demographic characteristics

1. How old are you.

A. Below 30 years ☐ B. 30-39 years ☐ C.40-49years ☐

2. What is your level of education?

A. Don't write and read ☐ B. Only read and write ☐ C. Primary (1-4) ☐

D. Primary (5-8) ☐ E. Secondary (9-10) ☐ F. Preparatory ☐

G. Diploma or technical/vocational ☐ H. Higher (bachelor degree and above) ☐

3. How much is your family average monthly income in birr _____

A. Less than 1000 ☐ B. 1001-3000 ☐ C. 3001- 5000 ☐ D. Above 5000 ☐

4. What is your current occupation status?

A. House wife ☐ B. Merchant ☐ C. Daily laborer ☐

D. Governmental employee ☐ E. Private/NGO employee ☐ F. farmer ☐

5. Where do you live? A. Rural ☐ B. City ☐

6. What is your marital status?

A. Single ☐ B. Married ☐ C. Widowed D. Divorced ☐ E. Separated ☐

II. Life style and sexual behavior

1. How old are you when you first married? (If you are already married once)_____

A. <15years ☐ B. 15-17 years C. 18 and Above ☐

2. At what age did you start first sexual intercourse?

A. Less than 15 years ☐ B. 15-17 years ☐ C. Above 18 years ☐

3. Life time number of sexual partners (LSP)

A. 1 LSP ☐ B. 2 & above LSP ☐

4. Have you ever been infected by sexually transmitted disease (STDs) before

A. Yes ☐ B. No ☐

5. Your HIV/AIDS Result A. Positive ☐ B. Negative ☐

6. do you smoke cigarette,

A. Yes ☐ B. No ☐

7. If your answer is yes, for how long do you smoke

A. less than 2 years ☐ B. 3-5 years ☐ C. More than 6 years ☐

III. Reproductive health related factors

1. do you use contraceptive

A. Yes ☐ B. No ☐

2. If your answer is yes ,which type of contraceptive do you use

A. Hormonal contraceptive ☐ B. Condom ☐ C. IUD/Loop ☐ D. other ☐

3. For how long time do you use hormonal contraceptive(pills, injectable & implant) ?

A. Less than 2 years ☐ B. 2-4years ☐ C. Above 5years ☐

4. Menstrual cycle bleeding pattern History

A. Regular ☐ B. Irregular ☐ C. Menopause ☐

5. Have ever –experienced abortion

A. Yes ☐ B. No ☐

6. If your answer is yes, how many times? A. 1-3 ☐ B. 4 ≥ ☐

7. Your family have history of cervical cancer

A. Yes ☐ B. No ☐

8. At what age does you give your full first birth?

A. No ☐ B<18 ☐ C.18-20 ☐ D.>20 ☐

9. Have you ever screened for cervical cancer?

A. Yes ☐ B. No ☐

10. If your answer is no, least your reason

_____

_____

11. If your answer yes, what is your cervical screening results?

A .Positive ☐ B. Negative ☐

12. what is your attitudes towards the disease?

_____

_____

THANK YOU!

Appendix 2

UNIIVARSITII SAAYINSIIF TEEKNOLOGI ADAAMAA

MUMMEE BARUMSAA APPLAAYID BAAYOLOGII

Kutaa-1

Waraqaa Oddefanno Kenu

Waraqaa Oddefanno kuni kanfayyadu Dubartootaa Hospiitaala Bishoftuu kaansarii qarqara gadaamessaa yaalamuuf dhufanni irratti tatamsa'ina kansarii gadaamessaa iraa jirufi sababababii walqabataa ta'ee qo'achufi. Oddeffannoon isiin laatan kunis maddota biro walin ida'amun sababoota kaansarii qarqara gadaamessaa waliin walqabatan adda baasanii beekuuf hala itti foyya'u umuuf ittiyaadame qo'anno dhiyaateedha. Gaafiwwan kana kessatti maqaa kessaniifi yaadota isiin adda basuuf gargaaru barressun hinbarbaachisu. Oddefanno gafiloota kanaaf laataman kaayoo qo'anoof qofa kanoloniifi iciitiin isaaniis guttumaan guttutti kan egamu dha.

Kutaa 2faa

1. haala ikoonomi fi dimograafii
   1.1. Umurii
      A.Waggaa 30 gadi ☐ B. Waggaa30-39 ☐ C. Waggaa41-49 ☐
   1.2. Sadarkaa barumsaa
      A. Barressufii dubisuu kan hindandeenye ☐
      B. Barumsa sadarka 1^{faa} (kutaa1-4^{faa}) ☐
      C. Barumsa sadarka 2^{faa} (9-10) ☐
      D. Qopha'iinaa, BLTO ☐
      E. Diploomaa ☐
      F. Barumsa olaanaa /Digrii fi isaa ol ☐

1.3. Galiin maatii kessanii kan waligalaa meeqa?

A. Qarshii 1000 gadi ☐ B. Qarshii 1001-3000 ☐

C. Qarshii 3001-5000 ☐ D. Qarshi5000 ol ☐

1.4. Hojiin kessan maali?

A. Kan mana oltu ☐ B. Hojettuu guyyaa ☐. Kan dhunfaa ☐

D. Hojettuu mottummaa ☐ E. Kan biro ☐

1.5. Iddon jirrenyaa kessan essa?

A. Magaala ☐ B. Baaddiyyaa ☐

1.6. Haala ga'ilaa

A. Kan herumte ☐ C. Kan hin heerumnee ☐

B. Kan jalaa du'e ☐ D. Kan addaan baatee ☐

1.7. Umurii meeqan gaa'illa yeero duraaf raawatan?

A. Waggaa 15 fi gadi ☐ B.Waggaa16-19 ☐ C . Waggaa20 fi isaa ol ☐

1.8. Umurii meeqan ture yeero duraaf walqunnamtii salaa raawwachu kan egalte?

A. Waggaa 16 fi gadi ☐ B. Waggaa 17-19 ☐

C. Waggaa20 fi isaa ol. ☐

1.9. Hanga ammaatti nama meeqaa wallin wal-qunnamtii salaa raawwattan?

A. Nama tokko wallin ☐ B. Nama 2-3 wallin ☐. Nama 4fi isaa ol ☐

1.10. Kanaa dura dhibee wal-qunnamtii salaan qabamtanii nibekttu?

A. Eyee ☐ B. Miti /hinqabamne ☐

1.11. Tanboo xuxanii nibeektu? A. eyyeen ☐ B. hinbaknu ☐

1.12. Kanaan dura HIV/AIDS Qoramtani nibaktu?

A. eyyee ☐ B. hinbaku ☐

1.13. Umurii meqaan yeroo duraatif deessan?

A. Waggaa 18 fi gadi ☐ B.Waggaa 18-20 ☐ . Waggaa 20 ol ☐

1.14. Daa' ima meeqa qabduu?

A. Hinqabu ☐ B.1-3 ☐ C. 4 ol ☐

1.15. Seenaa kaansarii qarqara gadaamessaa matii kesssan kessa nijiraa?

A. Eyye ☐ B. Hinjiru ☐

1.16. Kanaan dura yeroo meeqaaf ulfa ofirraa bastanii?

A. Hinbeku ☐ B. Yeroo1-3fi ☐ C. Yeroo 4 fi ol ☐

1.17. Halli laguu kessan itti dhufu maal fakaata?

A. haala dhaabatan B. kan dhaabatan hin tane C. laguun arguu dhaabde

1.18. Kansarii gadaamessaa illalamtani/ yaalamtanii beektu?

A. Eyyee ☐ B. Hin beeku ☐

1.19. Deebiin kessan hin beeku yoo ta'e sababa isaa maali tarressi

_____

_____

_____

_____

1.20. Ittisa da'umsa akaaku akkamii fayyadamtu_____

Yeeroo hagamiitiifi_____

DEEBII NUUF KENNITANIIF GALATOOMAA!

Appendix 3

አዳማ ሣይንስ እና ቴክኖሎጂ ዩኒቨርሲቲ

<u>የስነህይወትክፍለ ትምህርት ት/ቤት</u>

<u>ክፍል አንድ</u>

<u>መረጃ መስጫ ወረቀት</u>

ይህ መረጃ መስጫ ወረቀት የሚጠቅመው ወደ ቢሾፍቱ ሆስፒታል የማህፀን ጫፍ ካንሠር ለመመርመር የመጡ ሴቶች ላይ ያለውን የማህፀን ጫፍ ካንሰር ስርጭትና ተያያዥ ምክንያቶችን ለማጥናት ነው::

እርሶም በጥናቱ ተሣታፊ እንዲሆኑ ተመርጠዋል::እርሶ የሚሠጡትን መረጃ ከሌሎች ምንጮች ጋር ተደምሮ የማህፀን በር ካንሠር ተያያዥ ምክንያቶች ለይቶ ለማወቅ ወይም የሚሻሻልበት ሁኔታ ለመፍጠር ታልሞ የተዘጋጀ ጥናት ነው::

በዚህ መጠይቅ ውስጥ ስሞትንና እርሶን ለመለየት የሚያገለግል ነገር አይፃፍም::በመጠይቁ ወቅት የሚሰጡት መረጃዎች ለጥናቱ አላማ ብቻ የሚውሉና ሚስጠራዊነቱ ሙሉ በሙሉ የተጠበቀ ነው::

ስለተባበሩን እናመሠግናለን::

ክፍል ሁለት:

የተሳታፊዋ መለያ ቁጥር _____

የማህፀን በር ቅድመ ካንሰር ያላት [ ]

የማህፀን በር ቅድመ ካንሰር የሌላት [ ]

ኢኮኖሚያዊ እና ዲሞግራፊያዊ ሁኔታዎች

1.1 **እድሜ** _____**ሀ. ከ**30**አመት በታች** ☐ **ለ. ከ**30--40 **ዓመት** ☐

ሐ. ከ41–50 **ዓመት** ☐ **መ. ከ** 51 **ዓመት በላይ** ☐

1.2. የትምህርት ደረጃዎ

ሀ. መፃፍና ማንበብ የማትችል ☐ ለ. መፃፍና ማንበብ ብቻ ☐

ሐ. የመጀመሪያ ደረጃ /1-4/ ☐ መ.የመጀመሪያ ሁለተኛ ሣይክል /5-8 ☐

ሠ. ሁለተኛ ደረጃ /9 እስከ 10/ ☐ ረ. መሰናዶ፣ ተክኒክ እና ሙያ ☐

ሰ. ዲኘሎማ ☐ ሸ. ከፍተኛ /ዲግሪ እና ከዛ በላይ/ ☐

1.3 ጠቅላላ የቤተሠብዎ ወርሀዊ ገቢ ስንት ነው ? የብሩ መጠን

ሀ 1000 ብር በታች ☐ ለ. ከ1001 –3000ብር ☐

ሐ. 3001–5000 ብር ☐ መ. ከ 5000 በላይ ☐

1.4. ስራዎ ምንድን ነው

ሀ. የቤትእመቤት ☐ለ. ነጋደ ☐ ሐ. የቀን ሠራተኛ ☐

መ. የግል ☐ ሠ. የመንግስት ሠራተኛ ☐ረ. ሌላ ☐

1.5 የትነው የሚኖሩት

ሀ. ከተማ ☐ ለ. ገጠር ☐

1.6 የጋብቻ ሁኔታ

ሀ. ያላገባች ☐ ለ. ያገባች ☐ሐ. ባሏ የሞተባት ☐መ. የተፋታች ☐

1.7. የመጀመሪያ ጋብቻ ሲፈፅሙ እድሜዎት ስንት ነበር

ሀ. ከ15አመት በታች ☐ ለ.16–17 ዓመት ☐ ሐ. ከ18 ዓመት በላይ☐

1.8 ለመጀመሪያ ጊዜ የግብረስጋ ግንኙት ሲፈፅሙ እድሜዎች ስንት ነበር

ሀ.ከ16አመት በታች ☐ ለ.17–19 ዓመት ☐ ሐ. ከ20 ዓመት በላይ ☐

1.9 እስከ አሁን ከስንት ሰው ጋር ያታዋ ግንኙነትን ፈፅመዋል

ሀ. 1 ☐ ለ. 2–3 ☐ ሐ. ከ4 በላይ ☐

1.10ከዚህ በፊት በአባላዘር በሽታ ተይዘው ያውቃሉ? ሀ. አዎ ☐ለ. አላውቅም ☐

1.11ምን አይነት የወሊድ መከላከያይጠቀማሉ _____

ለምን ያህል ጊዜ----------

1.12 ሰጋራ ያጤሣሉ _____ ካጤሱ ለምን ያህል ጊዜ

1.13. የማህፀን ጫፍ ካንሰር ተመርምረው ያውቃሉ

ሀ. አዎ ☐ ለ. አላውቅም ☐

1.13.1.መልሶ አላውቅም ከሆነ ምክንያቱ አስቀምጡ?

1.13.2 መልሶ አዎ ከሆነ ውጠቱ ምንድነዉ? ሀ. ፖዝትፍ ☐ለ. ነገትፍ ☐

1.14. ስንት ልጆች አልዎት ሀ. የለም ☐ ለ. 1-3 ☐ ሐ. ከ 4 በላይ ☐

1.15. ከዝህ በፍት ውርጃ አድርገው ነበር?

ሀ. አላውቅም ☐ ለ. ከ1-3 ☐ ሐ. ከ 4 በላይ ☐

1.16. በበተሰቦት ውስት የማህፀን ጫፍ ካንሰር ታርክ አለ?

ሀ. እዎ ☐ ለ. የለም ☐

1.17. በስንት አመቶት ነው መጀመርያ የወለዱት?

ሀ. አልወለድኩም ☐ ለ. ከ 18 አመት በታች ☐ሐ . ከ 18 አመት በላይ ☐

1.18. የእች አይ ቪ ተመርምሮ ያዉቃለ? ሀ. አዎ ☐ ለ. አላውቅም ☐

1.19. ተመርምሮ ከሆነ የምርመራዉ ውጠት

ሀ. ፖዝትፍ ☐ለ. ነገትፍ ☐

1.20. የወረ አበባ ኡደት

ሀ. በየወሩ ☐ ለ. የተዛባ ☐ ሐ.ማየት ያቆመች(ያረጠች) ☐

ስለ ሰጡኝ ምላሽ በጣም አመሰግናለዉ

Appendix 4

BIIROO EEGUMSA FAYYAA OROMIYAA | OROMIA HEALTH BUREAU
የኦሮሚያ ጤና ጥበቃ ቢሮ

Lakk/Ref. No. BEFO/AHDFDh/1-39/2013
Guyyaa /Date 12/10/09

Hospitaala Waliigala Bishooftuuf
Bishooftu

Dhimmi: Xalayya Deggersa Ilaala.

Akkuma beekamu Biiroon Keenya Ogeyyii , dhabbile akkasumas namoota qorannoo geggessuuf propozaala dhiyeffatan propoozaala isaani madaaluun akkasumas iddo biratti ilaalchisani fudhatama argatan (approved) dhiyeffatan,propoozaala isaanii ilaaluudhaan waraqa deggersa ni kenna.

Haaluma kanaan mata dure **"The prevalence and Risk factors for developing cervical cancer and precancerous lesion among women screened for cervical cancer in Bishoftu general Hospital,Oromia Regional State"** jedhuun **Obbo Demisuu Abarra** Magaala kessan kessatti qorannoo geggessuuf propoozaala isaani koree "Health Research Ethical Review Commite" Biiroo keenyatti dhiyeffatani jiru. Haaluma kanatti hunda`uudhaan koreen "Health Research Ethical Review Committee" Biiroo keenya piropoozaal kana ilaaluun mirkanesse qorannoon kun akka hojii irra oolu murtesse jira.

Kanaafuu, hojji qorannoo kana irratti deggersa barbaachisa ta`e akka gootaniif fi, hordoftan jecha,**" Demisuu Abarra "** qorannoon kun qacceffame xumurame firii isa koppi tokko BEFO tiif akka galii godhan galagalcha xalayya kanaan isaan beeksiifna.

Anis, **Obbo Demisuu Abarra** wayitti qorannoon kun qaaceffame xumurame firii isa koppi tokko BEFO tiif galii gochuuf mallatoo kootiin mirkanessa.

Nagaa wajjin!

Mallattoo____________________
Maqaa________________________
Bilbila_______________________
G/G
Obbo Demisuu Abarra tiif

Dr.Mangistuu Baqqalaa (MD)
I/A/Hogganaa Biiroo fi Gaggeessaa
Adeemsa Hojii Dagaagina
Fayyaa fi Ittisa Dhukkubaa

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