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Acceptability of cervical cancer screening using See and Treat (SAT) approachand determinant factors among women of reproductive age in health centers in Addis Ababa, Ethiopia.

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Acronyms and abbreviations

AIDS	Acquired Immune deficiency syndrome
AOR	Adjusted Odds ratio
ART	Anti-Retroviral therapy
BSc	Bachelor of Science
CC	Cervical Cancer
CCS	Cervical Cancer Screening
CHC	Community Health Center
CI	Confidence interval
COR	Crude Odd Ratio
DNA	Deoxy ribo nucleic Acid
FMOH	Federal Ministry of Health
FGAE	Family Guidance Association of Ethiopia
HC	Health Center
HFA	Health Facility Assessment
HIV	Human Immune Deficiency
HPV	Human papilloma virus
IDIs	In-Depth Interviews
IUCD	Intera urine contraceptive device

KAP	Knowledge Attitude Practice
LBC	Liquid-Based Cytology
LEEP	Loop Electrosurgical Excision Procedure
LETZ	Loop Excision of the Transformation Zone
LMIC	Low and Middle Income Country
OPD	Outpatient department
PAF	Population Attributable Fraction
PHC	Primary Health Care
PHCU	Primary Health Care Unit
SAT	See and Treat
SD	Standard deviation.
STI	Sexual Transmitted Infection
SVA	Single Visit Approach
VIA	Visual Inspection with Acetic acid
VILI	Visual Inspection with Lugol’s iodine
WHO	World Health Organization

Abstract

Background: Cervical cancer is one of the leading causes of morbidity and mortality amongst female cancer worldwide, especially in developingcountries, including Ethiopia. The level of women's acceptance of cervical cancer screening and treatment service is low and not well documented in Ethiopia. The current study sought to assess women's acceptance about cervical cancer screening and determinant factors of the service.

Objective: The objective of this study was to assess the acceptability of cervical cancer screening and treatment of precancerous cervical lesions and determinant factors among Women aged 30–49 years at selected health centers in Addis Ababa, Ethiopia.

Methodology: A facility based cross sectional study which contain quantitative and qualitative methods were conducted at 14 public health centers in Addis Ababa, from November, 2016 to October 2017.Totally a sample of 316 women aged 30–49 years were taken for Quantitative study and a single stage simple random sampling technique was employed to address the study subjects. For the Qualitative part 12 health professionals who were providing the service were interviewed purposively. Acceptability of cervical cancer screening and treatment service was measured after the women underwent the procedure, using women's Satisfaction on service delivered.Descriptive, Binary and multiple logistic regressions were employed to determine factors associated with acceptance about cervical cancer screening and treatment service.The transcribed and translated qualitative data was coded using cut and paste method of similar item. Then finally the codes were categorized and thematically described.

Result: one hundred forty seven (47%) of the participants accepted cervical cancer screening and treatment service. Almost half (48.6%) of the participant were not knowledgeable. After adjusting for covariates, acceptance of cervical cancer screening and treatment service was positively associated with being governmental employee [(AOR=5.85, 95% C.I:5.85(1.7, 20.0)], women who had history of vaginal burning [(AOR=4.57, 95% C.I:4.57(1.417,14.76)], information about status of women [(AOR = 0.06,95% CI: (0.014,0.26)], Delay screening and treatment time [(AOR = 7.6,95% CI: 7.6(2.89,20)], happy with staff behavior,[(AOR =4.6, 95% CI: 4.6(1.1,19.77)], health education about the service [(AOR = 2.45, 95% CI: 2.45(1.049,5.74)] , and women who were happy with setup of examination room [(AOR = 3.96, 95% CI: 3.96(1.32,20.85)] respectively.

Conclusion and Recommendation: This study shows a suboptimal acceptance of cervical cancer screening and treatment services. Occupational status, test related problem, Lack of health education, Delay screening and treatment time, setup of examination room and staff behavior were found to be important determinants. Efforts are needed to increase women's acceptance and knowledge about the service. Organization working on cervical cancer should establish a separate service delivery on screening and treatment program and should highly enhancehealth education and awareness creation program.

1. INTRODUCTION

1.1. Background

The population of Ethiopia is estimated to be nearly 100 million people, of whom 78.8% live in rural areas and 20.2% are urban dwellers (1). Women and men constitute 49.5% and 50.5% of the total population, respectively. Almost one quarter (23.4%) of the total population is made up of women of reproductive age (between 15 and 49 years of age) (2). The potential primary health service coverage reached 92% of the population, yet the per capita health service utilization per year, as measured by out-patient attendance, remains low at 0.29 (3).

Cervical cancer is a cancer arising from the cervix, which is due to the abnormal growth of cells that have the ability to invade other parts of the body (5). It is almost always caused by human papilloma virus (HPV), more than 100 distinct HPV genotypes exist, but only a small subset (at least 13) are considered oncogenic or high risk HPV and associated with development of cervical cancer(5). Globally the most common HPV types associated with cervical cancer are two strains HPV 16 and HPV 18(5). Of all the HPV types, HPV16 has the greatest oncogenic potential. In addition to HPV 16 and 18,other high- risk HPVs include 31,33,35,45,52,and 58 other risk factors include giving birth to many children, smoking, using oral contraceptives for long time, low immune system and first sexual intercourse initiation at early age (5).

Cancer of the cervix is the second most common cancer among women worldwide, with about 500 000 new patients' diagnosed and over 250 000 deaths every year (4). In low- and middle-income countries (LMICs), including Ethiopia, cervical cancer is the commonest cancer affecting reproductive organs and also the leading cause of death from cancer among women. In 2010, it was estimated that 20.9 million women were at risk of developing cervical cancer in Ethiopia with an estimated 4,648 and 3,235 annual numbers of new cases and deaths, respectively (4). The majority of cancers (over 80%) in sub-Saharan Africa are detected at a late stage, predominantly due to lack of information about cervical cancer and a dearth of prevention services(4). Late-stage disease is associated with low survival rates after surgery or radiotherapy (4). In addition, these treatment modalities may be lacking/limited, or too expensive and inaccessible, for many women in low-resource countries, including Ethiopia (4).

According to the report from WHO, globally in 2012, cervical cancer incidence was 7.9%, mortality 7.5% and five year prevalence was 9%, in sub-Saharan Africa the incidence was 25.2%, mortality 23.2% and five year prevalence was 27.6% (5). In Ethiopia the incidence was 17.3%, mortality 16.5% and five year prevalence was 18.2% (6).

Cervical cancer trend is significantly reduced in high income countries due to early diagnosis and treatment. Because of poor access to quality screening and treatment service, the trend is increasing in developing countries (7). According to trend analysis on cervical and breast cancer between the year 1980 and 2010, Cervical cancer trend is increasing from 378 000 (256 000–489 000) to 454 000 (318 000–620 000) an average annual increase of 0.6% (7). Cervical cancer death rates have been decreasing but the disease still killed 200,000 (139,000-276,000) women in 2010, of whom 46,000 (33,000-64,000) were aged 15-49 years in developing countries(7).

In developed countries, screening programs are in place to spot the signs of precancer and treat it early. These programs are generally built on a multi-visit, cytology-based screening approach Pap smears followed by colposcopy and biopsy where indicated. Such programs require a high degree of organization and management. In developing countries, on the other hand, such screening and treatment services generally are not available or accessible and where they are available, the programs may be ineffective due to training, quality control or logistical challenges This brief summarizes the current evidence on various options, namely cervical cytology (Pap test), HPV (human papillomavirus) DNA testing and visual inspection with acetic acid (VIA) for screening, and cryotherapy for treatment, with a focus on approaches appropriate for low-resource settings(10). VIA screening combined with access to cryotherapy was piloted in Ethiopia by the FMOH in collaboration with Pathfider1. The service was introduced in 2009as a single-visit approach to cervical cancer prevention integrated into a comprehensive care package for people living with HIV at 14 Hospitals The service was subsequently initiated in eleven additional health facilities (clinics of the Family Guidance Association of Ethiopia (FGAE), military hospitals, and some other facilities) making the service available in a total of 25 health institutions (2).

1.2. STATEMENT OF THE PROBLEM

Cervical cancer in Ethiopia was reported to be the second leading cancer diagnosis (after breast cancer) among adult women with an estimated 7,095 new cases and 4,732 deaths in 2012 (13). Routine access to cervical cancer screening was not available and treatment for precancerous cervical lesions did not exist in Ethiopia until implementation of the Addis Tesfa Project in 2009(13).

In Ethiopia, the current estimate indicates that every year 7095 women are diagnosed with cervical cancer and 4732 die from the disease, study showed that only 0.6% Women Age of 18-69 years were screened every 3 years (15).

Studies show that in most developed countries on average, a practice of cervical cancer screening was 23%, which is low and in Ethiopia it is 0.6% (14, 1 5, and 17). Most studies show that practice of screening is guided by knowledge of cervical cancer and screening (6). The study in north Ethiopia shows that among the participants who have knowledge about cervical cancer screening, only 14.7% of them practiced cervical cancer screening (17).

A lack of trust in quality of services has emerged as a key challenge for implementing the VIA screening and cryotherapy treatment (18). In Peru and Uganda the acceptance of women in precancerous cervical lesion procedure was low because the instrument were not properly cleaned or might spread infection or even cause cancer and the instrument have a lot of infection and cause many disease also it believed that fear, shame, or embarrassment were barrier to screening (18).

In certain conditions in which both VIA and cryotherapy are not performed at the same time in which they are linked by referral system, patient dropout is very high (19). Study done in India indicates that VIA is performed at Public Health center(PHC) and followed by referral to Community Health Center(CHC) for further diagnosis and treatments, which results in high dropout rate of 32% and whereas at facility where both VIA and cryotherapy was performed at the same time shows low dropout rate of 0.4%(19).

In India the most common complaint after screening was vaginal discharge (12%), a burning sensation in the vagina was experienced by some of the women (5.8%), these complaints were mild and short-lasting in majority of cases (20). The most common reasons for dissatisfaction with screening were discomfort during or after screening, long waiting time and failure to get treatment for other medical problems (21). In Tanzania, of the 188 Women who had been treated with cryotherapy, only 37(19.7%) returned for a 1-year follow up visit and in Madagascar only one Women had returned for follow up visit (21).

In the presence of high risk for acquiring cervical cancer among HIV patients, awareness and acceptance of the screening is low. In Boston, of eligible women for screening, about 53.0 % had not undergone screening (22). In Kenya, teaching and referral hospital, the self-Reported Screening up take was 17 .5 %(25). About half (56.2 %) of HIV positive Nigerian women were aware of cervical cancer (23). In same country, only one in every ten (9.4 %) of HIV positive women were screened for cervical cancer (24).

In Addis Ababa, Ethiopian women had very low awareness of cervical cancer and the etiology of cervical cancer was thought to be due to breaching social taboos or undertaking unacceptable behaviors (25). As a result, the perceived benefit of modern treatment is very low (25).

A study done in Ethiopia; on the Willingness and Acceptance of cervical cancer screening among HIV positive women indicates ; only a quarter (24.8%) of them accepted the test, one third (34.2%) of the participants knew cervical cancer and two third (62.7%) were willing for the test(26). The refusal is as a result of assuming time consuming of the test, fear of the test result and anticipated high cost (26). Although cervical cancer is a leading cause of cancer related morbidity and mortality among women in Ethiopia , its screening coverage as part of HIV care was low, only covers less than 1 % due to lack of national screening program(26).

1.3. Rationale of the study

In the context of cervical cancer screening, the acceptability and safety of the new test and the women's level of satisfaction with the service delivery provisions largely determine the success of the program. The present study aims to obtain such information from a VIA based cervical screening and cryotherapy treatment.

Although the growing number of cervical cancer cases in Ethiopia is apparent, still there is gap in acceptance of screening practice. Considering the increasing pattern of the disease, low practice of screening and high prevalence of risk factors, the need for cervical cancer prevention program is evident. Data from primary health care facilities are also scarce to see the problem for better intervention.

The views of Ethiopian women regarding the VIA/VILI cervical cancer screening method and cryotherapy treatment have not been systematically evaluated and in most of the health facility the treatment services were not provided at spot as the SAT approach recommends after screening if the VIA result is positive immediate cryotherapy treatment should follow. The aim of the present study is to assess the acceptability of VIA/VILI and cryotherapy, to determine the reasons why women might not be satisfied by screening method and to assess the experience of women who underwent the screening and treatment service. Several health care providers indicated that a large number of patients are refusing screening when offered, but refusal rates and reasons for not being screened were not been documented.

The findings from this study provide the necessary information to fill this gap, particularly for the primary care system strengthening, to tackle this growing public health problem and to inform implementation of the "see and treat" strategy in Ethiopia. In addition, the study shall give insight and serve as base line data for researchers and for planning of other intervention activities like; health education and promotion regarding cervical cancer care activities.

2. LITERATURE REVIEW

2.1. Human papilloma virus infection

Almost all of cervical cancer is due to HPV infection, a virus transmitted through sexual contact. There are a number of subtypes of HPV that can cause cervical cancer, but the predominant subtypes are 16 and18 (27). HPV is a group of more than 150 related viruses. Each HPV virus in this large group is given a number which is designated as its HPV type. HPV is named for the warts (papilloma's) some HPV types can cause. Some other HPV types can lead to cancer, especially cervical cancer the main cause of cervical cancer is the human papillomavirus (HPV). HPVs are a group of more than 100 related viruses. More than 30 subtypes are genital-area specific (27).

There are more than 100 different types of HPVs, of which HPV-16 and 18 are more aggressive and prone to cause lesions; together they contribute to 70 % of all cervical cancer cases (28). According to data from cancer registries in developing countries, 80-90% of confirmed cervical cases occur among women aged ≥35. Incidence increases around ages of 35-40 and reaches a maximum in women in their 50-60s (29).

Most women get infected with HPV at least once in their lifetime. Usually women contract HPV during adolescence with peak infection coinciding with the onset of sexual activity (29). Most HPV infections occur without any symptoms and go away without any treatment over the course of a few months to a few years (29).

Human papilloma virus (HPV), which is mostly acquired by sexual intercourse, is a necessary cause of cervical cancer, but HPV is not a sufficient cause and other cofactors are necessary for progression from cervical HPV infection to cancer (29). From different studies the following cofactors were identified: tobacco smoking, high parity, long-term hormonal contraceptive use, micronutrients deficiency and co infection with HIV or other STIs, including herpes simplex virus type-2 and Chlamydia trachomatis (30).

In low-income countries like Ethiopia, cervical cancer is a leading cause of cancer related deaths among women (31). In an analysis of more than a million women with normal cytology, authors found that although the prevalence of HPV types varied across countries, types 16, 18, 31, 52, and 58 were consistently among the 10 most common in all regions (31).

The most common HPV types found, in order of decreasing prevalence, were HPV 16 (57 %), 18 (16 %), 58 (4.7 %), 33 (4.6 %), 45 (4.5 %), 31, 52, and 35(31).

2.2. Burden of HPV Infection:

Genital human papillomavirus (HPV) infection is one of the most commonly diagnosed sexually transmitted infections world-wide (32). Over the last two decades, research has established a strong causal link between specific types of HPV infection and cancer, particularly cervical, anal, vulvar/vaginal, penile, and oropharyngeal cancer (32).

The worldwide prevalence of infection with human papillomavirus (HPV) in women without cervical abnormalities is 11-12% with higher rates in sub-Saharan Africa (24%), Eastern Europe (21%) and Latin America (16%) (33).The two most prevalent types are HPV16 (3.2%) and HPV18 (1.4%). HPV infection has been identified as a definite human carcinogen for six types of cancers: cervix, penis, vulva, vagina, anus and oropharynx (including the base of the tongue and tonsils) (30). Estimates of the incidence of these cancers for 2008 due to HPV infection have been calculated globally. Of the estimated 12.7 million cancers occurring in 2008, 610,000 (Population Attributable Fraction [PAF]=4.8%) could be attributed to HPV infection. The PAF varies substantially by geographic region and level of development, increasing to 6.9% in less developed regions of the world, 14.2% in sub-Saharan Africa and 15.5% in India, compared with 2.1% in more developed regions, 1.6% in Northern America and 1.2% in Australia/New Zealand (33).

Study in urban Nigerian women indicates, the prevalence of HPV infection was 37%, with a significant inverse linear association between age and the prevalence of HPV infections (34). This prevalence was approximately 4 times higher in women aged 18 – 30 years compared to women who were older than 45 years and younger women were more likely to have carcinogenic HPV types (34).

In sub-Saharan Africa, 34.8 new cases of cervical cancer are diagnosed per 100 000 women annually, and 22.5 per 100 000 women die from the disease (10). These figures compare with 6.6 and 2.5 per 100 000 women, respectively, in North America (10). The drastic differences can be explained by lack of access to effective screening and to services that facilitate early detection and treatment (10).

In Ethiopia cervical carcinoma is the most frequent cancer in women. HPV infection is a prerequisite for this disease. However, to date there have been no data on human papilloma virus (HPV) prevalence in Ethiopia (37). Outpatients attending Attat Hospital in rural Ethiopia were examined for the presence of HPV infection, of 185 women 30 (15.9%) were found to be HPV positive,13.2% were HPV high risk positive, 5.8% were low risk positive, and 3.2% low and high risk positive. HPV high risk positivity was more frequently seen in younger women. Of 101 women < 30 years, 18 (17.8%) tested HPV high risk positive, compared to 7 (8.0%) out of 88 women >30 years (37).

2.3. Magnitude of cervical cancer:

Cancer of the cervix is the second most common cancer among women worldwide, with about 500 000 new patients' diagnosed and over 250 000 deaths every year (4). It is a major cause of morbidity and mortality among women in resource-poor settings, especially in Africa. The majority of cancers (over 80%) in sub-Saharan Africa are detected in late stages, predominantly due to lack of information about cervical cancer and prevention services (4).

The incidence of cervical cancer varies widely among countries with world age-standardized rates ranging from <1 to >50 per 100 000 (39). Cervical cancer is the leading cause of cancer-related death among women in Eastern, Western and Middle Africa; Central America; South-Central Asia and Melanesia (38). The highest incidence rate is observed in Guinea, with 6.5% of women developing cervical cancer before the age of 75 years, India is the country with the highest disease frequency with 134 000 cases and 73 000 deaths. Cervical cancer, more than the other major cancers, affects women <45 years (38).

Analysis of population based surveys in 57 countries indicates that coverage of cervical cancer screening in developing countries is on average 19%, compared to 63% in developed countries, and ranges from 1% in Bangladesh to 73% in Brazil (39). In a large number of countries the majority of women never have pelvic exam. This proportion is largest in Malawi, Ethiopia, and Bangladesh, where more than 90% of women report that they have never had a pelvic exam. (39).

India also has the highest age standardized incidence of cervical cancer in South Asia with22%, compared to 19.2% in Bangladesh, 13% in Sri Lanka, and 2.8% in Iran (9). In 2008, 12,200 USA women were diagnosed with invasive cervical cancer and 4,018 died from it, which accounted for approximately 2% of all new cancer cases and deaths among women (9).

In sub-Saharan Africa, with the highest incidence and mortality rates of cervical cancer. 34.8 new cases of cervical cancer are diagnosed per 100 000 women annually, and 22.5 per 100 000 women die from the disease (14). These figures compare with 6.6 and 2.5 per 100 000 women, respectively, in North America (15). The drastic differences can be explained by lack of access to effective screening and to services that facilitate early detection and treatment (14).

In Ethiopia cervical cancer is the second common cancer and it is the second leading cause of mortality with 4732 death annually following breast cancer (6). Health facility data compiled by Tikur Anbesa Specialized Referral Hospital from 1996-2008 showed that 30.3% of all cancers diagnosed in the hospital were cervical cancer (4). The estimated coverage of cytology-based cervical cancer screening in Ethiopia is 1.6% in urban settings and 0.4% in rural areas (4).

2.4. Cervical cancer screening practice:

Cervical cancer screening dramatically reduces the risk of developing cervical cancer. Study done in south Eastern Nigeria shows, the level of awareness of cervical screening was 447(52.8 %), while 59(7.1 %) among those ever had the test (40). The major sources of information about cervical smear were hospital /health facilities (31.3%) and friends (30.9%)(40).The most common reasons given for not doing the test were lack of awareness 390(46.1%),no need for it 106(12.5%) and fear of a bad result 98(11.6%)(40).

In south Africa, cervical cancer screening program was Evaluated among 611 women of whom only 6% knew all and 65% knew any one of the risk factors of cervical cancer, whereas less than half (49%) of them knew that Pap smear is used for prevention of cervical cancer. Only 43% of the respondents received information on Pap smear from health care workers. Among all the respondents only 18% (95% CI, 15-21) had ever Pap smear test (41).

In India of the 809 women studied, only 6.9% had undergone screening (42). One third of the population was desirous of undergoing screening test but had not done it due to various factors

(42). Those factors related to knowledge (51.4%) such as no symptoms, not being aware of Pap test, not necessary, That was followed by resource factors (15.1%) like no time, no money, and psychosocial factors (10.2%) included lack of interest, and fear of procedure (42).

A qualitative study done on Somali women in Camden, London indicates; Knowledge about the purpose of cervical screening was limited among Somali women (43). There was also a lack of understanding of risk factors for cervical cancer, and many of the women held fatalistic attitudes, associated with the idea of 'God's will', about this cancer and other aspects of health. Another culturally specific barrier was embarrassment associated with female circumcision, i.e. female genital mutilation. Other barriers suggested by the participants were: lack of knowledge about the need for cervical screening, practical problems, such as appointment times and childcare needs, language difficulties, fear of the test and negative past experiences (43).

Every woman has the right to be screened for cervical cancer at least once in her lifetime (10). Ethiopia aims to screen at least 80% of women in the target population over a defined period of time (4). Based on the population census, the 2014 projected estimate of women aged 30 to

49 years comprises of approximately 8.9% of the total population of 93 million, yielding an estimate of 8.4million women who would need to be screened to achieve 80% coverage (4).

In Ethiopia, a study showed that the magnitude of the cervical cancer screening practice is very low among nurse health professionals (43). A total of 225 female nurses participated in the study (44). The magnitude of cervical cancer screening practice among those nurses was 10.7%, within the past five years of the survey. Attitude and work place of the respondents were significantly associated with a history of cervical cancer screening practices with an adjusted odds ratio (AOR) of 3.023, 95% CI (1.134–8.059), and 3.424, 95% CI (1.080–10.853), respectively(44).

Study done in Addis Ababa Ethiopia on Knowledge Attitude and Practice of cervical Cancer and Screening among Reproductive health Service Clients, indicates that the overall knowledge of cervical cancer screening was 27% and 56% of participants had positive attitude towards cervical cancer screening(6). The overall practice of cervical cancer screening was 3.5 %(6).

2.5. Cervical cancer prevention and control:

Cervical cancer prevention and control approach is made up of several key components, ranging from advocacy, communication and social mobilization, Primary prevention and Secondary prevention in promoting cervical cancer prevention (45).

The goal of primary prevention is to prevent infection by reducing or eliminating exposure to cancer-causing factors. Primary prevention of cervical cancer includes, delay of intercourse, condom use, monogamy, and HPV vaccines (13).

Secondary prevention (screening/testing with precancerous treatment): Screening involves checking for disease when there are no symptoms. Progression of precancerous conditions to cervical cancer is slow; therefore, screening has the potential to detect abnormal conditions before cancer develops. Screening tests for cervical cancer include conventional or liquid-based cytology (Pap smear), HPV DNA testing, and VIA with or without Lugol's Iodine (VILI) (13).

2.5.1. HPV vaccine:

Currently, there are two types of HPV vaccines: the bivalent vaccine (Cervarix), which protects mainly against HPV genotypes 16 and 18, and the quadrivalent vaccine (Gardasil), which protects against genotypes 6, 11, 16 and 18. Those two vaccines have been evaluated in large clinical trials and proven to prevent the two most important high-risk HPV types—genotypes 16 and 18—which are known to cause up to 70% of cervical cancers. Those vaccines also provide cross-protection against other oncogenic HPV genotypes (4).

Generally, adolescent girls of age 9 – 13 years are the current target for HPV vaccinations. Delivering HPV vaccine to those target groups requires a systematic approach such as school based, health facility based, outreach or a combination of either structures (46).

So far, HPV immunization has not been introduced in the public sector in Ethiopia,however, the country is in an active phase of introducing the HPV vaccine as a demonstration phases which eventually will be launched nationwide (4).

2.5.2 Screening

Screening is a public health intervention used on a population at risk, or target population. Screening is not undertaken to diagnose a disease, but to identify individuals with a high probability of having or of developing a disease (4).There are three types of cervical cancer tests. Those are: 1. Cytology: conventional (Pap smear) and liquid-based; 2. HPV DNA test; 3. Visual inspection: with acetic acid (VIA) or Lugol's iodine (VILI).

2.5.2.1. Cytology

Conventional Pap smear

In the Pap smear test, a sample of cells is taken from the transformation zone of the cervix using an extended-tip wooden spatula or brush; using a cotton swab is no longer recommended. The entire transformation zone should be sampled since this is where almost all high-grade lesions develop and the sample is then smeared on to a glass slide and immediately fixed with a solution to preserve the cells and the slide is sent to a cytology laboratory under the best conditions(4). In high-income countries or research settings, conventional cytology can detect up to 84% of pre-cancer and cancer. However, under poor conditions its sensitivity can be as low as 38%. The specificity of the test is usually over 90 %(4).

Liquid-based cytology (LBC)

This is refinement of conventional cytology and is increasingly used in high-resource settings. Instead of smearing cervical cells on a slide, the provider transfers the specimen from a brush to a preservative solution (52).

2.5.2.2. HPV DNA-based screening methods

New screening procedures are based on the detection of high-risk HPVDNA in vaginal or cervical smears. A sample of cells is collected from the cervix or vagina using a swab or small brush, and placed in a small container with a preservative solution(4). Since 80% or more of patients with cervical neoplasia are infected with high-risk HPV, particularly types 16, 18, 31 and 33, the prospect gained momentum of identifying these high-risk HPV DNA strains as markers for cervical neoplasia and HPV DNA testing often is recommended for use in women aged 30 years and older(47). The sensitivity of HPV DNA testing, probably between 60 and 70%, has not been adequately determined, but seems to be higher than that of the Pap smear (47).

2.5.2.3. Visual methods:

Two visual methods are available: Visual inspection with acetic acid (VIA); Visual inspection with Lugol's iodine (VILI) (4). VIA involves naked-eye inspection (i.e., without magnification) of the cervix to detect abnormalities after applying a dilute solution of acetic acid, which is commonly found in household vinegar, The acetic acid interacts with diseased cells, causing epithelial lesions to turn white. This reaction is referred to as an "acetowhite" change (48). When vinegar is applied to abnormal cervical tissue, it temporarily turns white (aceto-white) allowing the provider to make an immediate assessment of a positive (abnormal) or negative (normal) result. If iodine is applied to the cervix, precancerous and cancerous lesions appear well-defied, thick, and mustard or saffron-yellow in color, while squamous epithelium stains brown or black, and columnar epithelium retains its normal pink color (4). VIA has been shown to have an average sensitivity for detection of precancer and cancer of almost 77%, and a range of 56% to 94%.The specificity ranges from 74% to 94% with an average of 86%, which is WHO recommendation(4).

The following are VIA Eligibility criteria for age and frequency of cervical cancer screening which include; Women who are 30-45 years old and not menopausal are eligible for the VIA test. HIV-positive and HIV-negative women are eligible to be tested with VIA; the screening interval (frequency) should not be less than 5 years (and not less than 10 years, if using an HPV tests (48).

2.5.3. Treatment of Precancerous Lesions

2.5.3.1. Cryotherapy

Cryotherapy is a procedure that is used to remove abnormal cervical tissue from the cervix and promotes the growth of new healthy cells on the cervix (48).Cryotherapy does not require hospitalization, anesthesia, or premedication and can be completed in less than 30 minutes and it does not have a long-term impact on women's fertility or pregnancy outcomes (49). Eligibility criteria for Cryotherapy should be offered to a woman if an acetowhite lesion is observed during the VIA test and she meets criteria (11).

2.5.3.2. Loop Electrosurgical Excision Procedure (LEEP)

LEEP is the removal of abnormal areas from the cervix using a thin heated wire. LEEP aims to remove both the lesion and the entire transformation zone (45). It serves as a double purpose: it treats the lesion, and at the same time, produces a specimen for pathological examination. It is successful in eradicating precancerous lesion in more than 90% of cases (45).

2.5.3.3. Conization (Cone Biopsy*)*

Conization is both a diagnostic and treatment tool used to detect and treat abnormalities of the cervix (49). It is a procedure that is usually performed after a precancerous condition is found on cervical biopsy. It also may be performed if there is an abnormality detected on Pap test or if the result of cervical biopsy and coloscopy do not adequately explain the result of abnormal Pap test (50). Conization is the removal of a cone-shaped area from the cervix, including portions of the outer cervix (ectocervix) and inner cervix (endo cervix). Excision can be performed with a scalpel (cold knife conization), laser, or electrosurgical loop. Cold-knife conization (also called "cone biopsy") involves removing a large area of the cervix with a scalpel, and is usually done in the operating room under general or regional (spinal or epidural) anesthesia. Conization is recommended for the treatment of lesions that cannot be treated with cryotherapy (large or unknown extent of lesion) and unclear type of cervical abnormality to rule out invasive cervical cancer as it allows taking tissue for biopsy to confirm the diagnosis (53).

2.6. Acceptance of Cervical cancer screening by see and treat approach among women;

Recent studies have demonstrated that visual inspection with acetic acid (VIA) is an alternative sensitive screening method and it is cheap and non-invasive, and can be done in a low-level health facility, like a health center, more importantly, VIA provides instant results, and those eligible for treatment can receive treatment of the precancerous lesions using cryotherapy on the same day and in the same health facility. This "see and treat" method ensures adherence to treatment soon after diagnosis, hence, stemming the problem of failing to honour patient referrals (54, 55).Visual Inspection with Acetic acid (VIA), based on the ability of health care personnel to detect aceto-white areas on the transformation zone of the cervix, is currently being evaluated as an alternative to the Pap test. Recent studies have demonstrated that Visual Inspection with Acetic acid (VIA) is an alternative sensitive screening method (53). It is cheap and non-invasive, and can be done in a low level health facility like a health center (55).

More importantly, VIA provides instant results, and those eligible for treatment can receive treatment of the precancerous lesions using cryotherapy on the same day and in the same health facility (55).

Cryotherapy as a method of treatment for precancerous lesions is effective (56) and easier to implement than other treatment modalities; such as Loop Electrosurgical Excision Procedure (LEEP) and cone biopsy. Furthermore, it has additional advantages, including the fact that it is affordable; there is no need for complicated equipment (although a supply of electricity is needed); and it can be done by less specialized personnel and thus can be implemented in a Primary Health Centre (PHC) setting (58).

In Uganda a study was done to assess the acceptability of cervical screening, using VIA on 384 participants (57). Of the 229 women who agreed to undergo screening by VIA/VILI, 209 (91.3%) were willing to recommend the service to other women, while 223 (97.4%) stated that they would undergo VIA/VILI again if the need arose (57). Education level showed a significant association with screening uptake (P=0.007). In all, 155 women declined screening. Reasons for refusal included fears about privacy, fear of pain or discomfort, and worry about the test results (57). In the presence of high risk for acquiring cervical cancer among HIV patients, awareness and acceptance of the screening is low. In Boston, of eligible women for screening about 53.0 % had not undergone screening (58). In Kenya Kisumu teaching and referral hospital the self-reported screening up take among women age of 18– 49 year old was 17.5% (23). About half of (56.2 %) of HIV positive Nigerian women were aware of cervical cancer (60). In the same country, only one in every ten (9.4 %) of HIV positive women were screened for cervical cancer (60)

A study done in India shows, in the population based setup, VIA was performed at PHC (public health center) level followed by referral to CHC (community health center) for further diagnosis & treatment. This was result in the high dropout rate of 32.32%. This can be overcome if facilities for colposcopy and cryotherapy can be made available at the site of primary screening (20). Study done in Dares Salaam, Tanzania, on determinants of acceptance of cervical cancer screening, on Women aged 35–44 and women aged 45–59 had increased ORs of 3.52 and 7.09, respectively, for accepting screening (60). Increased accepting rates were also found among single women (OR 2.43) and among women who attended primary or secondary school (ORs of

1.81 and 1.94). Women who had 0–2 children were also more prone to accept screening in comparison with women who had five or more children (OR 3.21). Knowledge of cervical cancer and awareness of the existing screening program were also associated with increased acceptance rates (ORs of 5.90 and 4.20) (60).

VIA is better than a Pap test since women do not have to wait or come back for their results. Moreover, lower cost and immediate receiving of the results are two key benefits of the approach, Thus, VIA and cryotherapy can be provided at lower level health facilities, provided there is access to a referral facility. The availability of both VIA and cryotherapy at the Primary Health Centre (PHC) level and establishment of referral and follow-up systems will be critical in order to reduce the number of test-positive women lost to follow up(19).

In Ethiopia the Addis Tesfa (New Hope) project screened women with HIV through visual inspection of the cervix with acetic acid wash (VIA) shows, that almost all (99%) of the 16,632 women with HIV counseled about the single-visit approach were screened with VIA during the study period; 1,656 (10%) of them tested VIA positive (VIA+) for precancerous lesions (61).

Among those who tested VIA+ and were thus eligible for cryotherapy, 1,481 (97%) received cryotherapy treatment, but only 80 (63%) women eligible for LEEP actually received the treatment(62). The Health Facility Assessment (HFA) results showed frequent staff turnover, some shortage of essential supplies, and rooms that were judged by providers to be too small for delivery of cervical cancer prevention services (62).

The study in Ethiopia done on willingness and acceptance of cervical cancer screening among women living with HIV/AIDS indicates that both willingness and acceptability were low (26).One third (34.2 %) of participants knew cervical cancer and two third (62.7 %) were willing for the test, though only a quarter (24.8 %) accepted the test. The independent variables significantly associated with acceptance of screening were educational level, source of information, awareness for the test and preventability of the disease (26).

2.7. Knowledge of Women on cervical cancer screening.

Women willing to participate in screening had a high cognitive level with regard to common knowledge about cervical cancer. In China a study done on 7929 women showed that, most of the women recognized that cervical cancer is curable if detected early (80.8%) and most knew that it could be prevented by having fewer sexual partners (80.7%), maintaining sexual hygiene (90.3%), and eating more fruits and vegetables (78.0%)(65). Only 40.6% of the respondents knew the early stage of cervical cancer and Many of the participants knew that HPV could be transmitted sexually (53.4%), but the relationship between HPV infection and cervical cancer was poorly understood (3.0%) (63).

In southeast Nigeria, knowledge of Cervical cancer awareness and cervical screening indicates that; awareness of cervical cancer (37.5%), its preventable nature (31.9%), cervical screening (25%) and screening centers (20.8%) were generally low and screening uptake (0.6%) was abnormally low(64). Lack of awareness, non-availability of screening centers locally, cost and time were the main reasons indicated by respondents for not being screened. Overall, 62.5% of all respondents indicated willingness to be screened (64).

In Gahanna, knowledge of cervical cancer and Cervical Cancer Screening among College Students indicates that prior pap screening rate was 12.0%(68). Women were unaware of local screening initiatives and only 7.9% were aware of the link between HPV and cervical cancer (65).The most prevalent barriers were lack of awareness that the purpose of pap screening is to diagnose cancer, concerns about what others may think, and lack of information about how to obtain screening services. Women perceived the benefits of screening (65).

Study done in Ethiopia among Addis Ababa public health care workers shows the Overall knowledge surrounding cervical cancer was high, although awareness of etiology and risk factors was low among nurses and midwives (66). Providers had no experience performing cervical cancer screening on a routine basis with < 40% having performed any type of cervical cancer screening. Reported barriers to performing screening were lack of training (52%) and resources (53%) (66). A cross-sectional survey conducted in Gondar Town, Northwest Ethiopia on a total of 633 women aged 15 years and above, on cervical cancer indicates; about 47.5% of the respondents did not know whether there are risk factors for cervical cancer or not and 17 (2.7%) stated that there is no risk factor for cervical cancer(17). One hundred eighteen (18.8%) of the

study participants were unable to mention a risk factor although they said that cervical cancer has a risk factor. In general, 195 (31.0%) of them were able to identify at least one risk factor for cervical cancer. STI and early onset of sexual activity were specific risk factors mentioned by 132(21.0%) and 103 (16.4%) of the respondents respectively. When asked about the symptoms of cervical cancer, 249 (39.6%) of the respondents did not know any symptom. Four hundred two (63.9%) of the respondents knew that cervical cancer can be prevented. Regular medical checkup (screening) was mentioned by 345 (54.8%) of the respondents as a helpful prevention measure. Four hundred sixteen (66.1%) of the respondents also knew that cervical cancer can be treated and 332 (52.8%) agreed that cervical cancer can be cured if detected early. According to that study, only 13.7% of women had heard about Pap smear (17). A facility based cross sectional study conducted in public health centers in Addis Ababa, Ethiopia; showed that overall knowledge of cervical cancer to be 43.8% and knowledge of cervical cancer screening was 27%, but the overall practice of cervical cancer screening was 3.5%. Over all, the study shows that more than half of the participants were not knowledgeable of cervical cancer and screening (6). However; they had positive attitude as well as cervical cancer screening practice was very low (6).

2.8. Ethiopian Experience in Cervical Cancer screening using see and treat approach:

Visual Inspection with Acetic Acid (VIA) is an evidence-based and affordable alternative approach for cervical cancer screening in low-resource settings. Studies have reported VIA sensitivity for detecting precancerous lesions to be comparable to or greater than cervical cytology, while requiring fewer resources and feasible to carry out in low level health facilities (13).

In addition, VIA provides immediate results, thus promoting linkage of screening with treatment. This “see and treat” method ensures adherence to treatment soon after diagnosis, and reduces the risk that women will get lost in the referral system (11). VIA combined with cryotherapy (freezing of precancerous lesions of the cervix), ideally in a single visit approach (SVA), is an effective and efficient strategy (11).

Cryotherapy as a method of treatment for precancerous lesions is effective and easier to implement than other treatment modalities such as loop electrosurgical excision procedure

(LEEP), loop excision of the transformation zone (LETZ) and cone biopsy (12). Cryotherapy is affordable; there is no need for complicated equipment and it can be done by midlevel health personnel and thus can be implemented in a primary health-care (PHC) setting (12). Secondary prevention of cervical cancer through screening and treatment of precancerous lesions of the cervix is associated with an overall reduction of morbidity and mortality due to cancer of cervix (12).

2.9. Patient Referral system

Referral is a process in which a health worker at one level of the health system, having insufficient resources (e.g., drugs, equipment, skills) to manage a clinical condition, seeks the assistance of a better or differently resourced facility at the same or higher level to assist in or take over the management of a client's case. Functional referral system is very important to assure continuity and improved quality of care at all levels of health care system(67).Especially for developing countries, strengthening such systems is important to use the available scarce resources. In these countries, the most common reasons for referral are lack of qualified personnel and equipment and studies done in different developing countries indicate that more than one quarter of the patients were not satisfied with the referral system .Especially delay in finding immediate support after referred was the reason for this dissatisfaction (67).

In Ethiopia national cervical cancer guide line, it is recommended that a referral form has a second page or tear-away section that facilitates feed back to the referring health facility. These national referral forms should be available at all levels of health facilities and service providers should be made aware of the existing referral forms. Cases to be referred include: Suspicious for cancer, VIA-positive, but not eligible for cryotherapy (for LEEP), For second opinion, a complication encountered following treatment, as a result, the FMOH has prepared standard referral slip to be used by all health facilities to increase utilization of health care facilities at all levels, to assure continuity and improved quality of care at all levels and to strengthen communication within the healthcare system (4).

2.10. Conceptual frame work of Acceptability of cervical cancer screening and treatment service.

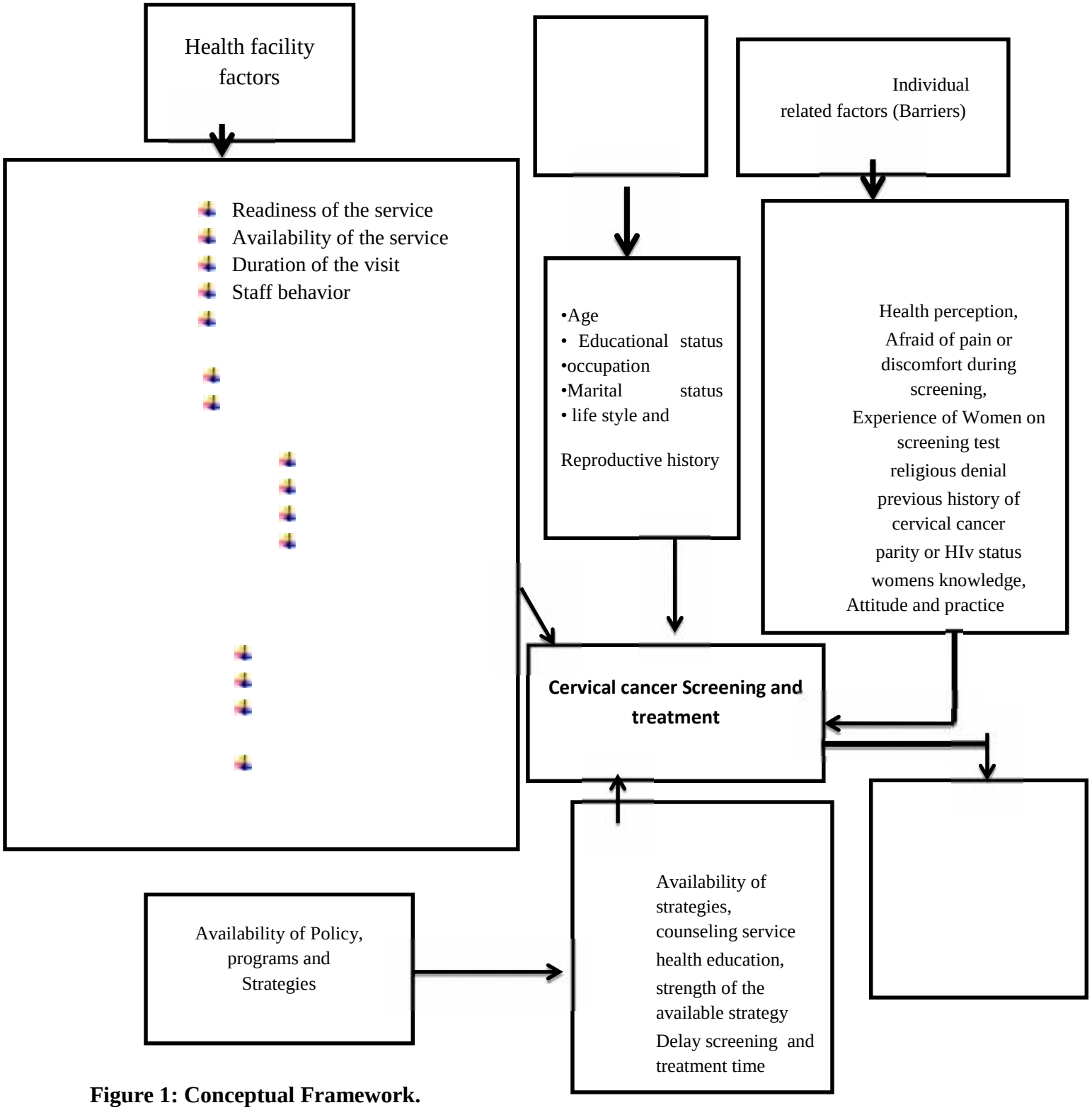


Figure 1: Conceptual Framework.

3. Objective:

3.1. General objective:

To assess the acceptability of cervical cancer screening and treatment of precancerous cervical lesions and determinant factors using See and Treat approachamong Women of reproductive age group in selected health centers in Addis Ababa.

3.2. Specific objective:

- To assess woman's acceptability of cervical cancer screening and treatment service after undergoing the procedure in selected public health centers in Addis Ababa.
- To assess the experience from women who underwent the cervical cancer screening and treatment service in selected public health centers of Addis Ababa.
- To identify factors associated with acceptance of cervical cancer screening using SAT approach among Women of reproductive age in public health centers of Addis Ababa.

4. Methods

4.1. Study area and period:

The study was conducted in Addis Ababa, the Capital City of Ethiopia. Administratively, the City is divided into ten sub-cities. There are 48 hospitals and more than80 health centers in Addis Ababa. Of the 48 hospitals, 13 are public. Among 13 public hospitals, Tikur Anibessa Specialized Hospital is the only one which gives cervical cancer treatment and St.pauls Hospital Millennium Medical College and Zewditu hospitals are the one which give cervical cancer screening and cervical precancerous treatment previously (4).

Recently, cervical cancer screening by VIA and cryotherapy treatment providing Health centers and Hospitals in the City are; around 16 health centers, 2 NGO Clinics and 5 public Hospitals. Totally Cervical Cancer Screening and treatment providing Health Centers and Hospitals in Addis Ababa city are around 23 Health facilities (Annex V II). The number of health worker who were trained on SAT approach in each health centers were a maximum of 3 and minimum of 2 individuals who were providing maternal and reproductive health service (4). The study was conducted from February 2017 – October 2017 in Addis Ababa, Ethiopia at 14 Health facilities.

4.2. Study design:

A facility based cross sectional study was conducted using both quantitative and qualitative methods.

4.3. Population

4.3.1. Source population:

All women in the age range of 30-49 years old who were reproductive health service clients residing in Addis Ababa and using public health center were included as source population.

4.3.2. Study population:

All women who underwent screening service using See and Treat (SAT) approach and those who have positive test result and were referred for cryotherapy treatment in Addis Ababa public health facilities were considered as study population.

4.4. Inclusion and exclusion criteria

4.4.1. Inclusion criteria:

- ✓ All women who had VIA screening and Cryotherapy treatment (SAT) in age of 30-49 years old
- ✓ Women with a positive test result and underwent cryotherapy treatment service.
- ✓ Women who were not pregnant.
- ✓ Women with previous history of treatment of pre-cancerous lesions and comes for checkup.

4.4.2. Exclusion criteria:

- ✓ Women who were very ill and those who were on cancer stage.
- ✓ Women who were on menstruation cycle.
- ✓ Women below age of 30 and above 49 years old.

4.5. Sample size determination and sampling procedure

4.5.1. Sample size:

Sample size was calculated using single population proportion formula to calculate the sample size assuming the proportion of those women who satisfied with their decision to be tested that is those women who accept cervical cancer screening test**.** Adding non-response rate of 10% and 95% confidence level, 5% margin of error (d), and the power of 80%. The sample size was determined as follows;

4.5.2. Assumptions:

Since the main outcome variable is acceptability of VIA we searched similar findings from elsewhere. Therefore; proportion of acceptance of cervical cancer screening among HIV women found to be 24.8% from study done in Addis Ababa, (26). ThisProportion was used because the cervical cancer is mostly seen and common in patients who had HIV. This could be similar population group for the source population.

Sample size (n) = $K*(Z\alpha/2)^2_* P *(1- P)/d^2$

Where n = sample size required

α = Level of significance (set at 0.05)

$z_{\sim/2}$ = a standardized normal test with the consideration of ~ level of significant. Usually, it is equivalent with 1.96 with the standard error of 5% (corresponding to 95% confidence interval)

p= Expected proportion of women who practiced of cervical cancer screening.

d= Degree of precision 5%

k = design factor, which is a measuring of the clustering of the characteristic being measures (k =1 when you are undertaking a simple random survey or systematic survey, but k =2 when you are undertaking a cluster survey as there are two stages in the sample design). Therefore, due to the selection criteria order of Sub city to select health facility where applied only one stage. The design factor of this study undertaken where K=1 stage sampling which indicates no design effects.

The sample size for Acceptance towards cervical cancer screening by taking all the above consideration into account, the size was:

$n= (1.96)^2 * 0.248(1-0.248)/ (0.05)^2$

$= 0.71644/0.0025$

$= 286.67 \sim 287$

Adding a non-response rate of 10%;

The total sample size was: 287 + 10 % (287) = 287 +28.7

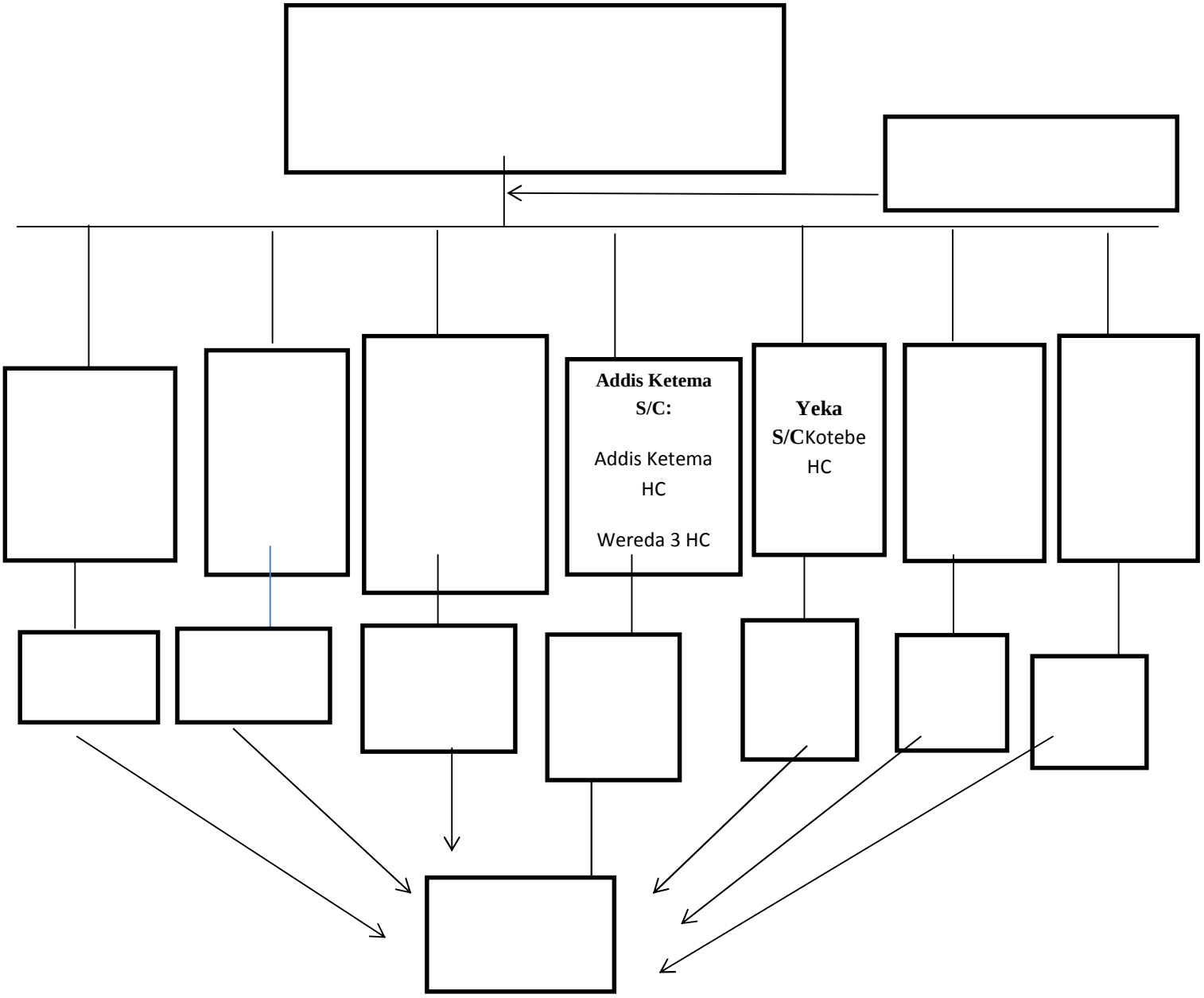
= 316 Women participant

Therefore; total Sample size of three hundred sixteen (316) Women of reproductive health participants was required**.**

4.5.3. Sampling procedure:

A single stage simple random sampling technique was utilized, from 23 Health facility of Addis Ababa which performs cervical cancer screening and treatment service by using SAT approach. 14 health centers providing cervical cancer screening and treatment service were selected directly using simple random sampling technique. Proportional allocation was assigned to the respective health centers based on the previous two month Health center patient follow up on cervical cancer screening service. First, all Health centers in the city was identified by name. next, the calculated sample size (316) was distributed to each Health center and finally, study subjects selected using systematic sampling technique by taking every other day as interval based on average daily flow from the respective health centers, and include every eligible clients coming to the facility in the selected days of the week till the required sample size was achieved. The data collection was facilitated by Health professionals such as Nurses and Health officer those who have experience about the procedure.

Figure 2: Schematic presentation of the sampling procedure, Addis Ababa, Ethiopia, 2017.



4.6. Method of Data collection procedures:

4.6.1. Quantitative part:

Data were collected using a pre-tested structured interview based questionnaire that was adopted from similar studies in India, Kenya, Uganda, Tanzania, Ghana and Morocco (20, 23, 54, 57, 59, and 69) which was initially developed in English and then translated into the local language (Amharic) was used for this study (Annex VI).Then backward translation from Amharic to English was performed to verify the accuracy of the translation. The questionnaire was designed based on the study objectives, taking help from the previous literature and studies available on the topic added with content specific questions.

The questionnaire included, socio demographic characteristics, Participant's reproductive data among the study subjects, Participants life style and medical conditions, factor affecting acceptance of having cervical cancer screening service by see and treat approach,acceptance about cervical cancer screening and treatment service, satisfaction levels among women attending the cervical cancer screening program, experiences of women regarding cervical cancer screening service, knowledge about cervical cancer and the screening service, attitude towards cervical cancer screening and the practice of women about cervical cancer screening using VIA and cryotherapy treatment.

Data were collected by 14 trained nurses and health officers who had smart mobile phones. Data collectors were those who deliver reproductive health service but who were not working in the See and Treat delivering room at the time of data collection. The data collectors and supervisors were trained before the actual data collection regarding the approach, objective of the study, ethical issue and how the data were collected using Mobile Phone by software called ***CSentrymobile application***. The questionnaire were prepared in English and translated to Amharic and entered into mobile software. All completed questionnaires were checked by supervisors for completeness and consistency at field level.

4.6.2. Measurement (Quantitative)

Acceptability of cervical cancer screening and treatment service was measured after the women underwent the See and treat approach (SAT)) using women's Satisfaction on service delivered (54).Specific indicators measured were: **Safety:** (1) proportion experiencing severe bleeding, shock, or any condition requiring hospitalization during treatment; (2) proportion with post-cryotherapy complications; and (3) proportion returning for a problem visit. **Acceptability:** (1) proportion satisfied with their initial visit decisions; (2) proportion whose partner supported their treatment decisions; and (3) proportion who successfully adhered to home-care instructions. **Feasibility**: (1) recruitment sources; (2) cryotherapy rate; (3) proportion of cryotherapy postponed versus provided immediately; and (4) VIA test-positive rate 1-year post-cryotherapy.

For each item, women were asked to rate their level of satisfaction on a four-point response scale: 1, unsatisfied; 2, undecided; 3, satisfied; and 4, complete satisfaction(54,69).A participant's answer was considered to be correct if she gave one of the expected answer participant's answer was considered to be correct if she gave one of the expected answers. The responses related to the performance of the screening services which indicates Satisfaction is reverted in **dichotomous** (satisfied or unsatisfied) manner based on the **likert scale average** mean cut off point. Those respondents who scored above average mean cut of point were categorized as "satisfied" by cervical cancer screening and treatment service and also accepted the approach; those women who scored below average mean cut of point were categorized as "unsatisfied" by the service and also not sufficiently accepted the approach.

4.6.3. Qualitative part:

For qualitative data, purposive sampling method was used to select the care provider and concerning bodies for the in-depth interview in selected health institutions. The total number of interviewees was determined by the level of saturation. One in-depth interview was held from selected health centers. The participants were chosen from the selected health centers among health workers who provide the service and have knowledge of screening and treatment service by using see and treat (SAT) approach in the health services. Using purposive sampling method, a total of 12 participants were considered. The participants were told about the objective of the study and appointed for another day for actual interview with principal investigator.

The interview was tape recorded, and translated and transcribed in the same day of the interview. Participants were encouraged to speak and express their ideas freely and describe their experience with cases related to the topic.

4.7. Study variables

4.7.1. Dependent variables:

Acceptance of cervical cancer screening service by see and treat (SAT) approach

- The measures of the Acceptances of cervical cancer screening service were **Satisfaction level** of Women after they underwent the screening service. Women were asked to rate their level of satisfaction on a four-point response scale: 1, unsatisfied; 2, undecided; 3, satisfied; and 4, complete satisfaction. The screened women were asked about any discomfort/pain they felt during the tests and also about any physical problem they felt during the week following the tests.

4.7.2. Independent variables:

1. socio demographic Characteristics and Reproductive History of the Women:

- Age
- Sex
- Women educational status
- Occupation
- Religion
- Residence
- History of pregnancy
- Age at start of sexual intercourse
- Oral contraceptive use

2. Life style and medical conditions of the Women:

- History of Smoking
- History of drinking
- History of sexual transmitted disease
- Partner with STI
- Having many partners

3. Factors affecting acceptance of having cervical cancer screening service:

- Distance from health facility
- Delay of screening
- Cost of test
- Privacy
- Waiting time
- Behavior of care provider
- Staff behavior
- Setup of examination room
- Health education

4. Satisfaction levels among women:

- Availability of the program
- Counseling service
- Time taken for screening and treatment service
- Recommend the testing procedure to friend or relative

5. Experiences of women regarding cervical cancer screening service by SAT:

- Pain/discomfort during screening and treatment service
- Problem during and post screening and treatment service.
- Information about the service
- Who care provider they prefer more etc..

6. Knowledge, Attitude and Practice of Women who underwent the service

- heard about cervical cancer
- Symptom of cervical cancer
- Treatment and screening option
- Screening schedule etc.
- Practice of cervical cancer screening
- Attitude of cervical cancer screening

4.8. Data quality management:

To ensure the validity of the study, appropriate size and representative type of study units were selected and maximum effort was made to minimize chances of bias using the following strategies: Data collection facilitators and a supervisor were trained. The study was pre tested by testing 10% of the total sample size which was 32. It was done before a week of the actual data collection period and the study was conducted in two hospitals prior to data collection process and based on the pre-test, questions was revised and edited with necessary modification and modern methods of data collection type was applied using ***CSEntry mobile and computer Software*** using Smart mobile phone were applied for quantitative data.

Training was given for the facilitators and supervisor before the pretest. The training was focused on the objective of the study, the contents of the questionnaire, on issue related to the confidentiality of the response, the rights of the respondents and how to use the software. The trainees were given the responsibility to handle the whole process of the data collection. The data was collected after informed consent is obtained from respondents

In the other direction, for qualitative data, the analyses of the qualitative data were based on the transcripts of taped interviews of Amharic to English. Discussion guides were developed in English and translated into Amharic and back translated into English to ensure its consistency. Data collector was familiar with the local culture, with fluency of the local languages and experience on qualitative research method. Research assistants were trained on the data collection process. Every day at the end of data collection, debriefing was made to complete missing data.

4.9. Data Processing and Analysis:

4.9.1. Quantitative:

The data collection instruments were coded and checked before entry. After the data were collected, the following activities on data processing have been carried out. The raw data were converted into suitable form for analysis and interpretation. This was achieved through sequences of activities including editing, coding, entry, and tabulation. The data were entered using **CSentry Software** and after it was cleaned it was exported to SPSS version 21 and STATA Verssion14 for further analysis by the Principal investigator. The objectives were to check the completeness, internal consistency and appropriateness of the answers to each of the questions. Finally, an analysis progress was developed using STATA and Statistical Package for Social Science (SPSS). The methods that have been used for the quantitative analysis were descriptive statistics (such as average, frequency, graphs, Chart, percentages etc.), bivariate and multivariate analysis. Under the bivariate analysis cases, this study has applied odds ratio (OR) with their 95% confidence intervals. Power of 80% was used for variable having

P-value<0.2 for test of significance in order to run multiple logistic regression to declare association which relies on results from the association between cervical cancer screening and acceptance of the service in relation to relevant variables. The multivariate analysis was based on the Conceptual framework presented above and used logistic regressionmodels. The logistic model was used when the dependent variable is dichotomous, i.e., it is taking the value 0 or 1, as the characteristics of women when we look at women who were satisfied versus those that were not satisfied.Hosmer-lemeshow goodness of fit was used to check the goodness of the applied models.

4.9.2. Qualitative:

The tape recorded data were transcribed to Amharic and translated to English. The analysis has tried to address the following subjects: understanding of the concept of acceptance of cervical cancer screening service among patients, the roles of; health facility, media, government, practices of women and health-education behavior in explaining cervical cancer screening service; and the influence of knowledge, attitude and beliefs, and other related factors on women acceptance of cervical cancer screening.

The qualitative data from the interviews with health professionals were analyzed using thematic analysis. We started the analysis by making a list of all topics, one column per data document, placing all column on the same sheet. We highlighted similar topics among our dataand cut and paste similar items. Then we developed theme, categories and code. Units of relevant meaning were examined line-by-line and coded by the first author and the coding results were discussed by the researcher part of the analysis we developed four categories that illustrated the meaning of the findings. Overall joint interpretation of the qualitative and quantitative information reflects the meaning of the data.

4.10. Operational definitions:

Acceptability of the screening service: Those women who were **satisfied** by cervical cancer screening service and decided to be screened by VIA and recommend testing to friend or relative and score above median score of 2 for the cervical cancer screening satisfaction assessing questions.

Acceptability Among women treated: Those women who are **satisfied** by cervical cancer treatment and with their decision to be treated by cryotherapy and recommend testing to friend or relative and score above median score of 2 for the cervical cancer treatment satisfaction assessing questions.

Previous experiences: Are general experiences of women in healthcare settings as well as experiences with cervical cancer screening and treatment service previously.

Women's experiences of cervical screening: is womens' Previous; screening experiences, previous positive and negative result, willingness to re-attend screening service, quality of gynaecological examinations, health center referral linkage and breaches of confidentiality

Negative experiences: Are womens' decisions which prevented them from re-attending screening, even if they had multiple positive previous experiences,

Challenges in cervical cancer screening: Practical barriers for accessing screening, which are often, associated with womens' life circumstances and the health center resources available for screening.

Knowledgeable of cervical cancer: Those respondents who score above median score of 3 for the cervical cancer screening knowledge assessing questions.

Not knowledgeable of cervical cancer: Those respondents who score below median score of 3 for the cervical cancer knowledge assessing questions.

Not Knowledgeable of cervical cancer screening: Those respondents who score below median score of 3 for the cervical cancer screening knowledge assessing questions.

Good practice: Those respondents who were screened for cervical cancer more than once

4.11. Ethical consideration:

Ethical clearance was obtained from the Research Ethics Committee of School of Public Health in Addis Ababa University and from the Addis Ababa Health Bureau of Addis Ababa Public Health Research and Emergency Management Core Process. A written consent was secured from the study subjects through informed consent. The participants were assured that the information they give is used only for the purpose of the study and confidentiality was maintained. The participants had long and short term benefits. The long term benefit was that, the result of the study would be useful to expand and implement screening programs which could be very beneficially for the participants and also for the overall community. The short term benefit would be that the study participants get an insight about cervical cancer and screening during the data collection period. There was no serious harm to the participants, though having conversation about cervical cancer might cause anxiety. To handle such issues the data collectors assured participants well about the objective of the study.

4.12. Dissemination of results:

After completion of the research, the results of the study were presented to the Addis Ababa University School of Public Health as partial fulfillment of Master Degree in Public Health. The findings of the research were submitted to the concerned bodies like School of Public Health, Addis Ababa public Health Research and Emergency core process, FGAE and Addis Ababa Health Bureau, etc. Efforts were also be made to disseminate the findings through presentation to conferences, seminars and publication.

5. Results

5.1. Socio demographic characteristics of the study population

From a total of 316 women who participated in the study 313 gave exit interviews with response rate of 99%, while 3 participants age 24, 26 and 29 declined to undergo the interviews, all were under age 30.

As depicted in Table1 below, the age distribution of the respondents shows that, 138 (44.1 %) of them were in the age range 30–34 years. The mean ages of the participants were 35.73 ± (SD4.78) years with minimum of 30 and maximum of 49 years.

Two hundred forty three ((77.6%) of the study subjects were orthodox Christian followers. Of the study subjects 257 (82.1%) were married. Regarding educational status 36 (11.5%) were not able to read and write.the respondents history of pregnancy indicates, 115(36.7%) of the participants had 1-2 pregnancies, 149(47.6%) had 3-5 pregnancies. Majority of participants 130 (39.4%) were house wives. As presented in table 1, almost all of the participants residence were Urban dwellers 300(95.8%), while 13(4.2%) were rural residents.

Table 1.Distribution of the study population by selected socio demographic characteristics, Addis Ababa, Ethiopia, 2017.

V**ariables**	Frequency	Percent
Age (years)		
30-34	138	44.1
35-39	103	32.9
40-44	50	16.0
45-49	22	7.0
Religion		
Orthodox	243	77.6
Muslim	49	15.7
Protestant	21	6.7
Marital status		
Unmarried	19	6.1
Married	257	82.1
Divorced	27	8.6
Widowed	9	2.9
Separated	1	0.3
Education		
Not able to read and write	36	11.5
Primary education (Grade 1-8)	109	34.8
Secondary education (Grade 9-12)	93	29.7
Diploma	55	17.6
Degree and above	20	6.4
Occupation		
House wife	130	41.5
Private employee	83	26.5
Government employee	69	22.0
Daily laborer	10	3.2
Merchant	18	5.8
Student	1	.3
Other	2	.6
No. of pregnancies		
1- 2	115	36.7
3-5	149	47.6
>5	21	6.7
No pregnancies	28	8.9
Residence area		
Urban	300	95.8
Rural	13	4.2

5.2. Womens' acceptability of cervical cancer screening and treatment in selected Health facilities.

As presented in Table 2 below, with respect to acceptability of the cervical cancer screening and treatment service of single-visit approach among women,239(76.4%) were satisfied and 49(15.7%) were completely satisfied by their decision. When we see the testing experience of care provider on screening service among women after they underwent the procedure, 223(71.2) had good experience. Whereas the counseling service of pretest and posttest experience indicates, 140(44.7%) were informed enough about pretest experiences, 104(33.2%) were informed enough about posttest experience. Furthermore from those women who underwent screening and treatment procedure, 259(82.7%) of them recommend the testing experience to friends or relatives which indicates a good progress of acceptance of the testing procedure.

Two hundred forty nine (79.6%) of the participant said VIA testing experience were good. Feeling of cryotherapy treatment experience among those client who underwent the treatment indicates, 59(66.3%) had good feeling. Time taken for VIA screening shows, 57(18.2%) said less than 5minute, 209(66.8%) said 5-25 minute and whereas the time taken for cryotherapy were almost all 84(94.3%) of them said 5-25 minute. The time gap seen between the two procedure of VIA and Cryotherapy might be due to the screening and treatment service were not given as SAT approach recommends, there is a patient who were underwent the treatment service next day after their VIA result were positive. The mean time taken for VIA screening was $16\pm(12.5S$) minute and the mean time taken for cryotherapy treatment was $4\pm(8S$)minute as the participants were predicted.The space and equipment for implementing the treatment and screening service shows almost more than half, 175(55.9%) said there is sufficient space and equipment; the result indicates that around 44% of the participant recommendsstill there is a need for improvement. Satisfaction of VIA screening coupled with immediate cryotherapy treatment indicates, 8(2.6%) of the women were not satisfied, 6(1.9%) were undecided, whereas 264(84.3%) were satisfied, and 35(11.2%) were completely satisfied.

Rates of adherence to home –care requirements were impressively high, from those women who underwent treatment option by cryotherapy, 81(91%) of them can convince their husband or partner to post pone intercourse for one month. More than half 54(66.7%) of the participant convince their partner to abstain from sexual intercourse as depicted in Table 2 below.

Table2: Acceptance about cervical cancer screening service by see and treat approach among Women who underwent screening test. Addis Ababa, Ethiopia, 2017.

V**ariables**	**Frequency**	**Percent**
Satisfied by their decision to be tested		
Unsatisfied	19	6.1
Undecided	3	1.0
satisfied but suggest service improvement	3	1
satisfied	239	76.4
completely satisfied	49	15.7
Testing experience of care provider		
Good	223	71.2
Better	74	23.6
Better than expected	16	5.1
Counseling service		
Informed enough about pretest experience	140	44.7
Informed enough about posttest experience	104	33.2
The counseling is not that much enough	69	22
Recommend the testing procedure to friend or relative		
Yes	259	82.7
No	54	17.3
VIA screening test experience		
Good	249	79.6
Better	53	16.9
Better than expected	11	3.5
Feeling of cryotherapy treatment experience		
Good	59	66.3
Better	26	29.2
Better than expected	4	4.5
Time taken for VIA screening		
<5minute	57	18.2
5minute – 25 minute	209	66.8
26minute- 45minute	34	10.9
46minute – 60 minute	13	4.2
Time taken for cryotherapy		
5minute – 25 minute	84	94.3
26minute- 45minute	4	4.5
46minute – 60 minute	1	1.2
Space and equipment availability		
There is sufficient space and equipment	175	55.9
There is a need for improvement	82	26.2
The space is over crowded	56	17.9
Satisfied by having cryotherapy at the same class with VIA		
Yes	52	80.5

No	61	19.5
Satisfied by VIA testing is coupled with immediate cryotherapy treatment		
unsatisfied	8	2.6
undecided	6	1.9
satisfied	264	84.3
completely satisfied	35	11.2
convince your Husband/partners to comply with post cryotherapy instruction to post pone inter course for 4 week		
Yes	81	91
No	8	9
How can you convince your Husband/partners		
I can convince my Husband/partners for 4 week abstinence	54	66.7
I can convince my Husband/partners to use condom if 4 week abstinence is unlike	26	32.1
I have a problem of convincing my Husband/partners to post pone inter course for 4 weeks	1	1.2

5.3. Satisfaction levels among women attending the cervical cancer screening program by see and treat (SAT) approach.

From 313 women who received screening and treatment procedure as illustrated in Table 3, Organization of the program were assessed by satisfaction on availability of screening program in health facility which indicates; 224(71.6%) were satisfied and 84(26.8%) were completely satisfied, whereas the idea of women on service provided indicates; 89(28.4%) of them said there is a need for improvement, 201(64.2%) satisfied and 23(7.3%) of them were completely satisfied by service provided respectively.

Quality of screening experience among participants were assessed by; rank of quality of the reception which indicates, 20(6.4%) moderate, 27(8.6%) good, 232(74.1%) very good and 34(10.9%) excellent quality of reception. Respect for privacy by staff which shows, 286(91.4%) of participant said there is a respect for privacy by staff.the duration of the visit at health facility indicates, very long among 17(5.4%), Long 31(9.9%), medium 131(41.9%) and short among 134(42.8%) participants.

The interaction of clients with medical staff were assessed in terms of; perception of clarity of information which indicates, 243(77.6%) of the participants were satisfied. Participant satisfaction level with information provided about VIA and Cryotherapy indicates, more than half, 181(57.8%) were satisfied, 128(40.9%) were unsatisfied. Participant idea on understanding of what the care provider said about service offered indicates, 273(87.2%) were understood what she or he said whereas the rest were not. The time allotted for counseling service indicates, enough among 174 (55.6%) participants. Participant satisfaction level by time allotted for result explanation shows; 219(70%) were satisfied and 48(15.3%) were completely satisfied. Satisfaction level among women by the action of care provider in convincing the fear feeling of participants indicates, 187(59.7%) were satisfied and 47(15%) were completely satisfied (Table3).

FacilityCharacteristicswere assessed in terms of;satisfaction of the participants by privacy level of examination room which indicates, 234(74.8) were satisfied and 43(13.7%) were completely satisfied. Participant satisfaction level by cleanliness of examination room and equipment, indicates, 237(75.7%) were satisfied (Table 3).

Table 3.Satisfaction levels among women attending the cervical cancer screening and treatment service, Addis Ababa, Ethiopia, 2017

V**ariables**	Frequency	**Percent**
Organization of program		
Satisfied by availability of screening program in health facility		
Unsatisfied		
Undecided	2	0.6
Satisfied	3	1
completely satisfied	224	71.6
Idea on service provided	84	26.8
There is a need for improvement		
Satisfied	89	28.4
completely satisfied	201	64.2
	23	7.3
Quality of screening experience		
Rank for quality of the reception		
Moderate	20	6.4
Good	27	8.6
Very good	232	74.1
Excellent	34	10.9
Respect for privacy by staff		
Yes	286	91.4
No	12	3.8
I don't know	15	4.8
Duration of the visit at the center		
Very long	17	5.4
Long	31	9.9
Medium	131	41.9
Short	134	42.8
Interaction with medical staff		
perception about the Clarity of information		
Unsatisfied		
Undecided	20	6.4
Satisfied	12	3.8
completely satisfied	243	77.6
	38	12.1

Satisfied with Information provided about service offered in the facility		
Yes	181	57.8
No	128	40.9
Undecided	4	1.3
Understand what the care provider Said about service offered		
Yes	273	87.2
No	40	12.8
Time allotted for counseling service		
Enough	174	55.6
Medium	95	30.4
More than enough	44	14.1
Satisfied with time allotted for result explanations		
Unsatisfied	37	11.8
Undecided	9	2.9
Satisfied	219	70
completely satisfied	48	15.3
Satisfied by care provider in convincing their fear feeling		
Unsatisfied	70	22.4
Undecided	9	2.9
Satisfied	187	59.7
completely satisfied	47	15
Facility characteristics		
Privacy level of the examination room		
Unsatisfied	21	6.7
Undecided	15	4.8
Satisfied	234	74.8
completely satisfied	43	13.7
satisfied with Cleanliness of examination room and equipment		
Unsatisfied	18	5.8
Undecided	58	18.5
Satisfied	237	75.7
Over all participant level of satisfaction		
Unsatisfied	166	53
Satisfied	147	47

5.3.1. Overall Satisfaction of cervical cancer screening and treatment procedure.

Question regarding satisfaction of acceptance, experience of screening and treatment option, as well as the level of satisfaction concerning, organization of the program, quality of screening service, interaction with medical staff and facility characteristics for cervical cancer screening and treatment procedure were scored and pulled together and the median score was computed to determine the overall satisfaction of the respondents. Respondents who scored above the median score were considered as satisfied. The Median score of satisfaction of cervical cancer screening in this case was 2.18 with maximum value 3 and minimum value 2. Based on this those who scored above 2.18 median value were considered as satisfied. Overall, in this study 147 (47%) participants were satisfied on cervical cancer screening which means 47% accepted cervical cancer screening and treatment option, whereas the rest 166(53%) were unsatisfied or did not accept the test procedure specific to this study. **Figure 3** below indicates the satisfaction level of Women who underwent cervical cancer screening and treatment service.

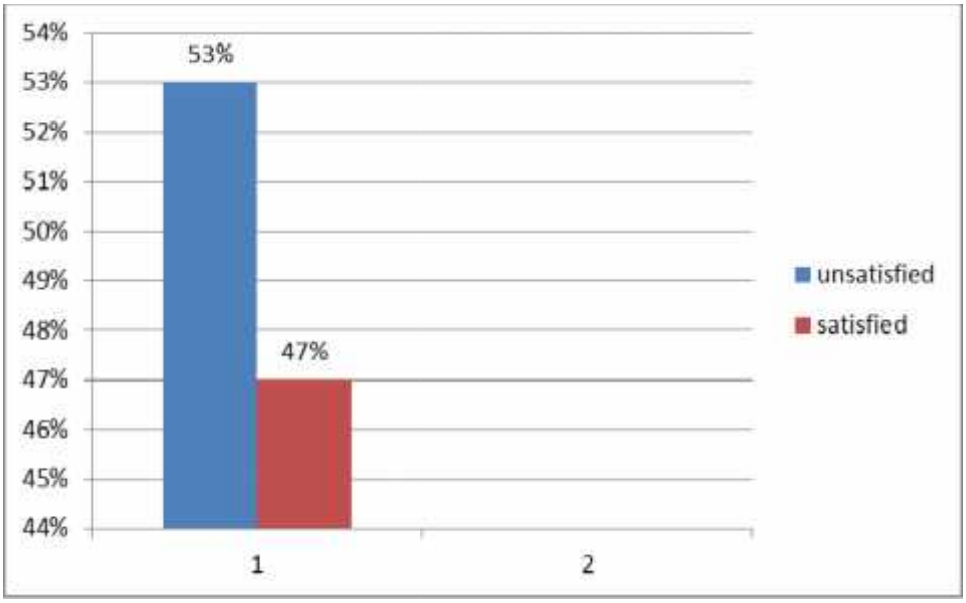


Figure 3: Satisfaction level of respondents regarding cervical cancer screening, Addis Ababa, Ethiopia, 2017.

5.3.2 Overall Satisfaction of cervical cancer screening and treatment across different variables:

As illustrated in Table 4 below, the Socio demographic status of the participants in relation to satisfaction of cervical cancer screening service shows that out of 147(47%) participant who were satisfied of cervical cancer screening service, 61(19.5%) were between 30-34 year age group, 50(16%) age of 35-39, and the rest, 27(8.6%) and 9(2.9%) were lies between age group of 40-44 and 45-49 respectively.Among the participant who were satisfied; marital status of the participants indicates, 123(39.3%) were married.When we categorize women who were satisfied, in terms of their occupational status, 53(16.9%) were house wife, 34(10.9%) employed, 43(13.7%) governmental employee.Educational status of women who were satisfied indicates, 12(3.8%) not able to read or write, 50(16%) were at primary school level, 49 (15.7%) Secondary school level and 36(11.5%) College or University in their educational status. Satisfaction of women by their religious back ground indicates, 114(36.4%) Orthodox Christian followers.\

Bivariate logistic regression shows; occupational status of being governmental employee by using hose wife as reference with, COR 2.402(1.32, 4.37), indicates an association with satisfaction of cervical cancer screening service (table 4 below).

Table 4: satisfaction of cervical cancer screening and treatment in relation to socio demographic status, life style and reproductive factors of respondents, *Addis Ababa Ethiopia*, 2017

Variables	Satisfaction		COR (95%C.I)
	satisfied	unsatisfied	
Socio- Demographic, life style and reproductive Factors			
Age			
30-34	61(19.5%	77(24.6%	.8397 (0.5032, 1.401)
35-39	50(16.0%)	53(16.9%)	1*
40-44	27(8.6%)	23(7.3%)	1.244(0.632,2.449)
45-49	9(2.9%)	13(4.2%)	0.733(0.288, 1.866)
Marital status			
Unmarried	7 (2.2%)	12 (3.8%)	1*
Married	123 (39.3%)	134 (42.8%)	1.57(0.6,4)
Divorced	12 (3.8%)	15 (4.8%)	1.37(0.4,4.6)
Widowed	9 (2.9%)	4 (1.3%)	2.14(0.43,10.73)
Separated		1(0.3%)	
Occupational status			
Hose wife	53(16.9%)	77(24%.6)	1*
Employed	34(10.9%)	49(15.7%)	1.008(0.575,1.765)
Governmental employee	43(13.7%)	26(8.3%)	2.402(1.32,4.37)**
Daily laborer	5(1.6%)	5(1.6%)	1.45(0.4007,5.267)
Merchant	11(3.5%)	7(2.2%)	2.28(0.831, 6.269)
Student		1(0.3%)	
Others	1(0.3%)	1(0.3%)	1.45(0 .088, 23.74)
Educational status			
Not able to read/write	12(3.8%)	24(7.7%)	1*
Primary school	50(16.0%)	59(18.8%)	1.694(0.770,3.73)
Secondary school	49 (15.7%)	44(14.1%)	2.22 (0.997, 4.97)
College/university	36(11.5%)	39(11.8%)	1.846 (0.8067,4.22)
Religion			
Orthodox Christian	114(36.4%)	129 (41.2%)	1*
Muslim	21 (6.7%)	28 (8.9%)	.848(0.456,1.576)
Protestant	12(3.8%)	9(2.9%)	1.50(0.613,3.71)

Figure 4 below shows Satisfaction of cervical cancer screening in relation to different variables among 147 participants who were satisfied and 166 who were unsatisfied about cervical cancer screening service. Among 160(51.3%) participant who were knowledgeable, 71(22.8%) were satisfied and 89(28.5%) were not satisfied and out of 152(48.7%) participant who were not knowledgeable about cervical cancer screening, 75(24%) were satisfied and 77(24.7%) were not satisfied. From 279(82.7%) participant who were willing to recommend the testing procedure to friends and relatives, 140(44.7%) were satisfied by their decision to be screened and the rest were not. Among 89(28.4%) study subject who underwent cryotherapy treatment after their VIA results were positive, 42(13.4%) were satisfied and 47(15%) were unsatisfied by their screening service; whereas from 224(71.6%) participants who underwent VIA screening service only 105(33.5%) where satisfied and the rest 119(38%) where unsatisfied. Among all respondents who got information about screening test from health worker, 62(19.7%) were satisfied and 49(15.5%) were unsatisfied. From those who used Media as a source of information 51(16.4%) were satisfied and 66 (21%) were unsatisfied.

Satisfaction of cervical cancer screening in relation to different variables

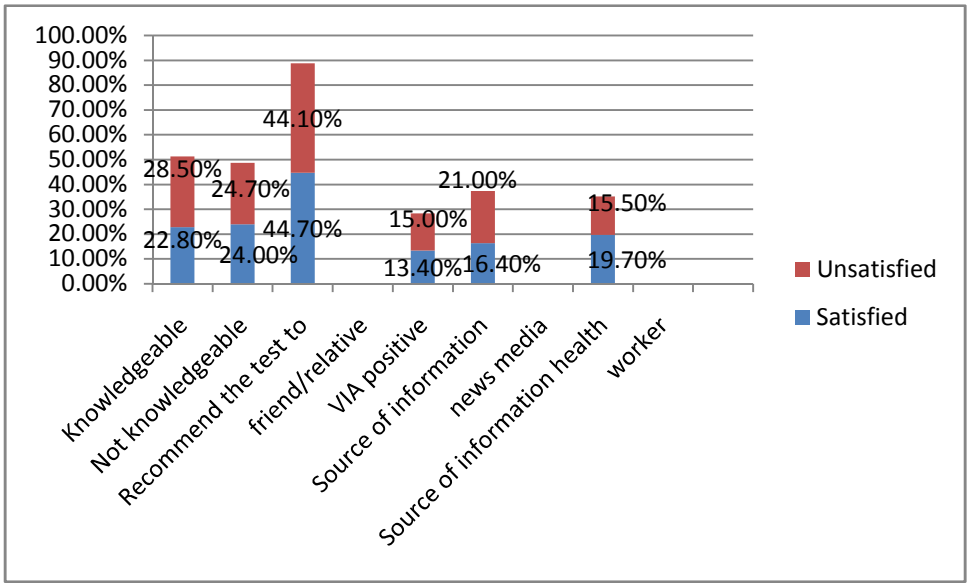


Figure 4, satisfaction of cervical cancer screening in relation to different variable, Addis Ababa, Ethiopia, 2017.

5.4. Experience from women who underwent cervical cancer screening and treatment option.

As indicated in Table 5below, at the time of screening with respect to safety of the service indicates, 55 (17.6%) experienced no pain or discomfort, 114(36.4%) women experienced slight discomfort, 130(41.5) experienced moderate pain. Exit interview were held for women who experienced test related problems; 7(2.2%) had severe bleeding, 11(3.5%) experienced shock, 24(7.7%) had foul smelling of vaginal discharge, among 82(26.2%) of women their condition required hospitalization during the screening and 189(60.4%) of participants did not experience any problem.

During post screening service; 45(14.4%) of the women experienced vaginal discharge, 20(6.4%) got vaginal bleeding, 94(30%) experienced vaginal burning.

As indicated in the Table 5 below, among participants who underwent screening and treatment services, 201(64.2%)got information about their condition before undergoing screening service,110(35.1%) did not get enough information while undergoing VIA screening and Cryotherapy treatment and 2 (0.6%) were unsure about procedure. about 223(71.2%) of the respondent did get information about their condition whereas 90(28.8%) of them did not get the information, 259(83%) of the participants felt embarrassed and 54(17%) of them were not. History of VIA positive results were observed among 37(11.8%) participants and 276(88.2%) did not have history of VIA positive results before and in contrast 89(28.4%) had VIA Positive result.

During VIA screening and cryotherapy treatment service, clients felt more comfortable 179(57.2%) if the nurse or doctor were female, 53(16.9%) male and 81(25.9%) were comfortable with both male and female. Under cervical screening and treatment by VIA and cryotherapy 125(39.9%) felt pain, 52(16.6%) felt no pain, whereas 136(43.5%) felt pain sometimes (*Table 5).*

Table 5; Experience from women during, VIA screening and cryotherapy treatment service in relation to different variables, Addis Ababa,Ethiopia,2017.

Variable	Frequency	Percent
Pain/discomfort During the Screening Test		
No pain/discomfort	55	17.6
Slight discomfort	114	36.4
Moderate pain	130	41.5
Severe pain	14	4.5
Test-related Problems after Screening		
severe bleeding	7	2.2
Shock	11	3.5
any condition requiring hospitalization	82	26.2
Foul Smelling of vaginal discharge	24	7.7
No problem	189	60.4
Experienced problem during post screening service		
Vaginal discharge	45	14.4
Vaginal bleeding	20	6.4
Vaginal burning	94	30.0
Others	11	3.5
No problem	143	45.7
Did you get enough information about cervical cancer Screening and treatment option before underwent the test.		
Yes	201	64.2
No	110	35.1
Unsure	2	0.6
Did you get enough information about your condition		
Yes	223	71.2
No	90	28.8
Feel embarrassed when undergoing a VIA screening and Cryotherapy treatment		
Yes	259	83
No	54	17
History of VIA positive result		
Yes	37	11.8
No	276	88.2
Did you got cryotherapy treatment		
Yes	89	28.4
No	224	71.6

Feel more comfortable during VIA screening and Cryotherapy treatment, if the nurse/doctor		
Female	179	57
Male	53	17
Female/Male	81	26
Feeling pain during VIA screening and Cryotherapy treatment		
Yes	125	39.9
No	52	16.6
Sometimes	136	43.5

5.5. Factors affecting cervical cancer screening using SAT approach amongwomen of reproductive age:

5.5.1. Cryotherapy outcomes (prevalence of VIA positive result)

As illustrated in table 6 below, 313 screened clients, 89 (28.4) were found to have VIA positive results, while 224(71.6%) had negative test results. There was no patient who had lesions suspicious for cancer. All 89(28.4) clients with positive VIA test results were eligible for cryotherapy and they were treated in the health facility where they were screened. Majority of the respondents 63(71%) did not received cryotherapy treatment immediately as their VIA test results were positive, whereas only 26(29%) offered immediate cryotherapy treatment service.

Table 6: VIA test result, among the study subjects, eligible for cryotherapy, Addis Ababa, Ethiopia, 2017.

Characteristics	Number (%)
VIA test result	
+ve	89 (28.4%)
-ve	224 (71.6 %)
Suspicious for cancer	0
Cryotherapy eligibility	
Eligible	89 (28.4%)
Ineligible	0
Received cryotherapy on the same day of VIA testing	
Yes	26(29%)
No	63(71%)

5.5.2. Factors affecting acceptance of cervical cancer screening service by see and treat approach among the study subjects:

As indicated in Table 7 below, among 313 participant who underwent screening service; 285(91.1%) of them were come from <5km distance from health facilities. Among all participants 125(39.9%) of them were satisfied by delay screening and planned to be screened in near future; but more than half 188(60.1%) of the respondents were not satisfied by delay screening.From those who were unsatisfied by delay screening;70(37.2%) recommends 3 to 6 month and 32(3.8%) of a participant recommends 2year – 3 year of a SAT approach. Cost of the screening and treatment service had no cost among 234(74.8%) participants (*Table 7).*

The privacy levels of pelvic examination were moderate to bad feeling among 46 (14.7%) clients. The waiting time at health facility were long among 34(10.9%), medium 139(44.4%) and short 140(44.7%). Among the participants 279(89.1%) were happy with staff behavior and 34(11%) were unhappy. Almost all 292(93%) participants were happy with care providers' behavior and the rest were unhappy. More than half of the participants 168(53.7%) were not get health education on screening service, whereas 145(46.3%) had got the education.149 (47.6%) of the clients were happy with set up of examination room, 56(17.9%) were unhappy with examination room and 108 (34.5%) of the participants were recommends there were no separate room for examination (*Table 7).*

Table 7; Factors affecting acceptance of cervical cancer screening service by see and treat approach among the study subjects, Addis Ababa, 2017.

V**ariables**	Frequency	percent
D**istance from health facility**		
<5km	285	91.1
≥5km	28	8.9
Satisfied by Delay screening and plan to be screened		
Yes	125	39.9
No	188	60.1
Unsatisfied with delay screening and treatment		
Which interval month/year you recommend		
<3month	39	20.7
3month – 6month	70	37.2
7month – 1 year	47	25
2 year - 3 year	32	17.1
Cost of the test		3.8
High	12	16.3
Medium	51	5.1
Low	16	74.8
No cost	234	
Privacy of pelvic examination		
Good filling	267	85.3
Moderate filling	30	9.6
Bad filling	16	5.1
Waiting time		
Long waiting time	34	10.9
Medium waiting time	139	44.4
Short waiting time	140	44.7
Staff behavior		
Un happy with staff behavior	34	11
Happy with staff behavior	279	89.1
Behavior of care provider		
Un happy with car provider	21	6.7
Happy with car provider	292	93.3
Health education on screening service		
No	168	53.7
Yes	145	46.3
Examination room		
Happy with set up	149	47.6
Unhappy with set up	56	17.9
No separate room for examination	108	34.5

5.5.3. Knowledge about cervical cancer screening, treatment, prevention and symptoms;

From all of the respondents, 238(76%) heard of cervical cancer screening and the rest 75(24%) never heard of cervical cancer screening. Among 238 respondents who heard about cervical cancer screening and treatment procedure 166(53%) said there were screening and treatment option for pre-cancerous cervical lesion and the rest were not (*Table 8).*

Of those who mention the screening and treatment option; 37(22.7%) mention VIA as screening method and 46(27.7%) mentioned cryotherapy as treatment option respectively.110 (66.3%) and 102(61.4%) of the respondents were not know the screening and treatment option respectively. Among those who said there is cervical cancer screening and treatment option, 32(10.2%) mention frequency for screening service were once every year, 17(5.4%) once every three year, 41(13.1%) mentioned once every five year and 76(24.3%) mentioned any other day for screening and the rest 147(47%) were not know the frequency of screening and treatment service (*Table 8).*

Regarding the age of screening, from those who heard of cervical screening service, 36(11.5%) replied that the Women of 30 years and above should screen,34(10.9%) any age but who are prostitute,31(9.9%) said elder women should undergo screening and 212(67.7%) were not know the age at which the screening were held. knowledge about cervical cancer symptom where assessed among all respondants,31(9.9%) said vaginal bleeding,14(4.5%) foul smelling of vaginal discharge,13(4.2%) post coital bleeding,4(1.3) painful coites,2(0.6%) post-menopausal bleeding,27(8.6%) abdominal pain, 21(6.7%) itching of the cervix and the rest 114(36.4%) were not know the symptom of cervical cancer (*Table 8).*

More than half of the participant 215(70%) replied that cervical cancer can be cured in its earliest stage. From those respondents who heard about cervical cancer screening;128(41%) replied the prevention method for cervical cancer were avoiding multiple sexual parteners,13(4.2%) avoiding human papilloma virus infection,28(9%) use Condom,2(0.64%) vaccination,15(4.8%) avoid unprotected sexual intercourse,21(6.7%) keeping personnel hygiene and 19(8.4%) do not know the prevention method. Among all respondents only 149(47.6%) of the participant knows as the screening and treatment service were free of charges (*Table 8).*

Table 8: Knowledge about cervical cancer screening, treatment, prevention and symptom, Addis Ababa, 2017.

V**ariable**	Frequency	Percent
Heard about cervical cancer screening before		
Yes	238	76
No	75	24
there is screening and treatment option for pre-cancerous cervical lesion		
Yes	166	53
No	57	18.2
Do not know	15	4.8
No response	75	24
What is type of screening option if 'YES'		
Herbal remedies	2	1.2
Surgery	15	9
Visual inspection by acetic acid(VIA)	37	22.3
Radiotherapy	2	1.2
Do not know	110	66.3
What is type of treatment option if 'YES'		
Herbal remedies	3	1.8
Surgery	14	8.4
Cryotherapy	46	27.7
Radiotherapy	1	0.6
Do not know	102	61.4
What isfrequency of cervical screening if 'YES'		
Once every year	32	10.2
Once every three years	17	5.4
Once every 5 years	41	13.1
Any other day	76	24.3
Do not know	147	47
Age of screening		
Women of 30 years and above	36	11.5
Prostitutes	34	10.9
Elderly women	31	9.9
Do not know	212	67.7

symptom of cervical cancer		
Vaginal bleeding	31	9.9
Foul smelling of Vaginal discharges	14	4.5
Post coital bleeding	13	4.2
Painful coitus	4	1.3
Post-menopausal bleeding	2	0.6
Abdominal pain	27	8.6
Itching of cervix	21	6.7
I do not know	114	36.4
No response	87	27.8
Cervical cancer can cured in earliest stage		
Yes	215	68.7
No	3	1
Do not know	89	28.4
No response	6	1.9
Prevention methods		
Avoid multiple sexual partners	128	41
Avoid Human papilloma virus infection	13	4.2
Use condoms	28	8.9
Vaccination	2	0.6
Avoid unprotected sexual intercourse	15	4.8
hygiene	21	6.7
Do not know	19	6.1
No response	87	27.8
How expensive do you think cancer of the cervix screening and treatment is in this country		
It is free of charge	149	47.6
It is reasonably priced	32	10.2
It is moderately expensive	19	6.1
It is very expensive	22	7
Don't know	16	5.1
No response	75	24

5.5.3.1. Over all knowledge of cervical cancer screening and treatment service.

Questions regarding knowledge about whether there is screening and treatment option for pre-cancerous cervical lesion or not, age of screening, type of screening, type of treatment, frequency of screening, weather cervical cancer can be cured at early stage if screened and weather the screening service is free of charges or not were scored and pulled together and the median score was computed to determine the overall cervical screening knowledge of respondents. Median score of cervical screening knowledge was 2.7 with maximum value 5 and minimum value 0. Those who score above median score were considered as Knowledgeable, Based on this overall 161 (51.4%) had knowledge on cervical cancer screening whereas the rest 152 (48.6%) had no knowledge. And from those 238 respondents who heard of cervical cancer screening, 129(41.3%) were found to be knowledgeable of cervical cancer screening and 109(34.8%) were not knowledgeable.

5.5.4. Sources of information about cervical cancer screening and treatment service.

Among 238 clients who had information about screening service; their source of information were;89(37.4%) were news media,22(9.2%) were brochures, posters, books and other printed materials,84(35.3%) were from health workers,19(8%) were from family,2(0.8%) were from religious ledears,3(1.3%) from techears,7(2.9%) from others source and 12(5%) were don't know the source of information. **Figure 5** below shows source of information of respondents regarding cervical cancer screening.

Source of information about cervical cancer screening.

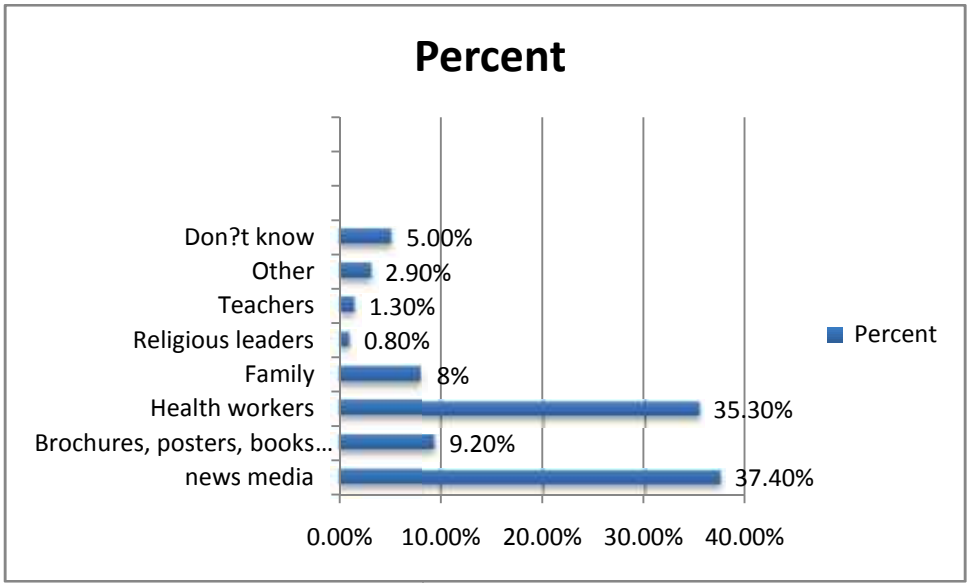


Figure 5: Source of information of respondents regarding cervical cancer screening and treatment service, Addis Ababa, Ethiopia, 2017.

5.5.5. Attitude towards cervical cancer and screening service.

There were eight questions that assess attitude of participant. Computing the eight questions of attitude questions median score value was obtained to classify respondents as positive and negative attitude towards cervical cancer screening service. Based on this both mean and median score of attitude of respondents were the same which is 2 with maximum value of 3 and minimum value of 1.based on this among all participant who underwent the screening service, 138(44.1%) had positive attitude and 175(55.9%) had negative attitude towards cervical cancer screening(*Table 9).*

From all the respondents 147(47%) strongly agreed that screening helps in prevention of carcinoma of cervix, 204(65.2%) strongly agreed cervical cancer screening and treatment should be available in all health center, 64(20.4%) of the respondent strongly agreed that cervical cancer is highly prevalent in our country and it is the leading cause of death, 70(22.4%) strongly agree that any reproductive age group of women can acquire cervical cancer. and 21(6.7%) strongly agreed that cervical cancer cannot be transmitted from one person to another(*Table 9).*

only 96(30.7%) participant strongly agreed that screening causes no harm to the clients, 185(59.1%) of the women strongly agreed that screening for pre-cancerous cervical lesion is not expensive, and 188(60.1%) of the women were strongly agreed that to undergo cervical cancer screening crevice if screening were not Causes any harm and free of cost (*Table 9).*

Table 9: The summarized response of participants for attitude questions regarding cervical cancer screening and treatment service Addis Ababa, 2017

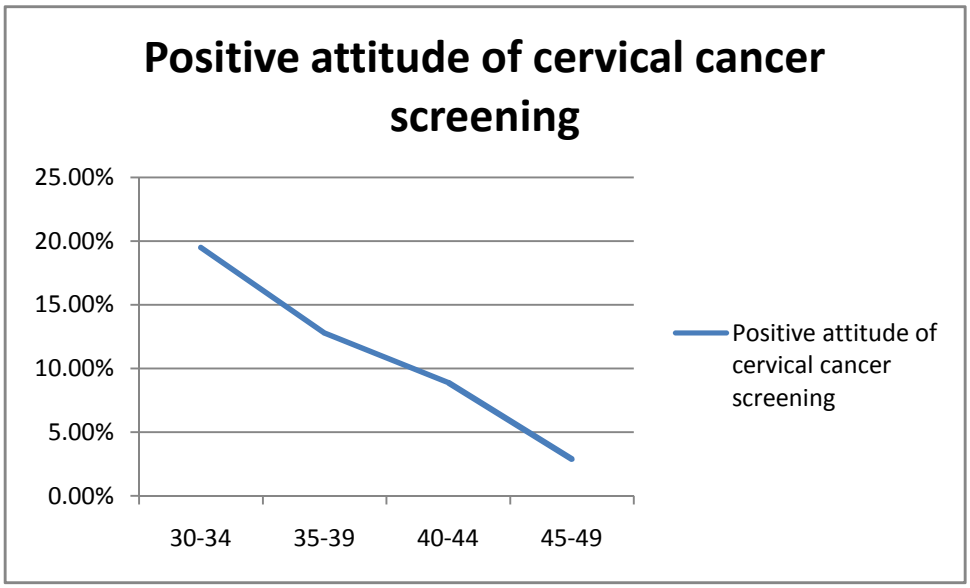
V**ariables**	Frequency	Percent
Screening helps in prevention of carcinoma of the cervix		
strongly agree	147	47
Agree	153	48.9
Uncertain	9	2.9
Dis agree	4	1.3
Cervical cancer screening and treatment service must be available in all health centers.		
strongly agree	204	65.2
Agree	104	33.2
Dis agree	2	0.6
Strongly disagree	3	1
Cervical cancer is highly prevalent in our country and it is the leading Couse of death among all cancer in Ethiopia		
strongly agree	64	20.4
Agree	113	36.1
Uncertain	81	25.9
Dis agree	49	15.7
Strongly disagree	6	1.9
Any reproductive age group (adult) women including you can acquire cervical cancer.		
strongly agree	70	22.4
Agree	189	60.4
Uncertain	28	8.9
Dis agree	20	6.4
Strongly disagree	6	1.9
Cervical cancer cannot be transmitted from one person to another		
strongly agree	21	6.7
Agree	56	17.9
Uncertain	60	19.2
Dis agree	162	51.8
Strongly disagree	14	4.5
Screening causes no harm to the client		
strongly agree	96	30.7
Agree	116	37.1
Uncertain	35	11.2
Dis agree	63	20.1
Strongly disagree	3	1

Screening for premalignant cervical lesions is not expensive		
strongly agree	185	59.1
Agree	72	23
Uncertain	22	7
Dis agree	29	9.3
Strongly disagree	5	1.6
If screening is free and causes no harm, will you screen		
strongly agree		
Agree	188	60.1
Uncertain	113	36.1
Dis agree	4	1.3
Strongly disagree	5	1.6
	3	1

5.5.5.1. Attitude of cervical cancer screening across socio demographic variables

From the total of 138 respondents who have positive attitude towards cervical cancer screening, 61 (19.5%) lay between the age group of 30-34, 40 (12.8%), 35-39, 28 (8.9%) 40-44, 9(2.9%), 45-49. The age pattern in relation to attitude shows that, generally as age group increases the attitude towards cervical cancer screenings were declining. Most of them who have positive attitude 111 (35.5%) were married and more than half 77 (24.6%) were House wife and 45(14.4%) were attended primary education. **Figure 6** below shows positive attitude of cervical cancer screening.

Figure 6: positive attitude of cervical cancer screening, Addis Ababa, 2017



5.5.6. Practice of cervical cancer screening.

Among 313 respondents of study participant 285(91%) were underwent reproductive health screening service before, out of 285 respondents cervical cancer screening service were done among 84(26.8%) respondents before this test. Of those who screened for cervical cancer, 66(21.1%) screened by VIA, 12(3.8%) Pap smear. Type of facility they underwent were, 18 (5.7%) screened in hospitals, 2 (0.6%) screened at private clinics and 65(20.8%) screened in health centers (*Table 10).*

Table 10: Practice of cervical cancer screening, Addis Ababa, 2017

Variable	Frequency	percent
Have you ever been screened for any reproductive health problem like cancer, HIV, STIs		
Yes	285	91.1
No	28	8.9
have you ever screened for cervical cancer before		
Yes	84	26.8
No	201	64.2
screening procedure they undergo		
VIA	66	21.1
Pap smear	12	3.8
Other specify	6	2.2
Facility they screened		
Hospital	18	5.7
Private	2	0.6
Health centers	64	20.8

5.5.6.1. Reason mentioned for not practicing screening test among study participants.

Respondents who had not underwent screening practice asked for their reasons why they were not screened. Among those 124 (39.6%) mentioned lack of information about the test, 34 (10.9%) I am health or no have sign and symptom,19(6.1%) fear of test result that they have cancer,18(5.8%) feel shay,8(2.6%),7(2.2%) said the test were not necessary,6(1.9%) the test may be pain full,6(1.9%) they do not have time,3(1%)replied that my husband would not agree to perform the test and 2(0.6%) of the participant said the test is expensive. **Figure 7** below indicates Reasons mentioned for not to screen among respondents who heard of cervical cancer Screening.

Reason mentioned for not practicing screening test among study participant

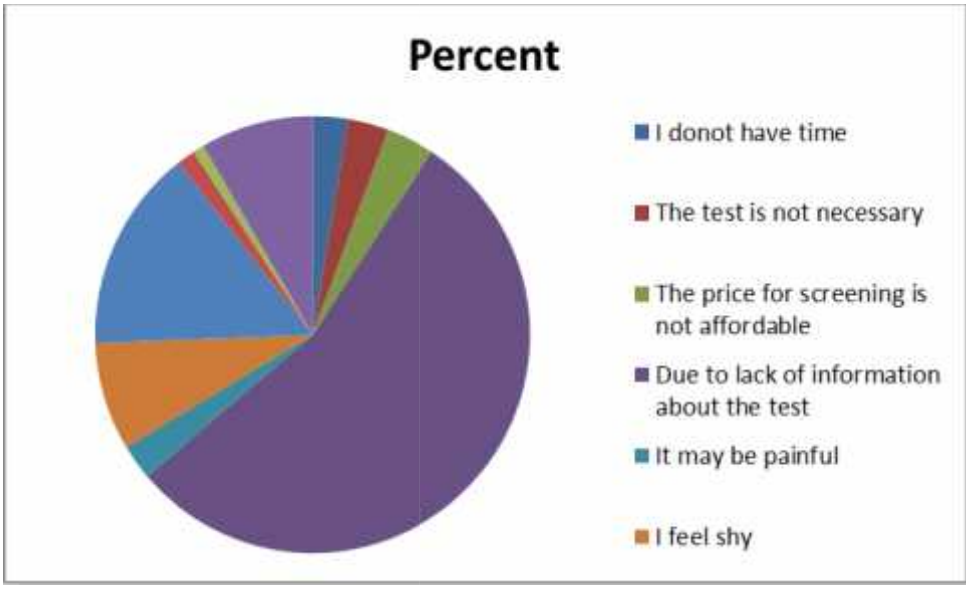


Figure 7. Reasons mentioned for not to screen among respondents who heard of cervical Screening, Addis Ababa, 2017

5.6. Factors associated with acceptance of cervical cancer screening and treatment service using SAT approach among study participants.

The previous section tells about the descriptive effect of Socio demographic characteristic of women, Acceptance about cervical cancer screening service by SAT, Satisfaction levels, Experience from women, Factor affecting acceptance of cervical cancer screening service, Cryotherapy outcomes (VIA positive result), Knowledge, Attitude and practice about cervical cancer screening and treatment service. For the identification of determinants of acceptance of cervical cancer screening and treatment service, here in the study considers a binary logistic regression. Based on the women's acceptance of cervical cancer screening and treatment results, the researcher primarily categorizes the dependent variables into a dummy format. That is, "0" and "1" category forms, meaning, the value "0", is assigned to whichever response indicates a lack or absence of the acceptance of service. In this case, "0" was used to code the answer "No" or "negative response" to the question such as 'satisfied or not satisfied' the value of "1" is used to indicate a "Yes" answer. A similar approach is also used when coding the independent variables. This binary logistic regression is carried out by taking into consideration the conceptual framework, shown in *Figure 1*, for assessing the relative effect of the explanatory variables over the dependent variable.

To avoid an excessive number of variability and unstable estimates in the subsequent model, only variables that have reached a **p-value less than 0.2** are taken into consideration in the subsequent analyses

The next step is running multiple logistic regression analyses based on the selected significant factors from binary logistic regression analysis. For the regressing of these factors, the researcher has used forwarded stepwise method, which is the procedure available in SPSS version21 in line with STATA version14 which used forwarded method as a default and the end result were reported by STATAversion14. It is used hierarchically to assess the relative effect of those variables that have significant relationship with the outcome variable in this casewhich is acceptance of cervical cancer screening and treatment service. Further analysis to determine association between acceptance about cervical cancer screening and treatment service and variables that were found to have positive association in binary test were assessed in multivariate logistic regression to determine significant association. Variable which have **p-value <0.2**in bivariate analysis were run for multiple logistic regression to get the variable which significantly

associated and predict the outcome variable perfectly.The goodness of fit of the model was checked for those which had significant association with outcome variable through Hosmer and Lemshow goodness of fit tests. The Hosmer and Lemshow significant test result also shows, 0.966, for the independent variable of satisfaction of cervical cancer screening service. This is higher than the p-value (0.05). So, we conclude that the model is good. Table 11

5.6.1. Overall acceptance of cervical cancer screening and treatment services and associated factors

Using the median score of all satisfaction items, we determined that overall a total of 47% of the participants had sub-optimalacceptance about cervical cancer screening and treatment service.

The study has examined various causal factors which are assumed to have effect on acceptance of cervical cancer screening and treatment service. On bivariate analysis, factors like, occupational status from socio-demographic characteristics,women's experience such as pain/discomfort during screening and treatment, test related problem, information delivered about women's status, history of VIA positive results, and feel embarrassed when underwent screening and treatment service; as well as factors affecting acceptance of cervical cancer screening and treatment service such as; distance from health facility, delay screening, waiting time, staff behavior, health education and set up of examination room andwomen's level of knowledgeabout cervical cancer screening and treatment servicewere significantly associated with acceptance of cervical cancer screening and treatment servicerelative to their respective reference group.Table 11

Further analysis to determine association between acceptability of cervical cancer screening and treatment service and variables that were found to have positive association in binary test shows that;

The occupational status of women was one of the basic factors of acceptance of cervical cancer screeningwhich was significantly associated with acceptance of cervical cancer screening and treatment service. As a result elaborate, acceptance of cervical cancer screening service were 5.85 times higher for women who were governmental employee compared to women who were house wife [(AOR=5.85, 95% C.I:5.85(1.7, 20.0)].

Variable indicating experience of women like; test related problem after screening and treatment service and having enough information about status of women were found to be significantly associated with acceptance of cervical cancer screening and treatment service. women experienced test related problems after screening and treatment service indicates those women who had vaginal burning shows that 4.57 times more likely to accept cervical cancer screening service compared to those women who had no problem [(AOR=4.57, 95% C.I:4.57(1.417, 14.76)] and Women who were not got enough information about their status were 6% times less likely to be satisfied or accept screening service compared to those who informed enough [(AOR = 0.06,95% CI: (0.014,0.26)**].**Table 11

Factor affecting acceptance of having cervical cancer screening service such as; delay screening and treatment service, Staff behavior, health education on screening and treatment service and set up of the examination room were found to be significantly associated with satisfaction of cervical cancer screening and treatment service. Women who said delay screening time were good were 7.6 times more likely to accept cervical cancer screening and treatment service than those who said delay screening were bad [(AOR = 7.6,95% CI: 7.6(2.89,20)] and those women who were happy with staff behavior were 4.6 times more likely to be satisfied by cervical cancer screening and treatment service than those women who were unhappy with staff behavior,[(AOR =4.6, 95% CI: 4.6(1.1,19.77)].Women who had Health education on cervical cancer screening and treatment service were 2.45 times more likely to accept cervical cancer screening service compared to those women who had no health education about the service before[(AOR = 2.45, 95% CI: 2.45(1.049,5.74)] , women who recommended there were no separate room for cervical cancer screening and treatment service were 5.25 times more likely to be satisfied by cervical cancer screening service and those who were happy with setup were 3.96 times more likely to be satisfied by cervical cancer screening service compared to those women who were unhappy with the setup of the examination room[(AOR = 5.25, 95% CI: 5.25(0.97, 16.14)] and[(AOR = 3.96, 95% CI: 3.96(1.32,20.85)] respectively. Table 11

Table 11. Factors associated with acceptance about cervical cancer screening among women who underwent the service in Addis Ababa, Ethiopia, 201

Variables	Satisfaction: Satisfied	Satisfaction: unsatisfied	COR (95%C.I)	AOR (95%C.I)
Socio – demographic characteristics				
Occupational status				
Hose wife	53(16.9%)	77(24%.6)	1*	
Employed	34(10.9%)	49(15.7%)	1.008(0.575, 1.765)	1.60(0.67,3.87)
Governmental employee	43(13.7%)	26(8.3%)	2.402(1.32, 4.37)**	**5.85(1.7,20.0)****
Daily laborer	5(1.6%)	5(1.6%)	1.45(0.4007, 5.267)	1.17(0.17,8.03)
Merchant	11(3.5%)	7(2.2%)	2.28(0.831, 6.269)	2.6(0.52,12.8)
Student	1(0.3%)			
Others	1(0.3%)	1(0.3%)	1.45(0 .088, 23.74)	
Factors related to women experience				
Pain/discomfort during screening				
No pain/discomfort	31 (9.9%)	24 (7.7%)	1*	
Slight discomfort	69 (22.0%)	45 (14.4%)	1(0.4, 2.04)	
Moderate pain	41(13.1%)	89 (4.2%)	0 .26(.116, .61)**	
Severe pain	6(1.9%)	8(2.6%)	0.43(.119, 1.6)	
Test-related Problems after Screening and treatment.				
Vaginal discharge	22 (7.0%)	23 (7.3%)	0.55(0.27,1.075)	2(0.755, 5.96)
Vaginal bleeding	6 (1.9%)	14 (4.5%)	0.245(0.08, 0.68)**	0.584(0.113,3.015)
Vaginal burning	28 (8.9%)	66 (21.1%)	0.242 (0.14, 0.42)**	**4.6(1.42, 14.76)****
No problem	91 (29.1%)	52 (16.6%)	1*	
enough information delivered about women status				
Yes	138 (44.1%)	85 (27.2%)	1*	
No	9 (2.9%)	81 (25.9%)	0.068(0.03, 0.14)**	**0.068(0.014,0.26)****
enough information about cervical cancer screening and treatment option before				
Yes	121 (38.7%)	80 (25.6%)	1*	
No	26 (8.3%)	84 (26.8%)	0 .068(.033, .143)**	
Unsure	36(11.5%)	2(0.6%)		
History of VIA positive result				
Yes	7 (2.2%)	30 (9.6%)	0.22(0.096, 0.53)**	
No	140(44.7%)	136(43.5%)	1*	
Feel embarrassed when underwent screening and treatment				
Yes	111(35.5%)	148(47.3%)	0.375(0.202,0.695)**	
No	36(11.5%)	18(5.8%)	1*	

Under go VIA screening and Cryotherapy treatment If the nurse/doctor				
Female	85(27.2%)	94(30.0%)	1*	
Male	17(5.4%)	36(11.5%)	0.52 (0.27, 0.99)**	
Female/Male	45(14.4%)	36(11.5%)	1.38(0.815, 2.34)	
Factor affecting acceptance				
Distance from health facility				
<5km	143 (45.4%)	142(45.4%)	1*	
≥5km	4(1.3%)24 (7.7%)		0.165(0.056,0.48)**	
How is Delay screening and treatment time				
Good	64(20.4%)61(19.5%)		1.32(0.843, 2.089)	**7.6(2.89, 20)****
Bad	83(26.5%)105(33.5%)		1*	
Waiting time				
Long waiting time	8 (2.6%) 26 (8.3%)		1*	
Medium waiting time	55 (17.6%)84 (26.8%)		2.1 (0.89 , 5.0)	
Short waiting time	84 (26.8%)56 (17.9%)		4.87(2.05,11.5)**	
Staff behavior				
Un happy with staff behavior	5 (1.6 %%)29 (9.3%)		1*	
Happy with staff behavior	142(45.4%)137 (43.8%)		6 (2.26, 15.98)**	**4.6(1.1, 19.77)****
Behavior of care provider				
Un happy with car provider	5(1.6%) 16(5.1%)		1*	
Happy with car provider	142 (45.4%)150 (38.0%)		3(1.08,8.5)**	
Health education on screening and treatment service				
Yes	106(33.9%)	39(12.5%)	8.41(5.06, 14.0) **	**2.45(1.049,5.74)****
No	41(13.1%) 127(40.6%)		1*	
Examination room				
Happy with set up	81(25.9%)	68(21.7%)	8.3(3.54,19.6)**	**3.96(1.32,20.85)****
Unhappy with set up	7(2.2%)49(15.7%)		1*	
No separate room for examination	59(18.8%)49(15.7%)		8.4(3.5,20.27)**	**5.25(1.32,20.85)****
Heard about cervical cancer screening before				
Yes	120 (38.3%) 118 (37.7%)		1.80(1.05,3.08)**	
No	27 (8.6%) 48 (15.3%)		1*	

Source: from the survey

* represents the reference group

** represents a significant value with 0.05 level of significance

COR= crude odds ratio, OR=adjusted odds ratio

5.7. Results from the qualitative assessment

Interviewee group comprised of twelve participants. Participants were purposely selected. A total of 12 participants were included in the discussion. The age of the discussants ranged from 25 to 49 years. All the discussants were engaged well with the topic and responded enthusiastically to the questions. The findings are presented in five thematic groups: uptake of cervical cancer screening, adherence level, referral linkage, perceived barriers of the service and proposed solution to barriers. The table (12) below shows Characteristics of discussants in interviewee group discussion and table (12) show the codes, categories and theme developed during the qualitative data analysis.

Table 12: Characteristics of women discussants in focus group discussion, Addis Ababa, 2017

V**ariables**	Frequency	Percent
Age		
25-29	5	41.6
30-34	5	41.6
45-49	2	16.6
Marital status		
Single	4	33.3
Married	8	66.7
What is the level of your profession		
Diploma in midwifery	3	25
Diploma in clinical nurse	4	33.3
Bsc in midwifery	3	25
Bsc in clinical nursing	2	16.6
Type of Reproductive health service provided		
Antenatal care(ANC	3	25
Post natal care (PNC)	3	25
Family planning	5	41.7
Pre-cancerous screening	1	8.3
Others (specify).....		

Table 13: The theme, categories and codes developed during the qualitative data, Addis Ababa, 2017.

Themes: 'acceptance of cervical cancer screening is hampered by lack of knowledge, importance of service, absence of disease symptom, perception of the service, lack of resource, service delivering time, social taboo and shame '					
Categories	Uptake of cervical cancer screening and treatment service	Adherence level	Referral linkage	Perceived barriers	Proposed solution to barrier
Codes:	• Waiting time • Information source • Sign and symptom of the disease • Knowledge of service • Importance of the service • Awareness of cervical cancer screening service • Fear of Material used Past experience	• Delay screening time • Lack of openness about cervical cancer • Attitude and Beliefs of service • Knowledge of service • Waiting time • Negligent behavior • side effect of the service • access to service	•Internal referral linkage •eligible for service •Lack of resource •Lack of knowledge	• Beliefs about risk factor • Embarrassment • Fear of Material used • Privacy issue • Age of screening • Health education and Information source • Lack of resource	• Individual level • Community level • Health facility level • Government level

A Qualitative Study of Provider Perspectives of acceptance to Cervical Cancer Screening among Addis Ababa Women

5.7.1. Uptake of cervical cancer screening and treatment services.

Uptake of cervical cancer screening was low among Women's due to lack of information about the service. Participants from interviews tended to discuss what they see among women and reason for not attend screening service is highlighted below

Majority of the women who come to screening were, purposively not come for screening of precancerous cervical lesion. They come to the facility for other service, as they come for Family planning, outpatient department and ART service, they linked to VIA screening service; the participants explained,

'The uptake is very low in society because there were many people who come for family planning, OPD, ART Service compared to those services very few were come to underwent screening service. I faced a problem when delivering the service; Women from OPD, linked to VIA class to underwent screening service,' she said; I don't need to perform the screening because I have no anypain ,no sign of the disease on me, For the fear of feature, I don't need to show my privacy'(Addis Ketema health center, health professionals(Midwife nurse)).

'Majority of the women who come to my health facility declared that as they know the cervical cancer screening program and got the information from television, but in fact no nationwide sustained campaign with regard to cervical cancer screening and treatment program. If there were a campaigns and awareness creation program were there it increase the uptake of the service. For these reasons, women had poor information about cervical cancer screening program, the role of government and health workers were very poor' (kality health center, health professionals(Midwife nurse)

Cervical cancer and cancer in general were not perceived by women as a disease that can be prevented. Some of the participant claimed that absence of sign and symptom of pre-cancerous cervical lesion and cervical cancer lowers the uptake of service deliver. It does not cause abnormal discharge, bleeding, or pain, the women feels well.one of the participant argued that;

The care provider elaborates;

'In our society the name of the program, early detection of cervical cancer, was understood as a means to make cancer appear earlier. Lack of symptoms and long development of cancer did not encourage preventive behaviors as women tended to wait the appearance of symptoms and the manifestation of the illness. Inflammation, pain, excessive discharge, sores, and over all symptoms of serious health problem.(Falage Males health center, health professionals(Clinical Nurse)

Many younger women were eventually become used to screening than older women; one of the care providers explained that;

"it's older women who probably don't go as often for screening, and younger women, are a little bit more proactive with their health"((Kolfe HC, health professionals(Midwife nurse)

Participant believed that the reason for this was primarily that older teenagers are exposed to health education in schools and consequently many are concerned about sexually transmitted diseases. Often, these young women become more informed about sexually transmitted disease prevention and more open to accepting screening than their older counterparts in the community

'the younger one….seem to be more open to the fact that this important with regards to their health care…. Whereas I find with the older generation they are very set in their ways and they are a bit more difficulty to get through to with regards to health teaching and prevention' (Kotebe HC Yeka sub cities, health professionals (Clinical nurse)

Screening for cervical cancer by VIA was rated highly acceptable by those women who underwent the procedure, after they underwent the screening and treatment service they satisfied a lot.one of the participant argued that,

'The women were di satisfied by the use of the speculum, metal, but after the procedure, and they got their result as a negative they were highly satisfied,especially those who comefor checkup post cryotherapy treatment after one year;if their result where negative, which makes them too happy' the fear of speculum were very high because of foreign body to cervix, (Woreda 03Nifas silk Lafto sub cities, health professionals (Midwife nurse)

The main barriers from the provision of health service identified in the studies as one of the care provider identified are;

''accessibility to health care centers and availability of quality services, like women living in rural areas reported having to travel long distance to get to facility, poor performance of service delivery, such as long waiting time inside the clinic, time to get card number, and financial dependence on the husband often acted as a preexisting barrier for the woman to be screened (kality health center, health professionals(Midwife nurse)).

For uptake of the cervical cancer screening service, the information delivered has play a major role, as educational message about screening service were increased the flow rate of the women to undergo screening test were high. One of the participants elaborated,

'Awareness creation is not continual if it given once it is not given till next month or year. There was no separate department; it is under family planning, no programed education. No media coverage, educations were not offered continuously. During some time in the last year the flow rate of women to undergo screening test were high, when we make health promotion, now the awareness creation were weak' (FelegeMeles health center, health professionals(Clinical nurse)).

Negative past experience among women who underwent the service who had experienced themselves or heard from others acting as a barrier to attend screening. such negative experiences includes experiencing pain ,discharge, bleeding and being faced with inexperienced care provider who did not explain the process or enable them to ask question.one of the care provider argued that;

'there were a lots off clients who have said that we avoid getting it done because when you put that thing in us(Speculum), it hurts so much, we might bleed loads, it might result in scared and it may cases many problem, so I afraid of it'(Kotobe HC Yeka sub cities, health professionals(Clinical nurse)

It was recognized that knowledge and awareness about the screening and treatment type, the method used for screening, like the acetic acid reagent, type of speculum used is, compel the women from screening, as a result women often refused to undergo the screening test.one of the participants argued that,

'I faced a problem when performing the counseling service for the women who come from OPD,to undergo screening test 'she said that ; the previous screening were by taking discharge from the cervix,(Pap smear) but now by reagent, ACHETO(acetic acid),it is the material which applied on the vegetables like cabbage(SALATA; local name) food for eating; so how it can be applied on my cervix, it may cause complexity so I don't need to be screened' she said and refused to undergo the screening test'(woreda09 health center, Kolfe sub cities health professional(Midwife nurse)

5.7.2. Adherence level among Women received the service.

Adherence level of screening services among women may be affected by the time of screening and treatment service. The structural barriers that appeared in this research were that of screening time or delay screening. The following participant identified delay screening as a barrier for adherence level:

'since we started providing this service those who had negative test result and appointed to come after 5 year were not come, because the adherence level of the patients were very low; they complain very long time gap and no one come after 5 year of screening time, I did not get even one patients till now from those who had negative test result' (woreda09 health center, Kolfe sub cities health professional(Midwife Nurse)

'Delay treatment, after 1year and screening after 5 year is not good because who knows that if she may get the problem with in two year, also ,the clients said that I might alive or not; I faced a problem, some time ago, Women with HIV positive test where come for screening to my room and after I performing the test she were VIA positive, and I appointed to re visit in one year but she come after 6 month when she come again she were positive again" so the delay screening time for 1 year is not recommended, as I think and also it lowers the adherence level of women's'(Arada health center, health professional(Midwife nurse)"

The length of waiting time for women seeking the service were a main problem for adherence to cervical cancer screening and treatment service due to high work load on the service provider. One of the care providers explained that;

'I did feel that the waiting time was quit long for women who come to health facility to get cervical cancer screening and treatment service which in turn reduce the adherence of the service delivery system. This can be explained because of there is no separate department which provides screening and treatment service for precancerous cervical lesion' (Woreda 03HC Nifas silk Lafto sub cities, health professionals(Midwife nurse)

Womens were negligent because they failed to consider their own health as a priority and to adopt a preventive behavior. None of the respondents were aware that the purpose of VIA screening and cryotherapy treatment are for early detection of cervical cancer. When asked about barriers to have a screening test, nearly all believed the test was not necessary for them as they had no reproductive health problems, and believed that they were not susceptible to cervical cancer. They felt that they would only need a cervical cancer screening service if they developed symptoms of pelvic infection, abnormal bleeding, or engaged in promiscuous sexual behaviors. One of the care provider explained that;

'Women's perceived negligent behavior such as perceiving that health providers did not care for patients. Absence of symptoms and the subsequent failure to seek screening were often understood as negligence on the part of the women,' (Kotebe HC Yeka sub cities, health professionals(Clinical nurse)

There was an apparent lack of family encouragement to have cervical cancer screening and treatment. Married respondents had never talked about screening of cervical cancer with their spouses and neither did their mothers'non-practice.one of the care provider argued that

' I faced a women who come to undergo screening service she said;' my mother has not done yet any cervical cancer screening, maybe that is why…..nobody encourage me to go for screening service' (Kality HC Akaki kality sub cities, health professionals(midwife nurse)

The uptake of instruction among Women who had positive VIA result were not go, as the SAT instruction recommends, the women were told to postpone the intercourse for one month, but they refused to do so, one health professionals argued that,

'women of reproductive age group were complain to post pone sexual intercourse for 1 month after cryotherapy treatment were offered, she refused to do, she said, it is my income, there is house rent, food for baby, so how I can stay till one month it is impossible, and I advised her to use Condom' (*Addis Ketema health center, health professionals(Midwife nurse*)).

During the interviews the professionals were asked about their actual experiences with consulting women as part of their daily work. Many recounted stories that indicated that cervical cancer and other sexual or reproductive health problems are seen as shameful, especially among uneducated and rural women; consequently, much probing by a healthcare professional is needed to uncover and treat the real problems: one of health professionals argued that.

‘ women who finished high school and more are open and tell about their status, they had good adherence, but uneducated women and women from rural are shy they go around the problem before they tell the true complaint and they had lower adherence level.’ (*Woreda 09 health center, Kolfe sub cities health professional (midwife nurse)*

The comment by one professional illustrates how blaming the patient may influence the likelihood of follow-up and treatment:

‘*After I provide a VIA screening she was free from pre-cancerous cervical lesion, but she had STIs I asked her to bring her husband, she said it is difficult for her, since she got it outside the marriage, then I said….you should have thought of that before the event. To get a complete cure both you and your husband should be treated. I promised to keep her secret from the husband, but she never come back’(Addis Ketema health center, Addis Ketema sub city health professional(Midwife nurse*)

5.7.3. Perceived barriers among women to accept the screening and treatment service

The discussant have mentioned about barriers they faced during delivering the screening and treatment service to women of reproductive age group. A number of themes emerged in the analysis of the data relating to barriers to screening and treatment service. Barriers were defined as the negative outcomes and impediments to undertake screening service.

Fear of the test was cited as a hindrance to some women, even if they appreciated the need for screening. The metal speculum was perceived as a painful instrument and some did not trust the sterilization process. Fear of the test results was also thought to prevent some women from coming forward for screening; one of the care providers explained this;

'To get tested is good, but women hate that metal thing. Everyone hates that metal thing even me (care provider). Apart from that women wouldn't refuse the test. That metal thing is really hefty.' (Woreda09 health center, Kolfe sub cities health professional (midwife nurse)

'The fear of speculum is high they suspect, it might causes pain, discomfort, and enlarges the sexual parts, the women's perception concerning reagent used is also too, during the screening test, I don't tell the women as I used the acetic acid reagent (Acheto: local language) because they refuses to undergo the screening and treatment but I tell them as it is a medication, I faced before many Women who refused to undergo the screening test when they heard the "name Acheto'(Samen health center, Arada sub cities health professional(Public health officer)

'Sister, I come to this health facility for other service, but He told me that; to undergo cervical cancer screening service, but the speculum is Metal, so how it could be, to my cervix rather I wish death' said one Women from,OPD' (*Addis Ketema health center, health professional((midwife nurse).*

Most women who come to health facilities identified pelvic examinations as a major source of anxiety, loss of privacy, and embarrassment ,especially if the VIA screening was conducted by a male provider. Several women would only accept and undergo screening of vaginal examination if it is conducted by a Female doctors (Nurses).one of the care provider explained that;

'There is a women who slightly felt too shy to expose or to show their genitalia to the provider, when I say ;open your legs….that things….they feel it so negative…so bad to do…generally they found exposing their private parts to health care provider, regardless of gender, as an invasion of privacy issue, 'one of my client stated that; my husband did not want a male doctor to perform such examination' Female doctors(nurses) also find this issue quite embarrassing' (Kolfe HC Kolfe sub cities, health professionals(midwife nurse)

Privacy while preforming pelvic examinations was not guaranteed at the health facilities; one of the care provider explained that,

"*there were no separate room for cervical cancer screening procedure it was given with other service; 'women reported lack of privacy such as interruptions while preforming pelvic examination and examinations held in inconvenient locations like corridors of the facilities because there were no separate room for this purpose, the service provided based on their card number no priorities given for them [those who screened* (Arada health center, health professional *(midwife nurse*)

In addition to lack of privacy accommodation at the health centers, acceptability of the pelvic examination among women felt that their performance or modesty was being compromised by the pelvic examination.one of the care provider elaborates;

'women mentioned discomfort, anxiety over pain or internal damage, coldness of speculum and clumsiness or difficulties when inserting it, anxiety over infertility or infection, bleeding among women with ulcers and feeling of defenselessness and impotency were also there among woman', acceptability of the pelvic examination by partners may also be a barrier particularly when a male provider preforms the examination(Kolfe health center health professional(midwife nurse)

In this study we identified that, embarrassments as one of hindrance to attending screening service among women; one of the care provider explained that;

'Women feel the test as uncomfortable method both physically and emotionally, for instance personnel hygiene, scarce around vagina and either they were circumcised or not was the most common embarrassment they feel during service delivery'(Kotebe health center, health professionals(Clinical nurse)).

The care provider who offers the service should have accurate knowledge about the test. but the training which is given about the screening and treatment test were not enough it is a great challenge to provide the service. Similarly, a participant argued that,

*'During screening and treatment test I faced the challenge in which after the women were underwent VIA test, I suspect the cervical lesion, even to provide a treatment I don't have full knowledge about the lesion because during our training I don't get the VIA positive patient for demonstration" I keep my colleague who works with me for confirmation since no knowledge on the lesion and no trained human power on cryotherapy treatment' (*woreda09 *health center, Kolfe sub cities health professional(Midwife nurse)*

Among the women who were screened and treated there were a women who complained of some discomfort during VIA and cryotherapy treatment procedure; one of the care provider explained that,

'A*mong women screened for VIA and treated for cryotherapy we faced many women who complained for some discomfort during the procedure; one in five women stated the insertion of the speculum caused pain and discomfort and one in eight women reported having a burning sensation after application of acetic acid, one out of five women shared their fear of having an abnormal result. and the external conditions were also reported by several women; some complained cold felt in examination room, others were frustrated by long waiting time, lack of privacy was also there due to no separate room for examination' (Arada health center, health professional(Midwife nurse)*

Health facility which provides the screening and treatment service for pre-cancerous cervical lesion had a cryotherapy treatment tip, cylinder, reagent, speculum and other material which used for screening and treatment purpose. Most of facility had three cryotherapy treatment tip, which used as medium, large and small lesion treating purpose, if three VIA positive women were diagnosed at a time, until the tip undergo sterilization ,the next patient keeps their turn, which may result in long waiting time and lower the uptake of the service. One of the Health professional argued that;

'The cryotherapy treatment tip is only three tip which is too few, to provide quality treatment service; I faced a problem, during time ago three patients with VIA positive of medium size lesion were obtained on the same day, I provide service for two Women and appointed the third women to come next day, it may result in lower the uptake of the service.'(Kolfe health center health professional(Midwife nurse)

The attention given for awareness of cervical cancer screening were too poor, no media coverage were given health education were not continuous .one participant recommended that,

'Pre-cancerous cervical lesion were the public problem ,which affects many people, but governmental attention were poor no media coverage were given, since many people were accessible ,to TV and Radio, and announced this problem to public, if the educational massage will be given, twice a week it increase the uptake of the community. I recommend also that a role play (drama) should be available by getting media coverage "to announce to the community; all governmental organization and government itself should give priority to this education' (Woreda 03 HC Nifas silk Lafto sub cities, health professionals (Midwife nurse)

Only a few respondents were aware that early screening and treatment of cervical cancer can save lives. Respondents with lower level of education (primary school) and of older age viewed cervical cancer as a matter of fate and were more likely to have fatalistic beliefs.one of the care provider argued that

'*Many Women who visit our health centers were not know if they had the disease ,they believed that failure to maintain personnel hygiene or dirtiness was a factor for cervical cancer, so keeping the vaginal area clean, having proper hygiene especially during menstruation, and cleansing of Men's semen after sexual intercourse can avoid cervical cancer' (Falage Males HC Gulalle sub cities, health professionals(Clinical nurse)).)*

Beliefs about risk factors for cervical cancers were very low among the women. They believed that women got cervical cancer by the will of God .one of the participant argued that;

'More of client who come to our facilities beliefs cervical cancer is God's will and a matter of fate' (Alembank health center, health professionals(Clinical nurse)).

Rarely there were women who suggested promiscuity as a risk factors, but among many women there were confusion regarding whether women who had never been sexually active needed testing. One of the care providers argued that;

"There were women who complained that, 'I don't know if there is a link between being promiscuous and getting cervical cancer, I don't know really. Because I know that having STDs for example would be linked to being promiscuous, there would be a link there. But with cancer I really don't know' said (one of my clients),(Alem bank health center, health professionals(Clinical nurse)).

5.7.4. Referral linkage for screening and treatment service:

Referral is a process in which a health worker at one level of the health system, having insufficient resources for delivering the service and to manage a clinical condition, seeks the assistance of a better or differently resourced facility at the same or higher level to assist in or take over the management of a client's case, on this situation

The referral linkage were to different hospital due to different reason including if the Women's were not eligible for cryotherapy treatment including large lesion, if she had bleeding and lack of cryotherapy tips were some of the reason, but for referred clients there were no feedback from referred bodies.one of the health professional explained that.

'I referred Women, who were on ART by suspecting, large lesion to higher hospital, but I did not get any feedback weather or not the Women get service as referred. But when I get the women she told me that, as she were not received any treatment, because she were negative' (Samen health center, Arada sub cities health professional (public health officer)

'Most of the time when I suspect large lesion, before referring the client ,I took a photo and sent too my colleague who works on similar job with high knowledge on issue ,after we confirm it I will sent the client, after I appointing her for next day' (Arada Health center health professionals(Midwife nurse)

Women who underwent the screening and treatment service where, come from, different department, OPD, ART class, Health extension workers and governmental office in the same health facilities. The participants elaborated that,

'The linkages of client to cervical cancer screening and treatment service were from different department like card room, ART, OPD and different department including family planning. Also from different organization; Governmental employee, and from different NGO. We also refer to higher Hospital if the clients were non eligible for cryotherapy, large lesion (>75% of cervix), when cervix open if bleeding is there' (Woreda 09 HC Nifas silk Lafto sub cities, health professionals(midwife nurse)

5.7.5. Proposed solutions to the barriers

As each barrier was suggested, the participants were asked to suggest acceptable solution which would help to encourage women to attend for screening. Education about thepurpose of the screening test and the programme was considered to be key incouraging womens to take up screening service. They felt that health advocates or community workers like health extension workers should provide this information in community settings. This would help women to understand the value of the test, and should aim to address some women's misinterpretation of the disease prevention and to overcome fatalistic barriers to screening. One of the care provider elaborates;

'I think that women working in the community should be trained up to help in this. The authorities should train them and give them job to help women access to this service. If that could be done, the women feel that they understand the availability of service and feel at ease to attend' (FelegeMelas health center,health professionals*(Clinical nurse)).*

To address the barriers of negative experience, participants suggested that providing an explanation of the procedure prior to the test and allowing adequate time for questions could help to overcome negative past experiences. Some believed that attending as part of a group with women and community worker would make the experience less daunting, especially for first time attenders. It was suggested by participants that the fear of pain and poor hygiene could be helped by the provision of disposable plastic speculums, which were considered less aggressive and more hygienic; participant argued that;

'The other things is this metal thing that people are paranoid about….to have [speculum] opened in front of them or one-time use, then they would feel more comfortable and recommend it to others' (Kolfe health center, healthprofessionals (Midwife nurse)).

Participant recommended that, all health professional should have detailed knowledge about the cervical cancer screening and treatment option, to deliver mass education and health education the service should have to be provided with separate room and department., if there is mass training for HEW and other concerned body it will increase the awareness of the women about screening and treatment test. One of the participants argued that,

'There is a need for promotion by the professional workers; very few professionals are trained so training must be at large scale. It should be available to all health professionals, like the HIV testing scenarios, the screening and treatment; should have to be separated from other service, because there were no separated department for service delivery, it is under, family planning, we used the same speculum for VIA and IUCD, even if it was sterile, the privacy issue were the main problem since the place were over crowded' (AlemBankhc,health professionals(Clinical nurse))

Delay screening were the main problem which inhibit the uptake of the service among women of reproductive age group, one of the health profession recommends that,

'delay screening time is too long for HIV patient, because HIV was one of the risk factor for cervical cancers so, rather than keeping 5 year time gap of screening if it is 2 year and for non HIV women if 3 year it is very good. Women who underwent VIA screening at certain time in the past told me that, if this issue were public announced why we keep 5year rather 1year is best to undergo the screening test it is too long time, I also recommend for those who are positive for VIA rather than keeping 1year if it is below 6month it is very good'(Samen health center, Arada sub cities health professional(Midwife nurse)

Health professionals recommend that women need to have detail information regarding cervical cancer screening and treatment, the disease itself and to have the service available at the nearest place and more counseling and discussion with health professionals regarding the issue.one participant argued the HIV/AIDS prevention strategies as an example.

'There is no awareness about the disease for example different educations and awareness creation service are given regarding HIV even in bars/restaurants and other places including school, through media coverage; but no one talk about cervical cancer and the available screening service for the last decades. I think house to house education is necessary for women who started sexual intercourse, starting from age of 18 and above. If we see the scenario of HIV, due to increased awareness creation, currently people voluntarily screen for HIV without the presence of any disease symptoms, so if health education and awareness creation strategy is done there will be a chance to get many women who seek for cervical cancer screening service.it is also important to make the service available and accessible at all health facilities.' (Woreda 03 HC Nifas silk Lafto sub cities, health professionals(Midwife nurse)

6. Discussion

Cervical cancer screening is a critical and the most effective method for early detection and treatment of precancerous lesions and mortality reduction of cervical cancer. The present study was conducted to determine the level of acceptability of cervical cancer screening by VIA/VILI and Cryotherapy treatment among women in Addis Ababa City, Ethiopia. The study also intended to identify factors influencing woman's acceptability about cervical cancer screening and treatment. Based on this acceptance of cervical cancer was assessed by overall satisfaction of cervical cancer screening and treatment service. Our result demonstrate that only 47% of women had satisfied on organization of programs, quality of screening service, facility characteristics, post screening experience, interaction with medical staff, characteristics of screening and treatment procedure.

The data showed that women with overall satisfaction (acceptance) of cervical cancer screening and treatment service were 47%. This finding is consistence with study done in Boston which was 47% and it was higher than study done in Kenya on cervical cancer screening uptake (17%) and study done in Addis Ababa Ethiopia on willingness of cervical cancer screening acceptance among HIV Positive clients were (24.8%)(22,23,26) .The possible reason for discrepancy of the result might be the variation in study populations i.e. all women in the age group of 18-49 years old but the current study includes women in the age group of 30-49 years old and the respondent in this study might have been relatively higher contact with health professionals that could increase their uptake and it is smaller than similar study done in Uganda (97.4%) (57).This can be explained due to regional state or Country specific promotional police variations, variations in involvement of cervical cancer screening and treatment education in media and its exposure and differences in socio-cultural condition.

In present study satisfaction of the cervical cancer screening and treatment service among women who satisfied by their decision to be tested indicates 239(76.4%) were satisfied and 49(15.7%) were completely satisfied by their decision. The most common reason for not being completely satisfied with the test was pain or discomfort during and after screening test, waiting time, distance from health center, delay screening and failure to get enough information, staff behavior and behavior of care providers. This finding have similar factor with similar study done in India on acceptance of cervical cancer screening which indicates when asked about their level

of satisfaction with the screening, 322 (64.7%) women responded that they were satisfied and 28 (5.6%) women responded that they were very satisfied(20). The finding also indicates that, most common reason for women to be dissatisfied with our service was post-screening problems like discharge and bleeding. This is quite comprehensible, as these women were apparently healthy and symptom-free before they went for the test. Pain during screening was also a reason for discontent and the negative effect of pain and discomfort on the overall satisfaction rating resulted in the negative emotions and beliefs women often associate with gynecological examinations(20). Other deficiencies pointed out by the women were related to service delivery provisions like long waiting time at the clinic, lack of female doctor, inadequate privacy etc.

Based on current data ,we conclude that a see and treat (SAT) approach using VIA followed by immediate cryotherapy treatment for those testing VIA positive were acceptable and feasible, as a result of this work, local police makers which works on cervical cancer screening service should have to improve the procedure as SAT approach recommends and We have also seen that it should be logistically feasible, at least in the case of service providing center, to obtain the necessary support in terms of gas supply for cryotherapy, the three cryotherapy tips and the consumables necessary for the VIA procedure. Advance training in equipment care as well as the creation of a separate manual for repair and maintenance helped insure that the cryotherapy units would continue to function at all and also the training given for the care providers were not enough. One of the Health professional argued that; *'The cryotherapy treatment tip is only three tip which is too few, to provide quality treatment service."(Kolfe health center (health professional).* Although a similar study was previously undertaken in Accra, Ghana was indicated similar finding with the current study (54).

Regarding Women experience during post screening and treatment service women's who experienced vaginal discharge among 313 participants were (14.4%), which was larger than similar study done in rural India which indicates women who experienced vaginal discharge among 498 participants were (12%)(20) and current study also indicates women who experienced vaginal bleeding and vaginal burning were (6.4%) and (30%) respectively which was larger than similar study done in rural India which was (3.8%) and (5.8%) (20) Respectively. the variation between the result were explained as, study population which includes all Women in the age range of 30-65 years old were included and recall bias might be

the main problem and it used high number of participant, in current study population were between the age of 30-49 years old and slightly smaller number of participants were participated. Similarly those women who experienced slight or no discomfort were (54%) which was slightly higher than similar study done in China which was (34.1%) (63) and smaller than similar study done in rural India which was (94.2%) (20). the discrepancy between the result might be the characteristics of women's and the comfort of material used like; examination room, type of speculum, examination bed and etc.

Study participants felt very comfortable post –screening after VIA; especially those who had a negative result. They were reassured about the health of their cervix, and they were happy to have a free test with a quick result. No complex complaints were reported by study participants, similar to data previously reported in other studies (69). Some screened women complained of pain experienced during the insertion of the speculum; this problem could be resolved by choosing an appropriately sized speculum for each women and putting the women at ease during VIA test procedures. Some women reported a sensation of stinging or burning in their vaginal caused by the diluted acetic acid (5%) used for VIA, but this sensation is normally temporary and disappears within a few hours.

The Views of cervical cancer screening among women's were the perception and feelings about pre-cancerous cervical lesions and the material's used for screening purpose. The perception they have on test procedures were also low; one of the professional in the interviewee group argued that; "*The fear of speculum is high also* c*auses pain, discomfort, and enlarges the "sexual parts, the women's perception concerning reagent used is also too(Samen health center, Arada sub cities (health professional),* this finding is consistence with study done in Uganda on Focus group discussions conducted on women to determine reasons for declining VIA/VILI the participants argued that" *the speculum causes pain, discomfort, and enlarges the "sexual parts." Others thought that the instruments used during screening could transmit disease as they were not disposable" (57).*

The women had little knowledge of cervical cancer. The Ethiopian population is not adequately informed about cancer in general; knowledge of the diseases still poor and confused, particularly concerning causes, symptoms, and available treatments, the finding was in line with similar study done in Morocco (69). In another context, knowledge about cervical cancer was poor among the women who underwent the screening program. however,53% of women declared that they knew about the cervical cancer screening program, this finding were slightly higher than similar study done in Lagos, Nigeria (34.5%) and Addis Ababa Ethiopia (34.2%) and smaller than similar study done in Morocco (84%) (24, 26, 69). The possible reason for variation in results might be the study population, possible sample size used, country specific promotional as well as awareness creation police and programs etc.

In current study majority of the participant mentioned the predominant source of information was media 37.4% as a source of information regarding cervical cancer screening and treatment service, 35.3% health professionals, 8% family or relatives were their main source of information about service. This finding was in agreement with similar study done in Northwest Ethiopia on Comprehensive knowledge about cervical cancer among women which was; 60.8% media, 34.9% health professionals, 21.6% friends/relatives (17). But in fact no nationwide sustained campaign with regard to cervical cancer program was done in Ethiopia. For this reasons women had poor information about cervical cancer and screening program.

The current study further showed that 76% of women answered to have heard about cervical cancer screening, which was slightly similar with study done in Kenya 67.5% (23) and higher than study done in Dares Salaam, Tanzania (47%) and Addis Ababa, Ethiopia which were 47.7% and study done in South Africa which was 33%(6, 41, 60).this difference might be due to the difference from study setting. This study was facility based study, in which participant in the study might have relatively higher health seeking behavior and will have contact with health professionals that might expose them for different information regarding cervical screening.

In this study women who got information about cervical cancer screening from health worker accepted more about cervical cancer screening and treatment methods (19.7%) than who were used media as a source of information(16.4%).this study were in agreement with similar study done in Addis Ababa Ethiopia(6).

Regarding prevention method for cervical cancer over all 40% of the respondents mentioned avoiding multiple sexual partners. This study were higher from study done in Gonder Ethiopia which was 7.6 % and study done in Addis Ababa Ethiopia (25%) (6, 17).the difference explained due to the fact that the current study is facility based study whereas the Gonder study was community based study and health seeking behavior of respondents who visit health facility is expected to be higher, that increase their contact with health professionals and which could have impact on their acceptance of cervical cancer screening service and knowledge of cervical cancer related issue.

Overall, the current study showed that 51.7% of respondents had sufficient knowledge of cervical cancer screening and treatment service. This finding was a little bit higher when it compared to Addis Ababa study which was done at hospital level that was overall 27 % (6). This gap can be explained due to the time and setting difference among the studies. Although the former result of screening knowledge was lower from the present study, the knowledge of cervical cancer screening and treatment service in present study were not enough which lowers the acceptance of cervical cancer screening. The little difference between these results showed, much has not been done regarding awareness of cervical cancer screening among reproductive health clients in Addis Ababa for the past years including the present one.

In this study only 26.8% of the participants were practiced screening service before, which was slightly in agreement with study done in Kenya, 22% of the participants were screened (68). Another study done in Addis Ababa Ethiopia, practice of cervical cancer screening was only 3.5%. Although all screening practice among all country was low, the finding of this study was too low (6). The possible reason for variation in results might be, in the former study there is no health education, awareness and availability of the screening and treatment service were limited.

In current study of participants who were given exit interviews; the VIA/ VILI test result were found to be positive in 89(28%) of the participants this finding was higher than similar study done in Uganda on 384 women participant who were given exit interviews on the VIA/VILI test result was 63(16.3%) positive and in Rural India study done on 2184 women participant 247(11.3%) of the women was VIA positive (20, 57). The difference in positive results might be, age of study population and the number of sample size utilized. The Ugandan study includes all participants who were underwent the screening service but the current study was include those

participants between age of 30-49 who underwent screening service and it may also be due to difference in test provider skills and in this study most of the participants who had pervious history of VIA positive result were purposively called from their home to sure their experience on screening and treatment test.

In current study the test positivity rate indicates 89 (28.4%) participants had VIA positive outcome, all of those participants were eligible for cryotherapy treatment,majority of the respondents 63(71%) did not received cryotherapy treatment immediately as their VIA test results were positive, whereas only 26(29%) offered immediate cryotherapy treatment.which was larger than similar study done inAccra, Ghana, on 3665 participant, 484(13.2%) had VIA positive outcome,of which,468 were determined to be eligible for immediate treatment with cryotherapy, The majority (70.9%) received cryotherapy on the same day as their VIA testing(54). The discrepancy in results in our study were explained as, due to broken equipment, lack of supplies, cryotherapy trained provider not available, work load because they were too busy and asked the patient to return on a different day which contradicted with SAT approach.

Home- care adherence and scheduled return visit of cryotherapy which recommend that women abstain from sexual intercourse during the initial healing phase (one month) after cryotherapy treatment to ensure prompt healing and reduce risk of infection were high 55(66.7%) abstinence and 26(32.1%) condom use from those who were treated by cryotherapy. this probably shows the quality of counseling about reason for abstinence or condom use, that women were offered the opportunity to postpone treatment if needed to negotiate with their husband to increase their acceptance of the treatment recommendations, which have similar findings with study done in Ghana (54)

In the current study attitude of cervical cancer shows, 44.1% of the respondents had positive attitude towards cervical cancer screening and treatment service;the age pattern in relation to attitude shows that, generally as age group increases the attitude towards cervical cancer screenings were declining; one of the professional in the interviewee group argued that;*it's older women who probably don't go as often for screening, and younger women, are a little bit more proactive with their health"((Kolfe HC, (health professionals)*.This finding was consistent with study done in Kenya and smaller than similar study done in Addis Ababa Ethiopia 50% (6, 68).

Reason for variation in result was the former study used all women's of reproductive age group as study participants, behavior of care giver and facility characteristics.

As cervical cancer screening is being increasingly implemented in our countries, there is a need to consider potential determinants of acceptance of cervical cancer screening in such settings. The present study is based on data from women who underwent the service and reveals that screening acceptance is associated with being governmental employee, having partner with STI, women experienced vaginal discharge and vaginal burning, information about status of women, delay screening time, staff behavior, health education on screening and treatment service and set up of examination room. Furthermore, knowledge and awareness of cervical cancer and screening benefits seem to have an impact on screening acceptance.

Women who had Occupation and governmental employee had high screening acceptance of cervical cancer screening service in comparession with women who were housewife, A possible explanation for the low screening acceptance among housewife women may be that practical barriers such as foregoing domestic activities are more prevalent among this group of women.

Women who lack awareness of cervical cancer and access of health education were less likely to participate in acceptance of cervical cancer screening and treatment service than those who had health education, this can be explained by the fact that despite being the cervical cancer is the most common disease in Ethiopia which are not been prioritized by the national health system, advocacy programs have therefore not focused on cervical cancer screening service ;therefore more diverse strategies should be employed to convey educational health message particularly on cervical cancer screening service by taking into account the women's socio economic and cultural background. Similar study done in Tanzania indicates the same situation with current study, The knowledge and awareness of cervical cancer was in general low and screening acceptance was associated with having knowledge of cervical cancer, its risk factors and its prevention(60).Experiences from both developed and developing countries have shown that conveying message via word of mouth and via audio visual channels are effective in making women more aware of cervical cancer and screening possibilities [12]. This study also recommends that, health education through trained lay persons and health extension workers in community centers should also be considered, as this has been reported to be an effective method.

7. Strength and limitation of the study

7.1. Strength of the study

- ✓ The study used both quantitative and qualitative methods
- ✓ It included more of primary health care facilities

7.2. Limitation of the study

- ✓ Due to the fact that the study was cross sectional study describing cause and effect relationship of the exposure and outcome variables is difficult.
- ✓ The study was conducted in facility level, which may limit generalizability of the findings to all Women in Ethiopia, particularly to those in rural areas

8. Conclusion and Recommendations

8.1. Conclusion:

This study confirmed that almost half of the participants did not satisfied by the overall service provision of SAT approach which indicates acceptance of cervical cancer screening and treatment service were suboptimal among the population under study. Women had insufficient knowledge and attitude about cervical cancer, screening and treatment service towards the VIA and cryotherapy program. Majority of the participants who were eligible for cryotherapy did not received the immediate cryotherapy treatment on the day of screening at spot as SAT approach recommends and Most of the women did not come to health facility early for cervical cancer screening service.

Lack of health education and Awareness creation strategy on cervical cancer screening and treatment service also contributed in preventing women from attending cervical cancer screenings.Providing education and information orally as well as improving access of screening service in the facilities where the program was implemented will likely lead to increased uptake of screening service. Barriers were very few compared with the benefit of the program, but efforts are required to upgrade capacity of health centers to reduce the dissatisfaction and discomfort felt by women who underwent the procedure.

The acceptance of cervical cancer screening and treatment service studied in this research have shown strong association with the occupational status, test related problems after screening and treatment, information delivered about status of women, delay screening and treatment time, staff behavior, presence of health education and set up of the examination room.

8.2. Recommendations

Based on the summarized result of the research, the study findings show a lot of problems and gaps. So, to mitigate those problems, we forwarded the following recommendations:

At federal and regional health offices level

- Should further work to enhance womens perceptions and attitude about cervical cancer and screening service need to be further assessed to develop communication strategies that take a broader cultural framework into account.
- Revise the pre designed policy of cervical cancer screening and treatment service specially in case of delay screening and treatment policy
- Design the strategies for Health education and awareness creation regarding cervical cancer at all levels, including primary health care.
- Awareness creationand Promotion on media about the severity of the disease as well as the treatment and screening strategies.
- There is a need to design policy and guide lines which could be applied at primary health care level to prevent and control cervical cancer among women's.
- The government should play its part by increasing health care budgets and put priority on cervical cancer prevention by establishing a national awareness campaign, spreading screening services all over the country using cheap screening procedures that have shown to have reasonable sensitivity and specificity.

- **Health Facilities and health professionals**
    - Health facility should focus on informing women who visit their facilities about their susceptibility to cervical cancer and encourage regular screening to detect at the pre-cancerous stage.
    - Health facilities need to have separated department and examination room for precancerous cervical lesion screening and treatment service.
    - Health education and awareness creation regarding cervical cancer should be implemented at the health facilities especially at primary health care units.
    - Educating women with cervical cancer and those who underwent precancerous cervical lesion treatment about the disease
    - Healthprofessionals should focus on providing the cryotherapy treatment service as a part of a single visit approachas the SAT approach recommends. That is after VIA test results were positive; including counseling, history taking, screening and treatment should be offered by the same health care provider who perform VIA should perform cryotherapy as soon as VIA test result is positive on the same day.
    - More emphasis should be on creating additional awareness about cervical cancer screening at all service delivery points within the health facilities as well as creating awareness in community by trained health extension workers.

Researcher:

- More research should be done regarding cervical screening and readiness of the material to give the service.
- Study should also be done on community to better understand reasons for the low uptake of the service.

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10. Appendixes

Appendix I: Information Sheet and Consent Form

Information Sheet and Consent Form to assess the Acceptability of cervical cancer screening by see and treat program among Women who come for cervical cancer screening in selected Health center in Addis Ababa Ethiopia, 2017

Name of the Principal Investigator: Birra Bejiga Bedassa
Name of the Organization: Addis Ababa University School of Public Health
Name of the sponsor: Addis Ababa University School of Public Health and others concerning bodies.

I-Information sheet

Greeting: Good morning/afternoon!

Hello. My name is _____. I am data collector for master of public health student project in Addis Ababa University. I am conducting a study with the aim of assessing the acceptability of cervical cancer screening and treatment of precancerous lesions using See and Treat approach in selected health center in Addis Ababa. The information I collect will help to your sub city and the government at large to plan health services. Now you are randomly selected for the survey. The questions usually take about 15 to 20 minutes.

Objective of the study: assessing the acceptability of cervical cancer screening and treatment of precancerous lesions using See and Treat approach in selected health center in Addis Ababa

Study Procedure:

If you agree to participate in the study you will be expected to answer a couple of questions about the acceptability of cervical cancer screening and treatment of precancerous lesions using See and Treat approach.

Benefit of the study: The participants will have long and short term benefits. The long term benefit would be, the result of the study will be useful to expand and implement screening programs which could be very beneficiary for the participants and also for the overall community. The short term benefit would be the study participants will get an insight about cervical cancer and screening service after the data collection.
Risk of the study: Participating in this study will not have any risk or harm

Rights of Participants: You have full right either to Participate or decline participation in this study as participant. You may respond to all the questions or you may not answer to questions you don't want to and you may end the interview at any time you want. You can ask any question which is not clear for you.

Confidentiality: Any information forwarded will be kept confidential and names will not be written or specified.

Right to Refuse or Withdraw:

Your participation in this study is on voluntary basis. You are free to decline participation or withdraw from study participation and any time. The services you receive will not be affected by your decision on whether to participate in the study or not.

Appendix II. Informed consent

As to the information given ahead, Participating in this study has no any risk. Your name will not be written on this form and the information you give will never be shared to others. You may not answer any questions that you don't want to answer and you may end this interview at any time you want. Now I would like to tell you that you are selected randomly to be participant of the study. Your genuine response to the interviews will be very important for the purpose of the study. At the same time we would like to appreciate your voluntary participation in the survey after a thorough understanding of the information given to you.

This consent form has been read and explained to me and I have understood, and my questions have been addressed. I therefore willingly agree to take part in the study.
Are you willing to participate in the study?

Yes, I want to participate in the study (please go to the next page) ☐

No, I don't want to participate (say thank you); ☐

THANK YOU VERY MUCH!!

Persons to contact: If you have any question you can contact the investigator by the following address and you may ask at any time you want.

1. Birra Bejiga Bedassa: Addis Ababa University School of Public Health
Mobile: + 251 913687219
E-mail: birr4all@gmail.com

2. Addis Ababa University School of Public Health ethics committee.

Mobile: + 251 91
E-mail:

Result of interview:1- Completed…… 2- Refused …….

3- Respondent not available…….. 4- Partially completed …….

Checked by supervisor;

Name …….. Signature ……
Date ……..

Appendix III: Questionnaire: (English version of the quantitative data tool)

Part 1 Socio demographic characteristics and Economic status

No.	Questions	Answers	Skip
101	What is your age? (In full years)		
102	What is your marital status?	single... .....1 Married.....2 Divorce.....3 Widowed.....4 separated.....5	
103	What is the level of school you attended?	1. Not able to read and write 2. Primary education (Grade 1-8) 3. Secondary education (Grade 9-12) 4. Diploma 5. Degree 6. Masters or above	
105	What is your Occupation?	House wife.....1 Private employee.....2 Farmer.....3 Government employee.....4 Daily laborer.....5 Merchant.....6 Student.....7 Others (specify)..... …8	
106	What is your current Residence area	Urban……..1 Rural……..2	

Part 2. Participant's reproductive data

No.	**Questions**	**Options/answers**	**Remark**
201.	Have you ever been pregnant?	0- No 1- Yes	
202	If your answer is yes, how many times you got pregnant?	----------times	
203	Have you ever gave birth?	0- No 1- Yes	
204	How old were you when you gave birth to your first child?	_____ years	
205	How many children do you have?	_____	
206	How old were you when you had sexual intercourse for the first time	I don't know……1 I never had sexual intercourse……..2 I can specify …….3	
207	Did you use any contraceptive methods?	0- No 1- Yes	
208	If Yes are you currently using it	0- No	

		1- Yes	
209	Which method are you using or you were used?	IUD . . . . . 1 Injectable . .2 implants . . .3 pill . . . . . .4 male condom . 5 female condom.6 Other specify….7	More than one answer can be possible

Part 3.Participants life style and medical conditions

No	Questions	Options/answers	Remark
301	Have you ever smoked cigarrete?	1. No 2. Yes 99. No response	
302	Have you been drinking any kind of alcohol before you knew that you have cancer?	0- No 1- Yes	
303	Have you ever been found to have sexually transmitted infections?	0. No 1. Yes	
304	How many sexual partners you had in your life time?	1.One 2.Two 3. 3-4 4.5-6 5.7-10 6. More than10 99. No response 100. I don't know	
305	Has any of your sexual partners been diagnosed to have sexually transmitted infections?	0- No 1- Yes 99. No response 100. I don't know	
306	Which of the following Does your household have/own	Electricity . . . . . .1 watch/clock . . . . . .2 radio . . . . . 3 television . . . . . 4 mobile telephone . . . . . .5 non-mobile telephone . . ……6refrigerator 7	
307	Have you ever been tested for HIV/AIDS	0- No 1- Yes	
308	If Your answer is Yes what is the result	Posetive(reactive)…….0 Negative(non reactive)…….1 I don't know……..2	

Part 4: **factor affecting acceptance of having cervical cancer screening service by see and treat approach among the study subject**

No	Question	Response	Skip
401	How far is your home from health facility to get cervical cancer screening service	Specify……..	
402	Do you see Delay screening .	0- bad 1- good	If good skip to 404
403	On which interval year or Month do you need?	……..Month/year	
404	How do you see cost of the test	High……1 Medium……2 Low……..3 No cost…….4	
406	what is your filling on Privacy of pelvic Examination	Good filling……1 Moderate filling……2 Bad filling…….3	
407	How did you see the Waiting time at clinic?	Long waiting time……1 Medium waiting time……2 short waiting time……3	
408	How did you see the staff behavior?	Un happy with staff behavior….1 Happy with staff behavior …..2	
409	How did you see the care provider behavior?	Un happy with care provider behavior……1 Un happy with care provider behavior……..2	
410	Is there any health education on cervical cancer screening service?	0- No 1- Yes	
411	How do you see the examination room	Happy with set up……..1 Unhappy with set up….2 No separate room for examination…3	

Part5: Acceptance about cervical cancer screening service by see and treat approach among Women who will be under went screening test.

No	Question	Answers	Skip
501	Are you Satisfied with your decision to be tested	Complete dissatisfaction…….1 unsatisfied…….2 undecided…….3, satisfied but suggest service improvement……4 satisfied……..5, completely satisfied……6	
502	How did you see the testing experience of care provider on service given?	Good……...1 Better…….2 Better than expected……3	
503	How did you see the counseling service?	Informed enough about pretest experience……1 Informed enough about posttest experience……2 The counseling is not that much enough…3	
504	Do you Recommend the testing procedure to friend or relative	Yes……1 No……..2	
505	How did you see the VIA screening test experience	Good……...1 Better…….2 Better than expected……3	
506	How did you feel cryotherapy treatment experience	Good……...1 Better…….2 Better than expected……3	
507	How long time did it take you for VIA screening and cryotherapy treatment	**Specify……..**	
508	How did you see the space and equipment for implementing VIA and cryotherapy	There is sufficient space and equipmen……1 There is a need for improvement……2 The space is over crawded.3 Shortage of Equipment is seen…… ….4	
509	Are you satisfied by having cryotherapy at the same site with VIA	0- No 1- Yes	
510	Are you Satisfied with VIA testing is	unsatisfied…….1	

	coupled with immediate cryotherapy treatment	undecided…….2 satisfied…….3 completely satisfied……4	
511	Do you convince your Husband/partners to comply with post cryotherapy instruction to post pone inter course for 4 week	0- No 1- Yes	If no go to question next question
512	If Yes how can you convince your Husband/partners to comply with post cryotherapy instruction to post pone inter course for 4 week.	I can convince my Husband/partners for 4 week abstinence……..…1 I can convince my Husband/partners to use condom if 4 week abstinence is unlike……..2 I have a problem of convincing my Husband/partners to post pone inter course for 4 weeks…….3 I have sexual intercourse prior to 4 weeks' post treatment……4	

Part 6 : Satisfaction levels among women attending the cervical cancer screening program

Organization of program			
601	How do you feel the Availability of screening program in health centers you screened	unsatisfied……...1 undecided…….2 satisfied…….3 completely satisfied…….4	
602	How did you see the Screening schedule	Good……...1 Better…….2 Better than expected…….3	
603	What is your idea on service provided?	There is a need for improvement…….……1 satisfied…….2 completely satisfied……..…3	
Quality of screening experience			
604	How do you rank The	Moderate …….1	

	quality of the reception?	Good ……..….2 Very good…….3 Excellent ……..4	
605	Do you think there is a Respect for privacy by staff?	Yes…….1 No……..2 I don't know……..3	
606	What is your idea about the Duration of the visit at the center?	Very long…….1 Long……2 Medium……..3 Short……..4	
Interaction with medical staff			
607	What is your perception about the Clarity of information	unsatisfied…….1 undecided…….2 satisfied…….3 completely satisfied……4	
608	Do you satisfied with Information provided about VIA and cryotherapy test in the center	Yes……0 No……..1 Undecided……..99	
609	Are the care provider Use intelligible words or do you understood what She/he says	Yes ……1 No ……..….2	
610	How do you see the Listening time for counseling	Enough……..1 Medium……..2 More than enough……..3	
611	Are you satisfied with Time allotted for result explanations	unsatisfied…….1 undecided…….2 satisfied…….3 completely satisfied……4	
612	How did you see the care provider in convincing	unsatisfied…….1 undecided…….2	

	your fear feeling	satisfied…….3 completely satisfied……4	
	Facility characteristics		
613	How do you see the Privacy level of the examination room	unsatisfied…….1 undecided…….2 satisfied……..….3 completely satisfied……4	
614	Did you satisfied with Cleanliness of examination room and equipment	No……..0 Yes ……..1 Undecided…3	
615	How did you see the Overall satisfaction with the service received	unsatisfied…….1 undecided…….2 satisfied……..….3 completely satisfied……4	

Part 7. Experiences of women regarding cervical cancer screening service by see and treat.

701	How do you perceive discomfort/ pain you felt during the tests	No pain/discomfort…..1 Slight discomfort……2 Moderate pain…….3 Severe pain……4 No pain……..5	
702	Is there any experienced problem during screening?	severe bleeding……..….1 shock……..2 any condition requiring hospitalization…….3	
703	Is there any experiencing problem during post screening service?	Vaginal discharge…….1 Vaginal bleeding……2 Vaginal burning……..3 Others(specify)……4 No problem……5	
704	Before coming to health facility did you heard about cervical cancer screening service.	Not at all…….1 Partly……..2 Quite a bit……..3	

		Completely……..4	
705	When you were in the treatment room, did you get enough information about your condition?	No……..0 Yes ……..1	
706	Did your VIA test result is positive before undergoing this test result	No……..0 Yes ……..1	
707	Were you given enough information about what was going to happen during your cervical cancer screening?	No……..0 Yes ……..1 Unsure……99	
708	Do you feel embarrassed when undergoing a VIA screening and Cryotherapy treatment?	No……..0 Yes ……..1	
709	Do you feel more comfortable in undergoing a VIA screening and Cryotherapy treatment? If the nurse/doctor is:	A female…….1 A male……...2 female / male ……..3	
710	Do you feel pain when undergoing a VIA screening and Cryotherapy treatment?	No……..0 Yes ……..1 Sometimes…..100	

Part8.Knowledge about cervical cancer and the screening service by see and treat.

No.	Question.	Answer	Skip.
801	Have you ever heard about cervical cancer screening	**No .....0** **Yes 1**	
802	What are the symptom of cervical cancer *Multiple answer possible*	Vaginal bleeding.....1 foul smelling of Vaginal discharges…….2 Post coital bleeding…….3 Painful coitus…….4 Post-menopausal bleeding…….5 Abdominal pain…….6 Others (specify)……..7 I Don't know……..….8	
803	How can cervical cancer be screened *Multiple answer possible*	Herbal remedies.....1 surgery.....2 Visual inspection by acetic acid(VIA)……...3 Radiotherapy…….4 Do not know.....5	
804	how can cervical cancer be treated *Multiple answer*	Herbal remedies.....1 surgery.....2 cryotherapy ……...3 Radiotherapy……...4 Do not know.....5	
805	Can cancer of the cervix be cured in its earliest stages?	No .....0 Yes .....1 Don't know.....100	
806	How can cervical cancer be prevented.	Avoid multiple sexual partners...1 Avoid Human papilloma virus	

	Multiple answer possible	infection…….2 Use condoms……..3 Vaccination……..4 Avoid unprotected sexual intercourse……5 hygine ----------6 I donot known……	
807	How expensive do you think cancer of the cervix screening and treatment is in this country? *Multiple answer possible*	It is free of charge.....1 It is reasonably priced.....2 It is somewhat/moderately expensive.....3 It is very expensive.....4 Don't know.....5 other(specify) 6	
808	Are there screening and treatment procedures for pre-cancerous cervical lesion	No .....0 Yes .....1 Don't know.....100	**If NO** skip to question 901
809	If yes what are these procedures? *Multiple answer possible*	VIA/VILI……1 Cryotherapy…….2 Pap smear……3 Blood test……..4 I don't know……..6	
810	From Whom you heard about cervical cancer screening *Multiple answer possible*	news media……..1 Brochures, posters, books and other printed material……2 Health workers……..3 Family…….4 Religious leders……5	

		Teachers……6 Other(specify)……7 Don't know……..8	
811	How often is screening for pre-cancerous cervical lesion is done?	Once every year.....1 Once every three years.....2 Once every 5 years.....3 Any other(mention).....4	
812	Who should be screened?	Women of 30 years and above.....1 Prostitutes.....2 Elderly women.....3 Other.....4 Don't know.....5	

Part 9. Attitude towards cervical cancer screening using See and Treat approach.

No.	Question.	Answer.	Skip.
901	Did cervical cancer Screening and treatment helps in prevention of carcinoma of the cervix	strongly agree……..1 Agree…….2 Uncertain …….3 Dis agree ……4 Strongly disagree…….5	
902	Cervical cancer screening and treatment service must be available in all health centers.	strongly agree.....1 agree.....2 Uncertain).....3 disagree.....4 strongly disagree.....5	
903	Cervical cancer is highly prevalent in our country and it is the leading Couse of death among all	strongly agree.....1 agree.....2 Uncertain.....3 disagree.....4 strongly disagree.....5	

	cancer in Ethiopia		
904	any reproductive age group(adult) women including you can acquire cervical cancer.	strongly agree.....1 agree.....2 neither agree nor Uncertain.....4 strongly disagree.....5	
905	Cervical cancer cannot be transmitted from one person to another	strongly agree.....1 agree.....2 Uncertain.....4 strongly disagree.....5	
906	Screening causes no harm to the client	strongly agree.....1 agree.....2 Uncertain.....4 strongly disagree.....5	
907	Screening for premalignant cervical lesions is not expensive	strongly agree.....1 agree.....2 Uncertain.....4 strongly disagree.....5	
908	If screening is free and causes no harm, will you screen	strongly agree.....1 agree.....2 Uncertain.....4 strongly disagree.....5	

Part 10: practice of women about cervical cancer screening using VIA and cryotherapy treatment.

No.	Question	Response	Skip
1001	Have you ever heard of cervical cancer screening?	yes.....1 No.....2	
1002	Have you ever screened for any reproductive health screenings like cancer, HIV, STI.	yes.....1 No.....2	If your answer is NO go to question number 107
1003	if your answer is Yes; have you ever screened for cervical cancer.	yes.....1 No.....2	**If no skip to 1006**
1004	If yes for Q1003, what screening procedure did you undergo, describe your experiences.	VIA……..1 Pap smear……2 Other specify……3	
1005	Where did you screen	Hospital(Mention).....1 private(Mention).....2 Health centers(Mention).....3	
1006	If no for Q1003, what is the reason for not having cervical cancer screening test? Describe your experiences.	The test is not necessary…1 The price for screening is not affordable……2 Due to lack of information about the test…….3 It may be painful..4 I feel shy…….5 I am healthy……..6 My husband would not agree…….7 I am afraid a screening test would reveal cervical Cancer……8 it is expensive …….9 I don't have time……..10	
1007	When was the last time you had cervical cancer screening test	……Month/Year	

Thank you.

Appendix IV. Informed consent for the qualitative study

Greeting: Good morning/afternoon

My name ----------is I am moderator

This is a study done by Birra Bejiga a student in Addis Ababa university School of Public health, study has an objective to assess the acceptability of cervical cancer screening and treatment of precancerous lesions using See and Treat (SAT) approach among Women of reproductive age group in selected health center in Addis Ababa. Participating in this study has no any risk. Your privacy and your name will not be written, all in formation you gave will be kept confidential. You may not answer any questions that you don't want to answer and you may end this interview/discussion at any time you want. We use tape recorder only to capture full idea of the discussion and after analyzing it recorded voice will be deleted. Your genuine discussion will be very important for the purpose of the study. At the same time we would like to appreciate your voluntarily participation in the study after a thorough understanding of the information given to you.

I have read this form or it has been read to me in the language i comprehend and understand all conditions stated above.

Are you willing to participate in this study?

1- No (say thank you)

2- Yes (continue interviewing)

Name of principal investigator: Birra Bejiga

Cell phone No - 0913687219

E-mail: birr4all@gmail.com.

Name of health facility……..

Name of interviewer_____ signature_____

Date of interview/FGD (Ethiopian calendar) _____/_____/_____

AppendixV : Qualitative tools for the In-depth Interview discussion

Topic guide for discussion**.**

1. How do you see the uptake of cervical cancer screening service among women? Please elaborate and what would make one woman more likely to get cervical cancer screening than another?
2. What is the Feedback among the patient concerning VIA screening and cryotherapy treatment after the procedure? Please explain.
3. What do you think is the barrier to many women had not screen for cervical cancer screening? Please explain why.
4. What is the adherence (follow up) level of patient during post screening service? After 5 year for; VIA and 1 year after cryotherapy.
5. When you offer or provide the cervical cancer screening service is there any challenge?, is there any patient who refuse the service?, Is there any pertinent problem in giving the service? What is your experience on this? Please explain.
6. How the clients were come into the health facility, from where they get information about the cervical cancer screening service? Do the OPD and ANC provide the information? Is there any health education in your facility about cervical cancer screening service? Please elaborate.
7. What were some barriers, if any, that you encountered during VIA screening and cryotherapy treatment? in terms of:
8. What is the barrier when educational messages which emphasize that women with abnormal screening results must return for follow-up? How did you overcome the barrier(s)?
9. What is the reason for refereeing cervical cancer screened patient? Do you have cryotherapy treatment tip? Is there human resource problem? Lack of trained man power or any other problem?
10. How do you see the women's uptake of instruction among those who had positive VIA .How do you see the overall patient satisfaction level?
11. What strategies, interventions, tools, etc., would you recommend be sustained and/or scaled up of the uptake of cervical cancer screening service? Please provide a justification for your response.
12. What recommendations do you have for future efforts and improvement of the cervical cancer screening service?

DECLARATION

I the undersigned, declare that this thesis is my original work, has never been presented in this or any other university, and that all the resources and materials used for the thesis development, have been acknowledged as complete references.

Name: Birra Bejiga Bedassa

Signature: _____

Date of submission: _____.

Approval of the primary Advisor

This thesis work has been submitted for examination with my approval as University primary advisor

Name of the primary advisor: Prof. Ahimed Ali

Signature _____

Date: _____