ASSESSMENT OF THE KNOWLEDGE AND PERCEPTION OF WOMEN TOWARDS CERVICAL CANCER, THE CASE OF MEKELLE CITY, NORTHERN ETHIOPIA,ACOMMUNITY BASED STUDY

ATHESIS SUMMITED TO MEKELLE UNIVERSITY INSTITUTE OF POPULATION STUDIES,CENTER FOR POPULATION AND DEVELOPMENT IN PARITAL FULFILLMENT FOR THE DEGREE OF MASTERS OF SCIENCE IN POPULATION AND DEVELOPMENT

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MEKELLE, ETHIOPIA

Declaration

I Bisrat G/meskeldeclare this thesis entitled as"*Assessment of the knowledge and perception of women towards cervical cancer, the case of Mekelle city, northern Ethiopia"*is my own original work and that it has not presented and will not be presented in any other university for a similar degree award. And all source and materials used in this thesis have been fittingly acknowledged.

Signature Date

Certification

The under Certify that this MSc Thesis entitledas:"Assessmentof the knowledge and perception of women towards cervical cancer, the case of Mekelle city, northern Ethiopia" is a research work of Bisrat G/meskel.Who did it under our guidance and supervision and hence, we hereby recommend it to be reviewed by the examiner.

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Abstract

*Cervical cancer is the 2nd most common female cancer in the women aged 15 to 44 years in the world. Every year, around 527,624 develop cervical cancer and 265,672 die from the disease, globally with about 84.6% (446, 546,) in developing countries. In Africa about 99,038 new cases of cervical cancer are recorded annually. In Ethiopia also 7,095 new cases are recorded and out of this, over 4,732 women die from the disease annually. This study aimed to assess the knowledge and perception towards cervical cancer among women aged 15-49. Community based cross-sectional study design with quantitative method was conducted from December 2017 to May 2018 in Mekelle city. Multistage sampling technique was used to select women respondent.The quantitative data was collected by providing interview from 382 community participants.Health extension workers /who are diploma nurse was administered a questionnaire using face-to-face interviews. The data collection was supervised by trained supervisors.This finding shows 53.9% of the participants had sufficient knowledge about cervical cancer. After adjusting for covariates, having sufficient knowledge about cervical cancer was positively associated with mothers' occupation and educational label. Respondents those who were Gov't employee AOR: 9.98; 95% CI were more likely to have sufficient knowledge about cervical cancer compared to those who were housewife and those who had some form of education were more likely to have sufficient knowledge. Women who attended preparatory AOR=**68.808(12.011-394.190)** andthose who had secondary and above educational status AOR=**10.191(2.040-50.913)**were also more knowledgeable than those who were unable to read and write.In this finding majority of the respondents ever heard about cervical cancer, however almost half of them did not have sufficient knowledge.Specifically, the knowledge on risk factors, symptoms, prevention and treatment methods was not satisfactory. Education and screening program should be given integrated with ANC and family planning services and the screening program should extend to near community at health centers.*

Key word: *cervical cancer: knowledge: screening: perception: w*omen

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Acronyms

AIDS	Acquired Immune Deficiency Syndrome
ANC	Antenatal Care
CDC	Center for Disease Control
CKC	Cold Knife Conization
CIN	Cervical Intraepithelial Neoplasma
HIV	Human Immune Deficiency Virus
HPV	Human Papilloma Virus
LLETZ	Large loop Excision of the Transformation Zone
NCDs	Non-Communicable Disease
NGO	Non-Governmental Organizations
SPSS	The Statistical Package for social science
STD	Sexual Transmitted Disease
TV	Television
USPSTF	United States Prevention Service Task Force
VIA	Visual Inspection with Acetic acid
WHO	World Health Organization
WHS	Women Health Survey

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Chapter One:Introduction

1.1 Background

Cancer is a term used for the malignant, autonomous and uncontrolled growth of cells and tissues. Persistent infection with cancer-causing human papilloma virus /HPV/ types is the cause of most cervicalcancer. Human papilloma virus is the most common infection acquired during sexual relations. Cervical cancer is the most common cancer among women in 45 countries of the world. These include many countries in Sub-Saharan Africa (WHO/ICO, 2017; ACCP, 2007).

Cervical cancer is one of the very few cancers where precursor stage /pre-cancer /lasts many years before becoming invasive cancer providing ample opportunity for detection and treatment. Cervical cancer prevention and control program are developed and designed to decrease cervical cancer incidence, morbidity and mortality by reducing HPV infection such as vaccination for girls aged 9-13 before they initiate sexual activity, detecting and treating pre-cervical cancer lesions and providing timely treatment and palliative care for invasive cancer. Unfortunately even though it is preventable there is still large number of women who die of cervical cancer in many countries, this is because by many factors such as barriers that limits their access to service as well as prevailing cultural and gender barrier(WHO, 2014).

Elderly women are at a higher risk of developing and dying from cervical cancer(CHP, 2017).Cervical cancer is the 2nd most common female cancer in the women aged 15 to 44 years in the World. Every year, around 527,624 develop cervical cancer and 265,672 die from the disease globally with about 84.6% (446, 546,) in developing countries. In Africa about 99,038 new cases of cervical cancer are recorded annually. In Ethiopia, 7,095new cases are recorded and out of this, over 4,732 women die from the disease annually(WHO/ICO, 2017)

Every woman has right to cervical cancer screening at least once in her life time(ACCP, 2007). Cervical intraepithelial neoplastic (CIN) is a premalignant lesion that may exist at any one ofthree stages: CIN1, CIN2, or CIN3. If left untreated, CIN2 or CIN3 (collectively referred to as CIN2+) can progress to cervical cancer. Available screening tests include a human papillomavirus (HPV) test, visual inspection with acetic acid (VIA), and cytology (Pap test). Available treatments include cryotherapy, large loopexcision of the transformation zone (LEEP/LLETZ), and cold knife conization

(CKC).Cervical cancer screening is recommended for women fromage 21 to about age 65 to reduce the morbidity and mortality from cervical cancer (WHO, 2013).

In our country Ethiopia prevention service (like screening) is available but utilization of thisservice remainlow (Mitiku and Tefera, 2016).For this reason studies in Robe/ Goba, Desse, andGonder have suggested that women did not have adequate information on what cervical cancer risk factors,symptoms and prevention and treatment methods.

No previous study has exclusively studied at the knowledge and perceived barriers regarding cervical cancer among women in Mekelle. This study is the first to document such important information that might be crucial to facilitate planning at community level and interventions necessary to reduce morbidity and mortality from the disease.

1.2 Statement of the problem

Worldwide, around 527,624develop cervical cancer every year and almost 265,672 die from the disease annually with about 84% (446, 546,) in developing countries(WHO/ICO, 2017).

In America before cervical cancer screening began, it was one of the most common causes of death in women. The reduction in mortality through cervical cancer screening has occurred by detecting precancerous lesions as well as invasive cancer at early stages and it is found that in United statesdeath rate declined by more than 54% over the last 35 years mainly due to the effectiveness of screening with the Pap test(Adegoke, Kulasingam and Virnig, 2012).

But in developing country cervical cancer is still the 2nd most common female cancer in the women aged 15 to 44 years in the world due to less practice of screening program.In Africa about 99,038 new cases of cervical cancer are recorded annually. According to the 2017 WHO report, Crude incidence rates of cervical cancer in Ethiopia is 16.3 per 100,000 patients, with 7,095 annual number of new cases and 4732 deaths every year. Despite this fact, very few women receive cervical cancer screening services in Ethiopia.Only 0.8% women age 25–64 years were screened every 3 years (WHO/ICO, 2017).Based on updated guidelines from the united states prevention service task force(USPSTF)screening recommendations the specific patient groups are: - for < 21 years old no screening becausesexual history is not a consideration, for women 21-29 years old cytology alone every 3 yearsorpreferred HPV and cytology co-testing every 5 years,30-65 years old cytology alone or in conjunction with HPV test every 3 years is acceptable and for women >65 years old screening can be discontinued after either three consecutive negative cytology tests or two negative cytology and HPV tests within 10 years, provided the most recent test was within 5 years (Jori S Carter, 2016).

But level of knowledge about cervical cancer regarding its risk factors, signs and symptoms, prevention and treatment methods is suboptimal among the population so magnitude of cervical cancer screening service uptake among all women is still unacceptably low.

Many studies related to this topic were donebefore, but most of these studies were limited on health professional, university students and were focused on level of service uptake. Almost all these studies show there were low level of service utilization, but they are limited to elaborate what is the proximal factor for this low level of service utilization. Hence this study aimed to assess knowledge related to risk factors, sign and symptoms, prevention and treatment methods as well as different perceived factors related to the service utilization and methods to mitigate this problem.

1.3 Objectives of the study

1.3.1 General objective

The main objective of this study is to assess the knowledge andperception,towards cervical cancer among women aged 15-49: the case of mekelle city.

1.3.2 Specific objectives

The specific objectives are:

1. To assess knowledge of women towards cervical cancer in mekelle city

2. To Identifyperceived factors influencing utilization of cervical cancer screening

3. To assess the level of women's utilization of screening services for cervical cancer and treatment.

4. To find out possible recommendations of mitigating this problem

1.4 Research Questions

This research seeks to answer the following questions.

1.4.1 The main question was

The main question of this study is whatisthe level of knowledge and perceptiontowards cervical cancer among women aged 15-49: the case of mekelle city?

1.4.2 The sub questions were:

1. What is the level of knowledge of cervical cancer among women aged15- 49 years?

2. What is the level of women's utilization of screening services for cervical cancer and treatment?

3. What are the perceived factors influencing utilization of screening services for cervical cancer and treatment?

4. What are the possible recommendations to mitigate this problem?

1.5Significance of the study

Cervical cancer is a preventable disease through detection of early stages of the disease. However,less attention has been given to it compared to other maternal services like antenatal care. In mekele city, there are governmental and non-governmental organizations/ private clinics and Hospitals which give pre-cervical cancer screening and treatment, but the service given by these organizations is low with regard to its urgency. Hence the findings from this study will be useful at the policy level to complement knowledge and awareness about this important public health issue. The study is crucial because it focus the reproductive health of women. Thedata gained from this study may be used for both health care providers who treatas well as give awareness to the community and to the women themselves. Identification of knowledge gaphelps in the development of educational programs targeted to women at reproductive age. This shallhelp in reducing the high incidence of cervical cancer in the city.

1.6 Definition of terminology and concept

Operational definition

Sufficient knowledge: a serious of questions regarding risk factors of cervical cancer, main sign and symptoms, treatmentoptions, curability, detectability and preventive measures were asked to assess the respondent's knowledge about cervical cancer and those answer 60% and above of knowledge questions regarded as have sufficient knowledge and those who answered less than 60% of the knowledge questions taken as having insufficient knowledge.

Cancer: growth of abnormal cell in the tissue

Cervical cancer: growth or abnormal proliferation of cell on the opening of uterus

Cervical cancer screening: those who ever had got test of any of this method once in life time considered as having screening practice, and those who never screened regarded as having no screening practice

Cervical pre-cancer: is distinct change in the epithelial cell of the transformation zone of the cervix, the cell begins developing in abnormal fashion in the presence of persistent or long term HPV infection

1.7 Scope, limitationand strength of the study

1.7.1 Limitation of the study

This study was delimited on two sub-city of mekelle and since community awareness is difficult to measure, conducting research on awareness of cervical cancer among women comes with some challenges and allows the findings of the research difficult to be generalized. This study was conducted with a limited sample group to determine the awareness and perception of cervical cancer among women in mekelle city. It would be beneficial to plan a study with a larger sample population to gain knowledge about cervical cancer.

1.7.2 Strength of the study

The study has tried to identify the knowledge andperceptions, related to cervical cancer screening, and applied multistage sampling through simple random sampling and systematic random sampling technique to have a representative sample of the source population is one of the major strengths of this study.The data collector was daily followed by supervisors to ensure completeness of the data and procedure.

1.8 Organization of the study

The paper is organized into five chapters. Chapter one presents the introduction, background of the study, a statement of the problem, objectives of the study, the significance of the study, definition of terminology, scope and limitation of the study. The second chapter presents aliterature review related to the research topic. Chapter three present research method, research approach, sampling procedure, data collection technique, methods of data analysis and ethical consideration. Chapter four results of demographic characteristics of respondents, reproductive characteristics of respondents, and knowledge related to risk factors, symptoms, preventive and treatment measures of cervical cancer, perceived factors of cervical cancer screening, and discussions with previous study and finally, in chapter five conclusion and recommendation are presented.

Chapter Two: Literature review

2.1 Overview of cervical cancer screening

Cervical cancer is a global public health problem accounting around 527,624 new cases and over 265,672 deaths worldwide each year,84% of cervical cancer cases occur in less developed countries, Eastern and Western Africa are the two regions with the highest age standardized cervical cancer rate (between 29-42 per 100,000) in the world. Human Papillomavirus infection rate in females is the highest in Africa than other regions of the world. Cervical cancer is the 2nd most common female cancer in the women aged 15 to 44 years in World. In Africa about 99,038 new cases of cervical cancer are recorded annually. In Ethiopia 7,095of new cases and 4732 deaths recorded annually(WHO/ICO, 2017)

Participants in Uganda suggested that there was not enough information about cervical cancer in the media to raise concern for cervical cancer. Majority of the respondents observed that one way to communicate cervical cancer as an important issue and to increase the public's perceived risk was to hear more about it on media. Radio, television, internet and friends respectively ranked as the main sources of cervical cancer information. Radio ranked highly because respondents found it most easily accessible. Television also ranked highly and respondents attributed this to the many health programs that have been accessed through this platform as well as the audio visual characteristics of television. Newspapers were cited as having news stories about cervical cancer. Internet and social media is also increasingly becoming an important avenue for creating awareness and increasing knowledge about issues. Particularly among the respondent this ranked highly because they spend quite some time using the internet. However the concern with internet is that there is a lot of inaccurate information available. The participants were also asked to identify their preferred media for receiving and accessing cervical cancer information. Most respondents indicated that they intend to access cervical cancer information from a health professional based on the idea that they more knowledgeable and informed about cervical cancer issues (Nattembo, 2018).

Risk factors for HPV infection include multiple sexual partners, having a partner who has had many partners, and starting to have sex at an early age (18 years or younger), Failure to use condom can also increase the HPV infection. In addition to having HPV, other risk factors for cervical cancer include, smoking, having human immunodeficiency virus (HIV), compromised immune system,

using birth control pills for a long time (five or more years) and having given birth to three or more children (Holle et al., 2017).

Women who smoke are about twice as likely as non-smokers to get cervical cancer. Tobacco by-products have been found in the cervical mucus of women who smoke. Researchers believe that these substances damage the DNA of cervix cells and may contribute to the development of cervical cancer. Smoking also makes the immune system less effective in fighting HPV infections. The immune system is important in destroying cancer cells and slowing their growth and spread. In women with HIV, a cervical pre-cancer might develop into an invasive cancer faster than it normally would. There is evidence that taking oral contraceptives (OCs) for a long time increases the risk of cancer of the cervix. Research suggests that the risk of cervical cancer goes up the longer a woman takes OCs, but the risk goes back down again after the OCs are stopped, and returns to normal about 10 years after stopping. Some research suggests that women who had ever used an intrauterine device (IUD) had a lower risk of cervical cancer. The effect on risk was seen even in women who had an IUD for less than a year, and the protective effect remained after the IUDs were removed. Women who have had 3 or more full-term pregnancies have an increased risk of developing cervical cancer. Also, studies have pointed to hormonal changes during pregnancy as possibly making women more susceptible to HPV infection or cancer growth. Another thought is that pregnant women might have weaker immune systems, allowing for HPV infection and cancer growth (American cancer society, 2018).

If it's found early, cervical cancer is one of the most successfully treatable cancers. In the United States, the cervical cancer death rate declined by more than 54% over the last 35 years. This is thought to be mainly due to the effectiveness of screening with the Pap test(Adegoke, Kulasingam and Virnig, 2012).

2.2 Knowledge about risk factors

Infection by the human papillomavirus (cancer/cancer-causes/infectious-agents) (HPV) is the most important risk factor for cervical cancer. HPV is a group of more than 150 related viruses. Some of them cause a type of growth called papilloma(American cancer socity, 2018)

Study in Desse town showed that 57.7% of the women reported that they had heard about cervical cancer.Media/radio/Television was the major(55.3%) source of information followed by health care

provider (33%).Study in southern Ethiopia/Sidama zone/ most of the respondents(92.9%) had heard about cervical cancer. Regarding the source of information about cervical cancer, 63.2% had heard from school/college, 29.2% from news/media, 21.8% from friends/colleagues, and10.9% from brochures/posters, while 1.6% of them had heard from a religious institution(Dulla *et al.*, 2018).And about 58.1% of the respondents did not know the risk factors for cervical cancer, less than half of participants (41.9%) were able to identify at least one risk factor for cervical cancer. Multiple sexual partners and sexually transmitted infections (STI) were specific risk factors mentioned by 21.6% and 67 (10.8%) of the respondents respectively(Mitiku and Tefera, 2016). Related study in Robe andGoba shows77.1% of respondent had heard of cervical cancer and the main source for those who have heard were mass media(60.4%). Only 34.9% of the respondent were able to identify any risk factor of the cervical cancer (Tefera *et al.*, 2016).

2.3 Knowledge about sign and symptom

The common sign and symptom of cervical cancer are: abnormal uterine bleeding, spotting especially in postmenopausal women /is frequent early sign, pain during urination, intercourse or pain in the pelvic area can be symptom (ACCP, 2007).

Studyin Gondar town shows 39.6% of the respondents did not knew any symptom.Among all the participants, 35.3% and 29.7% of them mentioned offensive and excessive vaginal discharge respectively(Getahun *et al.*, 2013).

Similar study in Robe andGoba, 75.2% of the study participants were not knew any presenting sign and symptom. About 23% knew bleeding after coitus and 22.53% of them knew pain as the sign and symptoms of cervical cancer when asked about the symptoms of cervical cancer(Tefera *et al.*, 2016).

Related study in Desse 46.3% of the respondenst mentioned either vaginal bleeding or foul smelling vaginal discharge as symptom of the disease. However half of them(53.%)did not knew any symptom (Mitiku and Tefera, 2016).

Similar study in north Uganda shows: 99% of participants had heard about cervical cancer.,of these 70.3% reported that cervical cancer is preventable while 92% reported that cervical cancer can be cured in the hospitals when diagnosed at an early stage. However, there was limited awareness that cervical cancer can be prevented through Pap smears (41%) or vaccination of young girls against HPV (8.3%). While surgical treatment was reported by about 1 in 4 participants (29.9%) (G, 2018).

2.4 Knowledge about preventive method

Few respondents in Uganda suggested that frequently having cervical cancer screening and having one sexual partner would help prevent cervical cancer. Few respondents discussed that cervical cancer does not necessarily concern them as students because they feel this disease affects women of an older age group. Respondents indicated that they had not gone for cervical cancer screening because they did not know where to go for the screening. Some respondents cited concerns of high costs of cervical cancer. Some respondents identified stigma as a constraint to cervical cancer screening (Biobaku *et al.*, 2018).

Study in Gondar 63.9% of the respondents knew that cervical cancer as it can be prevented. Regular medical checkup (screening) was mentioned by 54.8% of the respondents as a helpful prevention measure. 66.1% of the respondents also knew that cervical cancer can be treated and 52.8% agreed that cervical cancer can be cured if detected early (Getahun *et al.*, 2013).

Related study of Robe andGoba majority of the respondent (86.6%)did not knew any possible detection of cervical cancer before manifestation and 65.7% did not knew early detection for easily cure of the cervical cancer. Among respondent who knew the prevention method of cervical cancer about 57% of them reported regular medical checkup followed by being faithful, delaying sexual debut, consistent condom uses and Vaccine for HPV (Tefera *et al.*, 2016).

2.5 Knowledge about treatment methods of cervical cancer

Finding from northwest Ethiopia shows 33.9% respondent were not knew any treatment option to cervical cancer (Getahun *et al.*, 2013). and finding from Addis abebaGulele sub city indicates ,4.1 % of respondents knew that cervical cancer is treated by radiation, 44.7% of the respondents knew that cervical cancer can be treated by surgery, lastly 10.6 % respondents were answer that drug can treat cervical cancer (Segni, 2017),

2.6 Over all knowledge about cervical cancer and associated factors

Finding from Desse(51%)of the participants had sufficient knowledge about cervical cancer and Robe and Goba (46.3%) participants had adequate knowledge about cervical cancer which shows that comprehensive knowledge about cervical cancer is low (Mitiku and Tefera, 2016; Tefera *et al.*,

2016).and study from low and middle income countries was 66% in India, 58.8% in Nepal and 57.7% in Srilanka(Raychaudhuri and Mandal, 2012).

Study at Adds abebaGulele sub city shows that 37.4% of the respondents had good knowledge (Segni, 2017),and women with higher education has more knowledge on cervical cancer than women with no education; husband education has also greater contribution to women's knowledge if they were married, income level of the respondent also have effect on women's knowledge to cervical cancer .women with high income level have more knowledge than women with low income (Segni, 2017).

2.7 Level of utilization to cervical cancer screening service

According study done at early married women in Arbaminch majority (94.1%) of the respondents did not utilize cervical cancer screening service. majority (60.02%) of them mentioned being healthy for not utilizing(Gebru Z, 2016).

Similar study in Zimbabwa91% had never had cervical screening, and 81% had no previous knowledge of the cervical screening tests(Sampselle, Ph and Johnson, 2011).

2.8 perceived factors influencing utilization of cervical cancer screening service

The key barrier to screening service are,Fear of pain from procedure : Low level of knowledge and awareness about cervical cancer and screening : Screening is unnecessary if no symptoms ,Low risk, Low susceptibility, Most see no benefit in screening, Lack of facility for screening, Health facility distance, navigation issues, Distance and cost of transportation, Services not easily accessible, Cultural issues: like Shame of sickness, Fatalistic view, stigmatization : Modesty like Embarrassed with procedure, Privacy and embarrassment, Cultural constraints about expression, Sex of care giver, Misconception about disease, screening, procedure ,infection from other diseases, Spousal support, Health care worker attitude, Financial constraints, Cost of screening, Cost of transportation and Busy with housework(Lim, 2017).

The major factors identified by the women in Nigeria were lack of awareness about the screening. Illiteracy, Also, the facts that when people are healthy they don't bother about preventive services as they have other contending(Ndikom and Ofi, 2012). Common reasons given by women for not undergoing screening were feeling of healthiness because of absent symptoms followed by emotional barriers like fear of test procedure is painful and embarrassment (Mitiku and Tefera, 2016).

Study done in some part of Ethiopia /Addisabeda and Jima/shows most women with cervical cancer symptom only seeks treatment after the disease reaches an advanced stage with the women suffering intolerable pain. Various factor including cultural, socio economic believe about the disease and health care system were found to affect the treatment seeking behavior for cervical cancer. some of the perceived barrier includes stigma associated with the disease. Major barrier to seeking treatment stigma and discrimination affected women experienced by their family and the community.As the community commonly believe the cause of cervical cancer is due to unacceptable social behaviors, women are therefore reluctant to disclose their condition due to social consequences(Birhanu *et al.*, 2012).

More than half (66.2%) of the participants' study in Hong Cong shows considered themselves healthy and only 5.5% reported themselves as not healthy. Less than one-third (28.5%) of the participants believed that they did not have control of their health. Very high percentage(95.3%) of women concerns about their family or relatives health and half of the participant report that their health behavior were influenced by family or relatives health(Leung and Leung, 2010).

2.9 Method of overcoming this problem

Study in Nigerian women commented, to overcome the problem of cervical cancer screening are:-as ANC is being advertised on TV and radio, it should also be done for cervical cancer; It should be advertised on Radio so that people will go for screening and those who are positive will know about the disease and get treatment for it.; screening can be improved through orientation and awareness by nurses in streets and markets like immunization programs; Information can be taken to schools and offices, hospitals and even to the market women. It should be explained to both uneducated and educated people; Education on cervical cancer should begin from nursery, primary and secondary. "Should be discussed at the clinics, posters should be made and public campaign should be done so that people can know about it (Ndikom and Ofi, 2012).

Conceptual frame work

The conceptual framework below shows how socio-demographic characteristics, access to health service, source of information, awareness like having information about cervical cancer,having information about cervical cancer screening and cultural issue/perceptions to cervical cancer screening influences comprehensive knowledge of cervical cancer amongwomen aged 15-49.

Study among female students in Hawassa with age group 21-23 years 11 times more likely to be knowledgeable than students with age group 17- 20 years. And 24 and above years over 19 times more likely to be knowledgeable as compared to students with age group 17-20 years old.

Study in Gonder shows participants with secondary and above education were also about 1.2 times more likely to be knowledgeable than women with no formal education. In addition knowing someone with cervical cancer and ever heard about screening were also factors that are more likely to increase knowledge of cervical cancer(Getahun *et al.*, 2013)

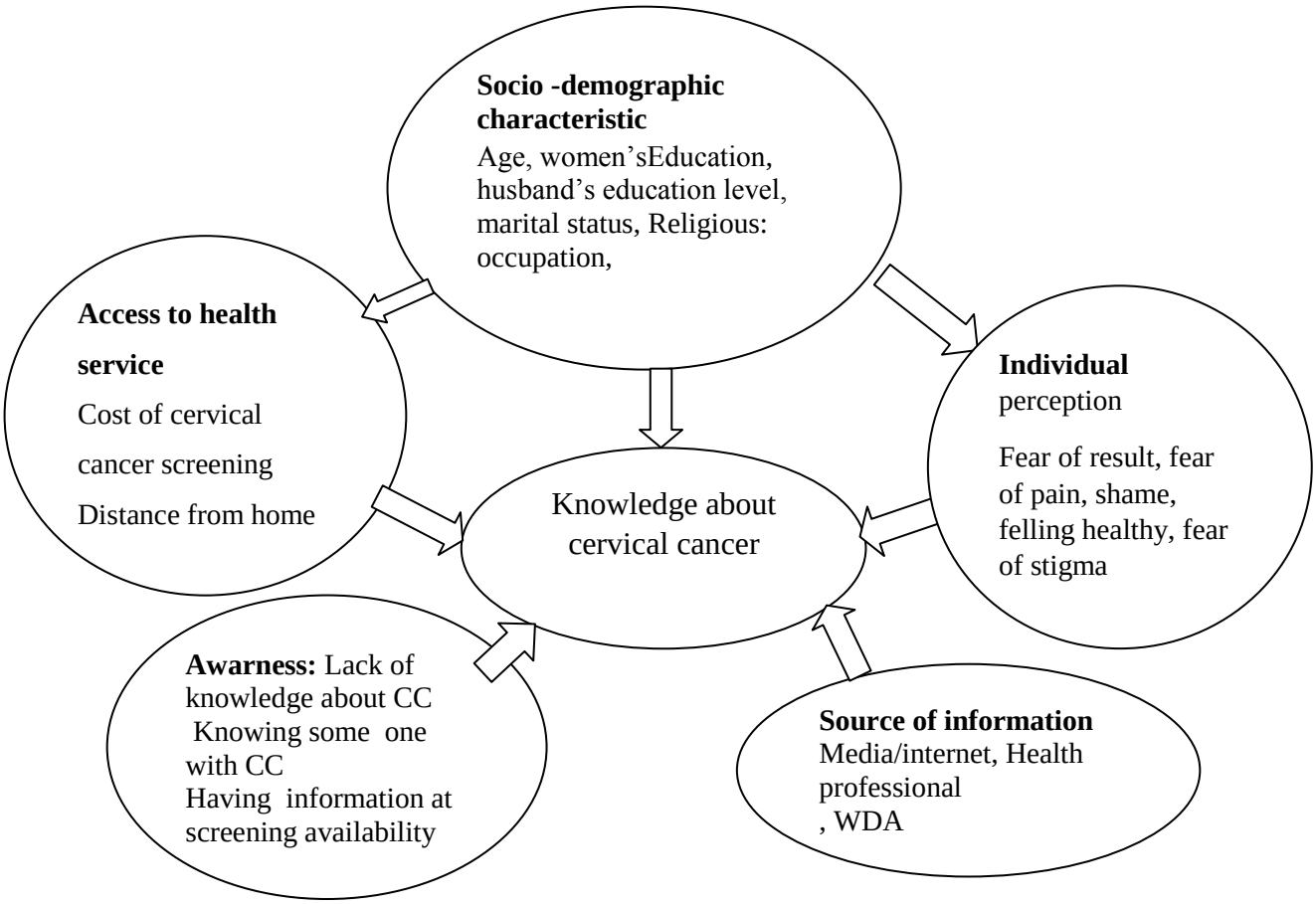

Figure 1 Conceptual framework of different factors influencing knowledge about cervical cancer among reproductive age women (based on reviews, 2018)

(Author's own construct)

ChapterThree:Methods and Materials

3.1 Study area and period

Mekelle is the capital city ofTigray regional state, covers an area of 109 square kilometers, located in Tigray Region, the city is one of the fastest growing urban areas in Ethiopia and is the sixth largest city in the country.The town is divided into 7 administrative areas called sub city, these areAyder, Hawelti, AdiHaqi, Hadnet, KedamayWeyane,Quiha and Semien. The city has one referral hospital (Ayder), two general hospitals (Mekelle, and Quiha,), ten health centers (Mekelle, Simien, Kasech, Quiha, Aynalem, Halwelti, Serawat,Felegdaro, Adha and Adishimdihun) and several private clinics and hospitals.

The town has two cervical cancer-screening centersat hospital level andthese are Mekelleand Ayder Referral Hospitals and other non-governmental/private hospitals even clinics like Mari stopEthiopia, family guidance association Ethiopia.

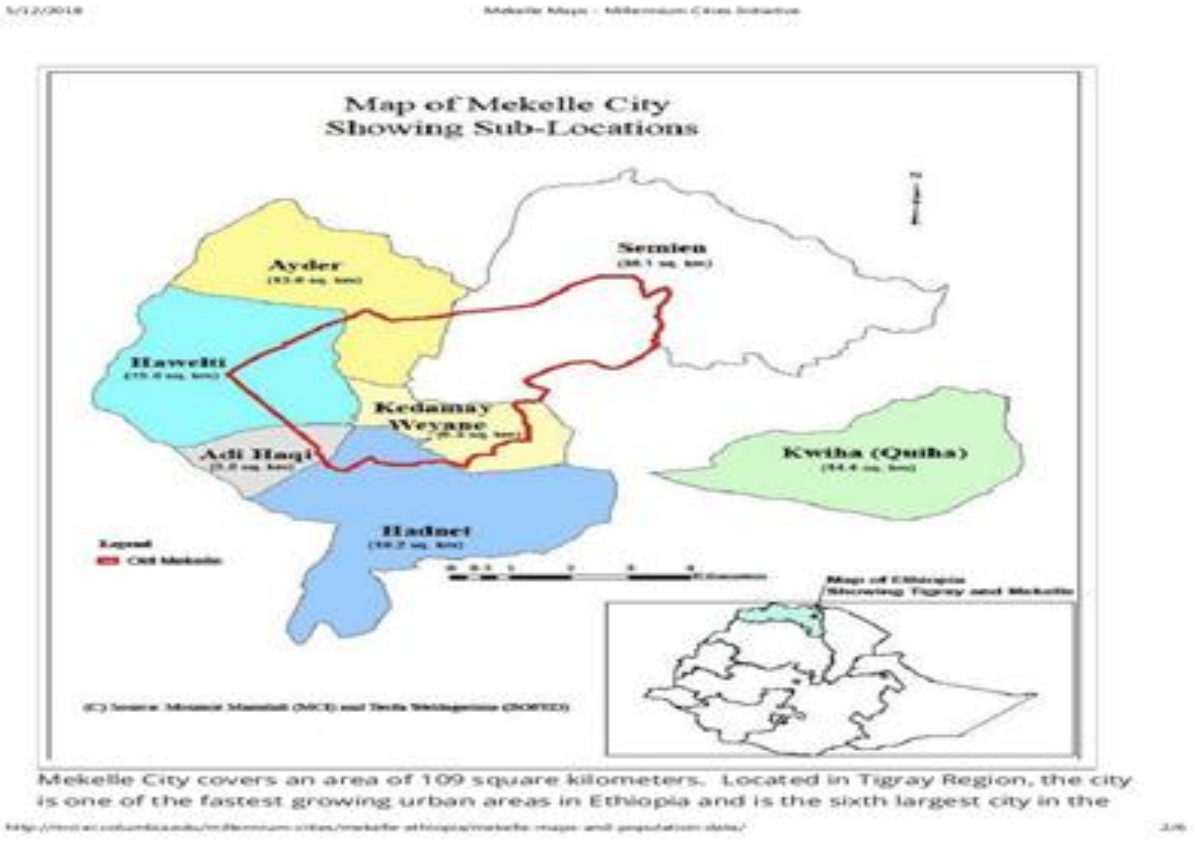

Figure 2 administrative map of Mekelle city

3.2 Study design: Community based cross-sectional study with quantitative method was conducted. The quantitative data were collected by interview of 382 community participants.

3.3 Study variables:

3.3.1 Independent variable:

- Socio -demographic characteristic such as Age, women's education, husband's education, marital status, Religion: occupation
- Source of information: like Media/internet, Health professional, women development army (WDA)
- Access to health service,cost ,distance
- Individual perceptions:- Feeling healthy, Fear of stigma, fear of result,sex of care giver,
- Awareness like: Lack of knowledge about cervical cancer, Knowing someone with cervical cancer, Having information on screening availability

3.3.2 Dependent variables

Knowledge ofcervical cancer

Inclusion and Exclusion criteria

3.4.1 Inclusion criteria

- Women aged 15-49
- Mothers who were volunteringto participate in the study

3.4.2 Exclusion criteria

- Mothers who are positive for cervical cancer (mothers who knew their health status)

3.5 The target population

All households having reproductive age group of women in mekelle town, and study populationwere women of age 15 -49 from theselectedTabias.

3.6 study unit

Randomly selected reproductive age individual women who are living in the study area

3.7 Sample size determination and sampling procedure

The sample size calculation was based on a single population proportion formulaconsidering prevalence ofsufficient knowledge about the disease 46.3%at Robe and Goba town (Tefera *et al.*, 2016).

Assuming a 95% confidence level and 5% margin of error, $n=\frac{Z2*p(1-p)}{d2}$

The minimumsample size required for the study was382. That meansall participantswere women at reproductive age from community.Then from four Keble's sample size was obtained from sample frame of selected Keble's based on the proportion to population size, which is 23.48%of the total population are women at reproductive age

Where $nr = \frac{Nr*n}{N}$

nr=number ofwomen who are at reproductive age selected from each kebele

Nr=sample frame /women at reproductive age of each Keble(Adishndhon=3836, Momona=3613, Adiha=2935, Sertse=1346women's at reproductive age)

N=Total number of women at reproductive age in the selected Kebles3836+3613+2935+1346=11,730

n=Total sample size (women inreproductive age in the selectedkebele which is 382

Adishndhon$\frac{3836*382}{11730}$, = 125Adiha$\frac{2935*382}{11730}$=96

Momona$\frac{3613*382}{11730}$ = 118Sertse$\frac{1346*382}{11730}$=43

A multistage sampling technique was used to select women. First, 2 sub city was selected out of the seven sub city using simple random sampling technique/lottery method, from this sub cities fourkebeles were selected using a simple random sampling technique/lottery method. A sampleframe for list of households with women of reproductive age from each selected kebele wasprepared in consultation with health extension workers and local administrators. Then the total sample size wasallocated proportional to the size of the women of reproductive age at each Kebele. Finally, a systematic random sampling method was used to select households and women for an interview.

Whenmore than one respondent residing in the same selected household was found, only one respondent was chosen using the lotterymethod. In case the selected household is closed or unable to respond, the interviewer was going to the next household in the clockwise direction until getting an eligible woman.

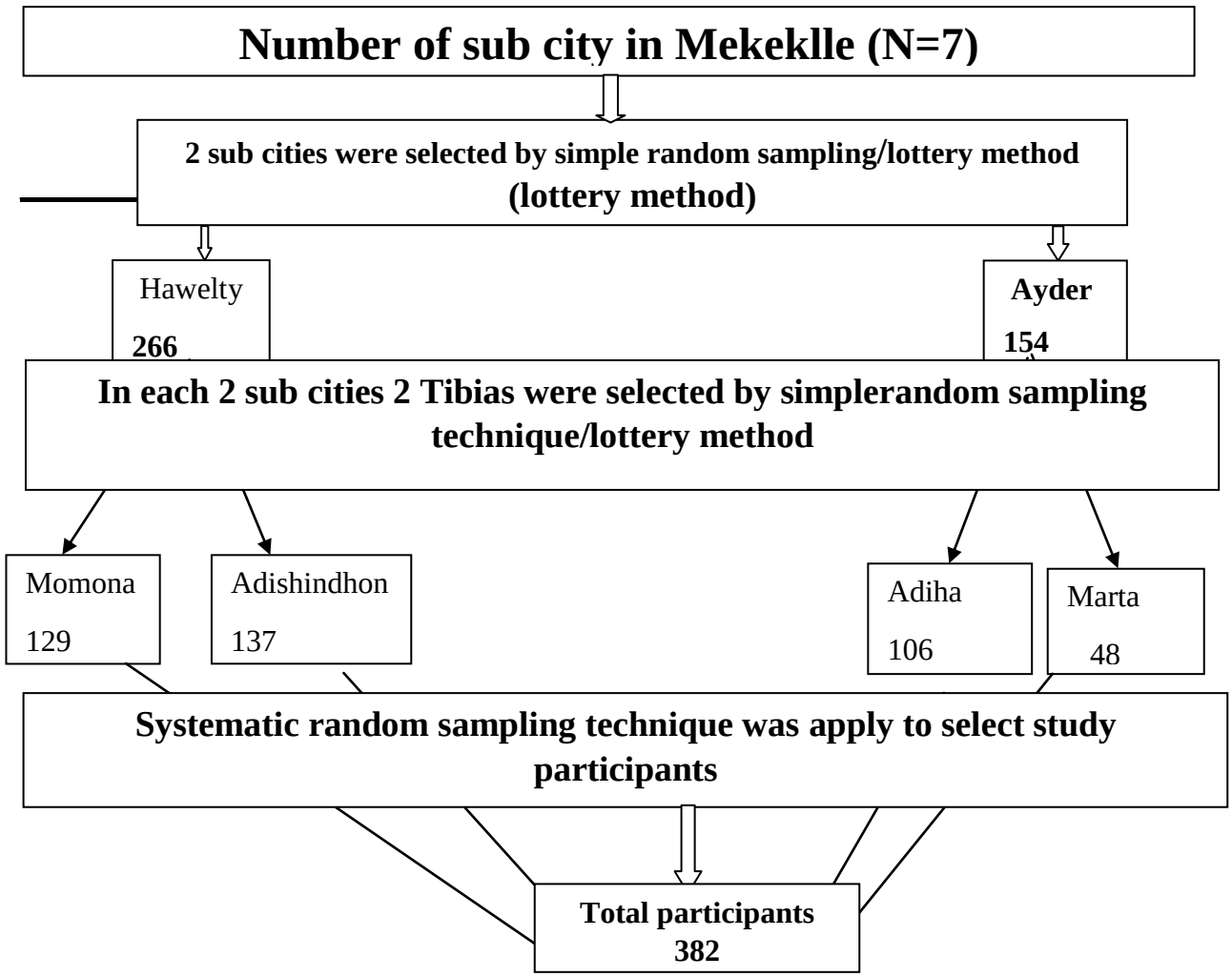

Figure 3 Schematic Presentation of the sampling techniquein Mekelle, Ethiopia, 2018

3.8 Pre-testing

The study was pre tested by using a sample of 20 women at reproductive age in the same selected sub city, but different kebeles; the population has the same characteristics and similarities as compared to the selected study population. Pre-testing revealed the weakness of the data collection tools and corrections were made to address the weaknesses observed.

3.9Data collection

A pre-tested structured questionnaire initially developed in English and then translated into the local language (Tigrigna) was used for this study.Questionnaire was developed based on different reviewed resources(Getahun et al., 2013; Mitiku and Tefera, 2018)),andwas included socio-demographic characteristics and questions regarding the knowledge and perception about different aspects of cervical cancer. Twelve trained health extension workers who are diploma nurse was administered a questionnaire using face-to-face interviews. The data collection wassupervised by two trained supervisors/who are diploma nurse. All completed questionnaires werechecked by supervisors for completeness and consistency at field level.

3.10 Data processing and analysis

3.10.1 Data processing

The method of data processing in this study was manual and computerized system. In the data processing procedure editing, coding, classification and tabulation of the collected data were used. During data clean up the collected raw data was edited to detect errors and omission in responses and checking that the question answered accurately and uniformly.Classification or arranging large volume of raw data into class or groups based on common characteristics wasapplied. Data having the common characteristics was placed together. Finally, depending on the result of the collected data tabulation and pie charts was used to summarize the raw data and displayed in the form of tabulation for farther analysis.

3.10.2Data analysis

The statistical package for social science (SPSS version 20) wasused to analyze the data.Binary logistic regressionanalysis was done between independent and dependent variables. After checking associations of the variables through bivariate analysis, all of them were processed to multivariate analysis to control confounding factors in the association. The P-value of < 0.05 was used to express statistical significance of the variables. Sentence, table and graphs were used to present result of this study.

3.11 Ethical Considerations

Prior data collection ,formal letter of cooperation was obtained from Mekelle university, institute of population studies, then after formal letter of permission was required from the area of the study each sub city, the consent of each participant wasasked before the interview started,respondentswere informedthattheycan declineiftheydon’twanttobeinterviewed. Furthermore, confidentiality and anonymity of the respondent wasguaranteed.

Chapter For: Result and Discussion

4.1 Socio demographic characteristics of respondent

Table 1 shows the demographic characteristic of the women in the study. Majority (30.6%) of the respondents werewithin the age group of 25-29 years (mean age 30.88, SD 6.84) with modal age of 30 years and predominantly 95.8% and 88.7% were from Tigray and Orthodox Christiansrespectively,and72% of them were married (table 1).

Table 1: Socio-demographic characteristics of respondents, Mekelle, Ethiopia, May 2018(n=382)

Variable	**Frequency (n)**	**Percentage (%)**
Age (years)		
15-19	13	3.4
20-24	46	12.0
25-29	117	30.6
30-34	86	22.5
35-39	70	18.3
40-44	33	8.6
45-49	17	4.5
Total	382	100.0
Mean age ±SD	**30.88±(6.84)**	
Religion		
Orthodox	339	88.7
Muslim	39	10.2
Catholic	4	1.0
Total	382	100.0
Ethnicity		
Tigray	366	95.8
Amhara	13	3.4
Others	3	.8
Total	382	100
Marital status		

Single	45	11.8
Married	275	72.0
Divorced	41	10.7
Widowed	16	4.2
Separated	5	1.3
Total	382	100.0
Income level		
less than 1000 birr	192	50.3
1000-2500 birr	80	20.9
2500-4000 birr	36	9.4
4000 birr and above	74	19.4
Total	382	100

4.1.1 Socio economic characteristics of respondents

As table 2 shows one third (27%) of the respondents attend primary school (1-8) while 17.3% participants were unable to read and write ,and 167(43.7%) participants were housewife.Half (50.3%) of participants were with very level of income When we see husband's education 22.3% of them attend diploma and above (table 2).

Table 2 Socio-economic characteristics of respondents, Mekelle, Ethiopia, May 2018(n=382)

Variable	Frequency (n)	Percentage (%)
Mother's education		
Unable to read and write	66	17.3
Read and write	18	4.7
1-8	99	25.9
9-10	81	21.2
11-12	61	16.0
Diploma and above	57	14.9
Respondent's occupation		
Housewife	167	43.7
Merchant	41	10.7
Gov`t employed	20	5.2
Student	27	7.1
Commercial sex worker	7	1.8
House servant	29	7.6
Daily laborer	65	17.0
Others	26	6.8
Total	382	100.0
Husband's education		
Unable to read and write	25	6.5
Read and write	26	6.8
1-8	78	20.4
9-10	54	14.1

11-12	25	6.5
Diploma and above	85	22.3
Total	293	76.7
Income level		
less than 1000 birr	192	50.3
1000-2500 birr	80	20.9
2500-4000 birr	36	9.4
4000 birr and above	74	19.4
Total	382	100

4.2 Reproductive characteristics of respondents

Table 3shows reproductive characteristic of the respondents.This study shows that 331 respondents (86.6%) ever had sexual intercourse, the first age of their sexual intercourse was at the age less thanor equal 18 years in 169(51.1%) of the respondents, and one third (33.5%) of them had multiple partners. Eleven respondents (3%) ever smoked and almost half (45.3 %) respondents ever use contraceptive pills. Thirty six women have a history of STI, and 8 (2.1%) were HIV positive while 3.4% of them did not know their HIV status (table3).

Table 3: Reproductivecharacteristics of respondents, Mekelle, Ethiopia, May 2018(n=382)

Variable	**Frequency (n)**	**Percentage (%)**
Have you ever had sexual intercourse?		
Yes	331	86.6
Age of the first sexual intercourse		
Less than or equal 18	169	51.1
Greater than 18	162	48.9
Total	331	100
Number of partners		
1	220	66.5
2 and above	111	33.5
Total	331	100
Have you ever smoked?		

Yes	11	2.9
Time of smoking		
Daily	3	0.8
Weekly	2	0.5
Infrequent	6	1.6
Total	11	2.9
Have you ever use contraceptive pills?		
Yes	173	45.3
History of STI		
Yes	36	9.4
HIV status		
Positive	8	2.1
Negative	361	94.5
Don't know	13	3.4
Total	382	100.0
Number of abortions		
0	332	86.9
1	36	9.4
2 and above	14	3.7
Total	382	100.0
Number of birth		
0	65	17.0
1-4	273	71.5
5 and above	44	11.5
Total	382	100

4.3Awareness of Cervical Cancer, its risk factors, sign and symptoms, prevention and treatment methods of cervical cancer

4.3.1 Ever heard cervical cancer

Figure 4shows 331(86.6%) of respondents ever heard of cervical cancer and 51(13.4%) had not heard about it (figure3).

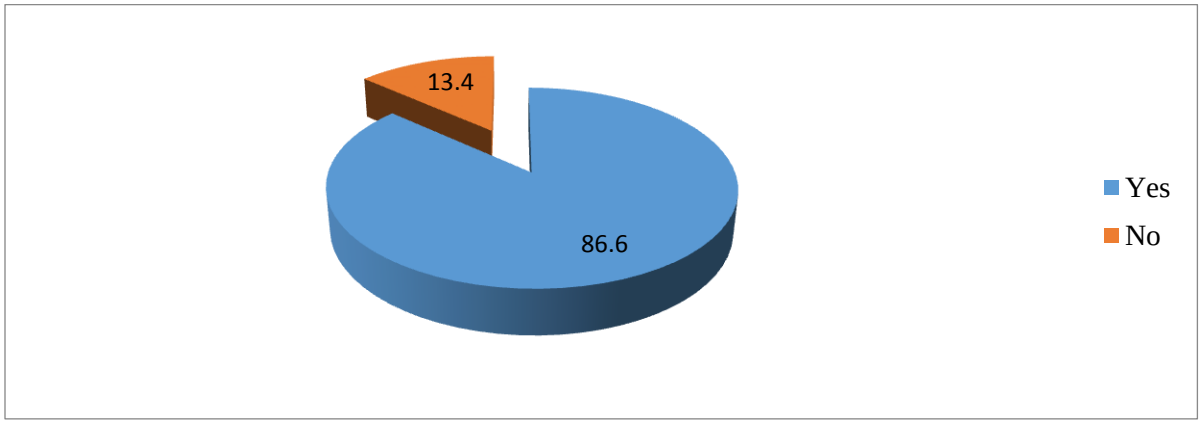

Figure 4 distribution of respondents who ever heard about cervical cancer, Mekelle, Ethiopia,May2018 (n=382)

As in figure 5 shows, the main sources of information for those who heard of cervical cancer were mass media155(46.83%), followed by health professional 110(33.23%) and health extension worker 47(14.2%).The least source of information waswomen development army (WDA) (1.8%)(figure 4).

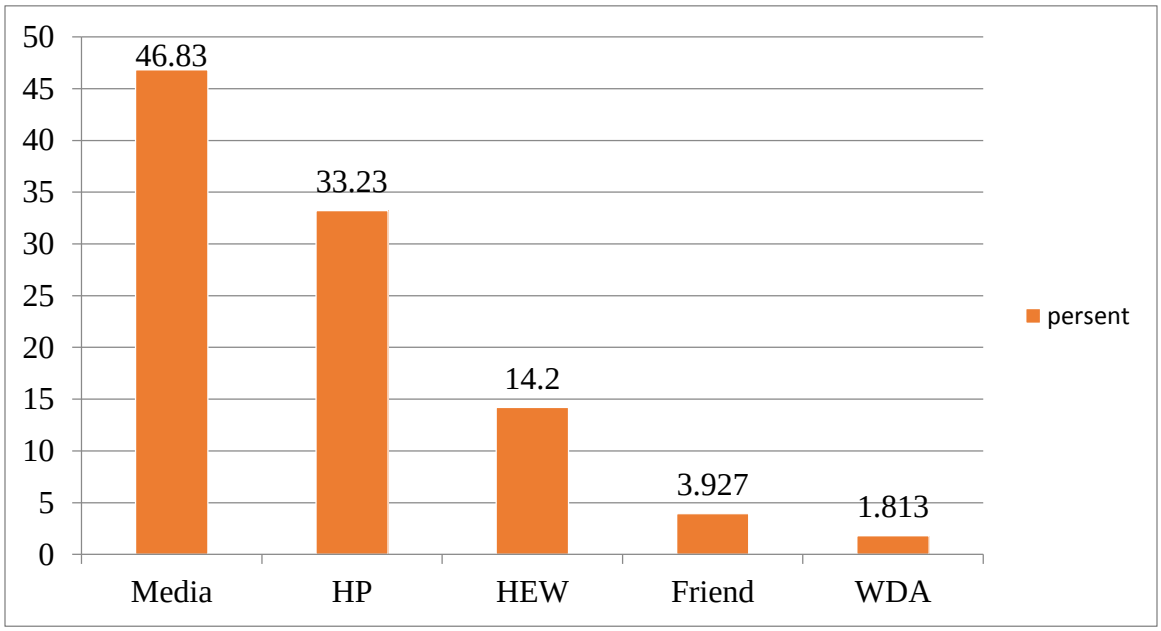

Figure 5: Respondents source of information about cervical cancer, Mekelle, Ethiopia, May 2018 (n=382)

4.3.2Knowledge about risk factor and detection of cervical cancer

As table 4 shows 84 (22%) respondents knew anyone with cervical cancer;for majority (66%) of them wereat reproductiveage. One hundred fifty two (39.8%) knew that all women are at risks of developing cervical cancer. This study found that about 84.8% of the respondents believe that cervical cancer can be cured if detected early. About 40.6% of the respondents did not know the risk factors for cervical cancer. Multiple sexual partners, early onset of sexual activityand HIVAIDS were specific risk factors mentioned by 226 (59.2), 222(58.1) and 155(40.6%)participants respectively (table 4).

Table 4: Respondents' distribution of knowledge about risk factor of cervical cancer Mekelle, Ethiopia, May 2018 (n=382)

Variable	Frequency (n)	Percentage (%)
Do you know anyone with cervical cancer?		
Yes	84	22
Do you think that all women are at risk of developing cervical cancer?		
Yes	152	39.8
Is cervical cancer curable ? If yes when,		
Yes	324	84.8
- If early treated	324	84.8
- Can be cured even at a late stage	0	0
Do you know risk factor for cervical cancer?		
No	155	40.6
Yes	227	59.4
Total	382	100.0
Multiple sexual partner	226	59.2
Early sexual intercourse	226	59.2

Cigar ate Smoking	66	17.3
Contraceptive Pill	58	15.2
Having STI	53	13.9
Having HIV AIDs	222	58.1

4.3.3Knowledge about sign and symptom

As figure 6 indicates 158 (38.7%) of the respondents did not know the main presenting sign and symptoms of cervical cancer, among all respondents, 214(56%) of them knew vaginal bleeding 212(55.5%) knew foul smelling vaginal discharge,31.9% knew pain at sexual intercourse and 51.8 % of them knew pelvic pain as symptoms of cervical cancer (figure 6).

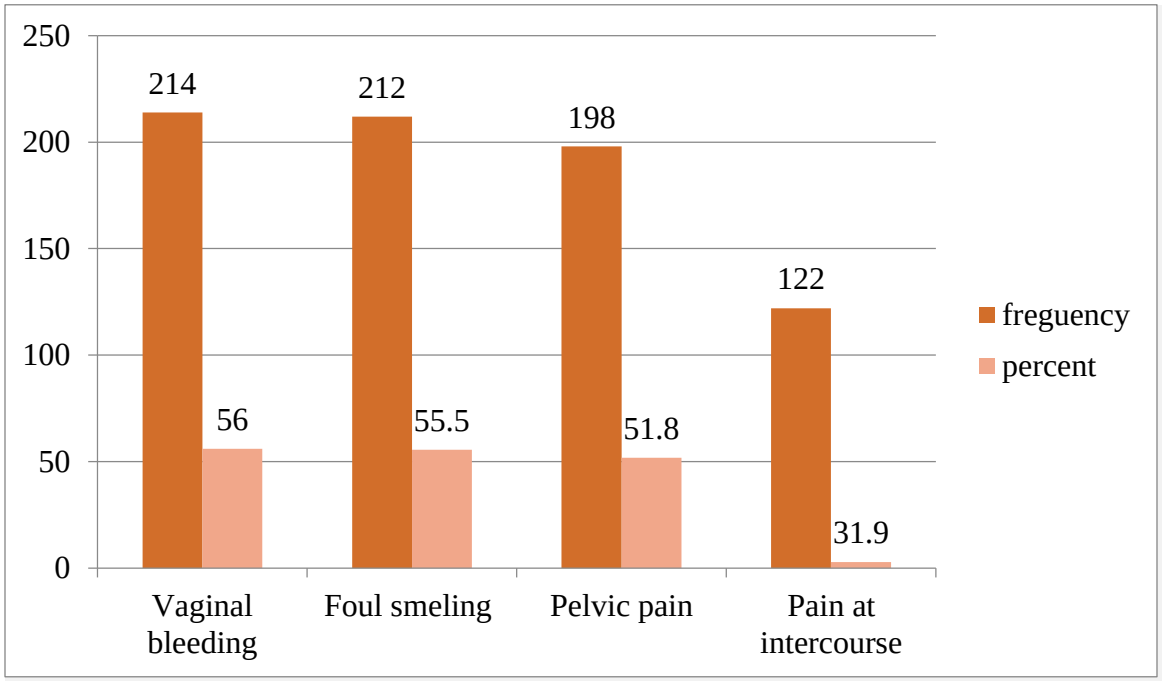

Figure 6: respondents' distribution of knowledge about symptoms of cervical cancer, Mekelle, Ethiopia, May 2018 (n=382)

4.3.4 Knowledge about prevention and treatment methods

As table 5 shows among all respondents, 55.5% of them reportedthe possible prevention methods. Which are regular medical checkup as well as being faithful to one partner followed by delay sexual intercourse and consistent condom use. Two hundred and sixty eight (70.2%) respondentsknew drug (chemotherapy) as a method of treatment followed by radiation(53.4%), and surgery (29.8%)(table5).

Table 5: Respondents' distribution of knowledge about cervical cancer prevention and treatment method, Mekelle, Ethiopia, May 2018 (n=382)

Variable	Frequency (n)	Percentage (%)
Do you know prevention method of cervical cancer?		
No	152	39.8
Yes	230	60.2
Total	382	100.0
Regular Screening for cervical cancer	212	55.5
Vaccine for cervical cancer	21	5.5
Delay to sexual intercourse	200	52.4
Being faith full to one partner	212	55.5
Consistent use of condom	31	8.1
Do you know the treatment method of cervical cancer?		
No	114	29.8
Yes	268	70.2
Total	382	100.0
Radiation	204	53.4
Surgery	114	29.8
Chemotherapy	268	70.2

4.4 Information and Practiceof cervical cancer screening service

As table 6 shows majority of the respondents 304(79.6%) never had undergonescreening and from theoe only 200(52.4%) of them have information that, there is available screening services (table 6).

Table 6: Respondents'information and practice for screening service of cervical cancer, Mekelle, Ethiopia, May 2018(n=382)

Variable	Frequency (n)	Percentage (%)
Have you ever screened for cervical cancer?		
No	304	79.6
Yes	78	20.4
Total	382	100.0
Have you ever heard about screening to cervical cancer?		
No	104	27.2
Yes	200	52.4
Total	304	79.6

4.5 perceived factors of women at reproductive age to screening practice of cervical cancer

Figure 7 indicates among all respondents 258 (74.6%)givedifferent reasons that limitwomen to undertake screeningto cervical cancer, fear of pain to procedure, fear of result, feeling of healthiness, and lack of knowledge are expressed by more than half of the participants (figure7).

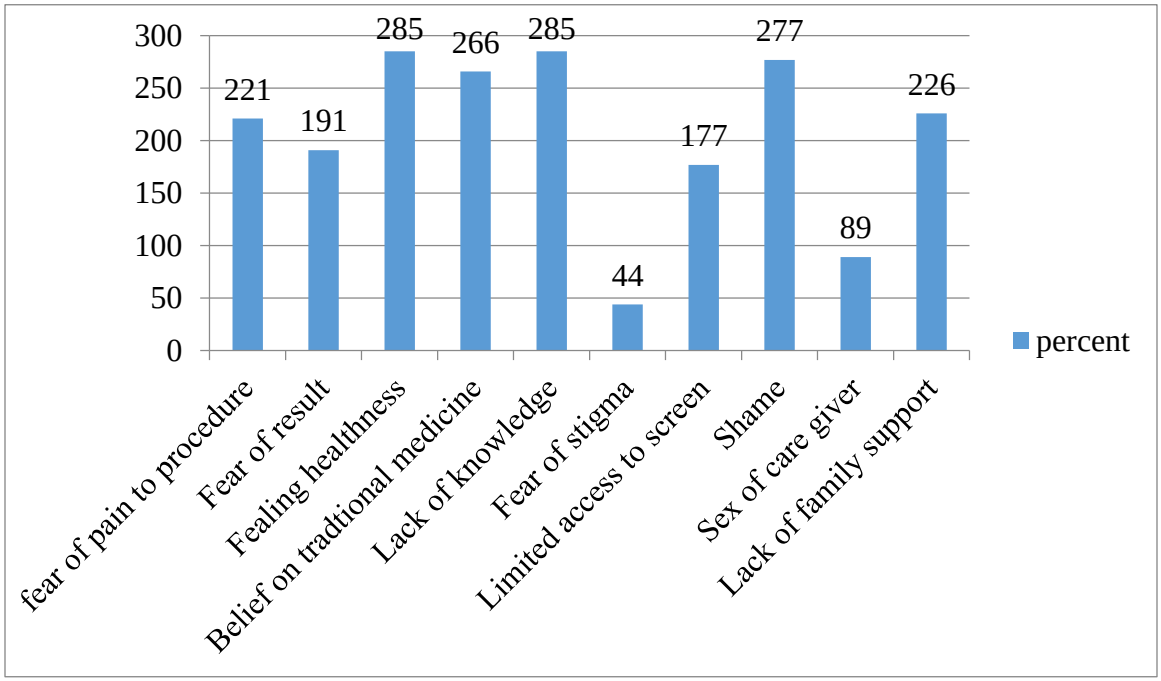

Figure 7:respondents' reason not to undertake screening service to cervical cancer, Mekelle, Ethiopia, May 2018 (n=382)

4.6 Suggestions by the women on ways to mitigate low level of knowledgeabout cervical cancer

As ANC is being advertised on TV (radio) and by health professionals , it should also be done for cervical cancer; It should be advertised on Radio so that people will know and go for screening and those who are positive will know about the disease and get treatment for it.; screening can be improved through orientation and awareness by health professionals in home to home visiting,different meetings and markets; and the health institution should initiate all women to undertake screening practice. One participant from Hawelti said:

"Health professionals in health institution should aware and initiate to every woman came to that facility, so that every woman can have awareness and undertake screening service".

4.7 Overall knowledge about cervical cancer and associated factors with knowledge among respondent

4.7.1 Overall knowledge about cervical cancer

Figure 8 indicates using the sum of all knowledge items, it was determined that a total of 53.9% of the participants answered >=60% of knowledge questionshadsufficient knowledge about cervical cancer (Figure 8).

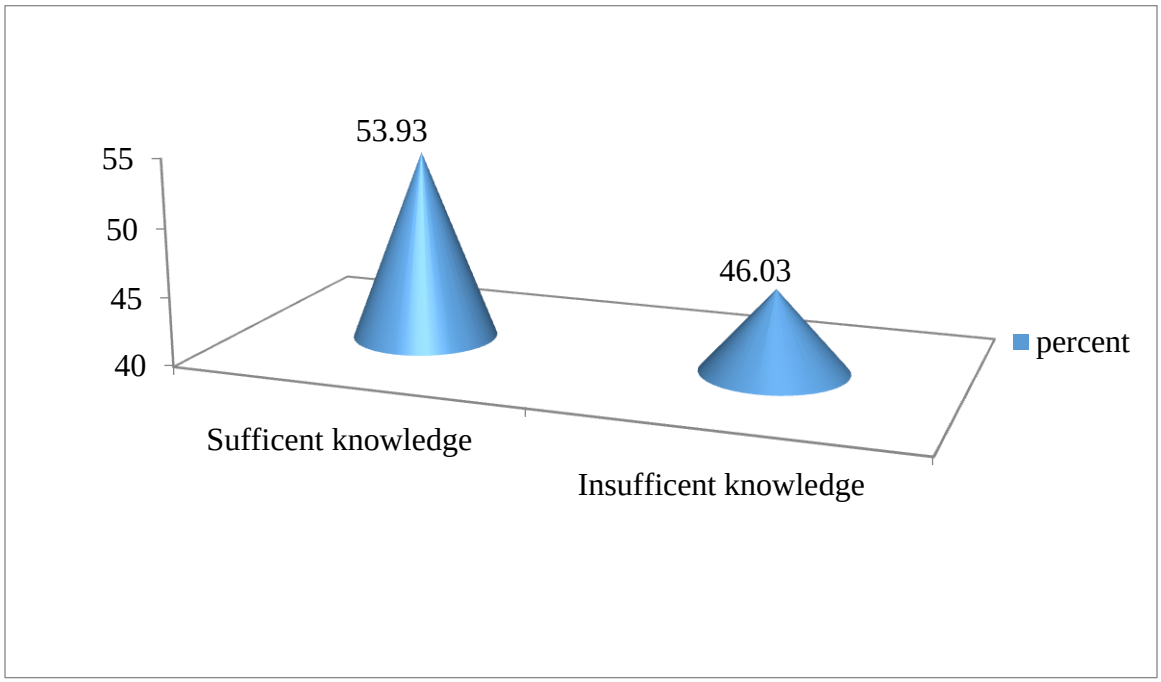

Figure 8: respondents overall knowledge about cervical cancer, Mekelle, Ethiopia, May 2018(n=382)

4.7.2 Associated variables with knowledge about cervical cancer among respondent

As Table 7 indicates factors associated with knowledge of cervical cancer among the respondents,binary logistic regression was used. First bivariate analysis was made to each variables then, those variables entered for Multivarate Logistic regression analysis with step wise method. Finally, only respondent's occupation and educational level were found significant predictors of knowledge for cervical cancer among the respondents, this shows respndentsthose government employee were 9.98 times more knowledgeable from those who were housewife. AOR=**9.983(1.256-79.325),** in addition those who had some form of education were more likely to have sufficient knowledge.Women who attend preparatorywere also 68.8 times more knowledgeable than those who were unable to read and writeAOR=**68.808(12.011-394.190)** and those who had diploma and above educational status were also 10.19times more knowledgeable than those who were unable to read and write. AOR=**10.191(2.040-50.913)** (table 7).

Table 7: Associated variable with knowledge about cervical cancer among respondent, Mekelle, Ethiopia, May 2018 (n=382)

No	Variable			**Crude OR (95% CI)**	**Adjusted OR (95% CI)**	**P-value**
1	**Age**	**Sufficient Knowledge**	**No sufficient Knowledge**			
	15-19	5	8			
	20-24	25	21	.703(0.162-3.052)	4.215(.125-141.739)	.423
	25-29	58	59	1.339(.439-4.085)	3.539(.388-32.279)	.262
	30-34	52	34	1.106(.399-3.064)	2.166(.309-15.165)	.436
	35-39	40	30	1.721(.605-4.897)	4.070(.574-28.585)	.160
	40-44	18	15	1.500(.518-4.345)	1.778(.242-13.049)	.571
	45-49	8	9	1.350(.418-4.364)	3.046(.308-30.138)	.341
2	**Mothers' education**					

	Unable to read and write	28	38	**1**		
	Read and write	4	14	.388(.115-1.305)	.000(.000.	.999
	1-8	41	58	.959(.510-1.803)	1.829(.688-4.863)	.226
	9-10	36	45	1.086(.563-2.092)	2.611(.773-8.823)	.122
	11-12	57	4	**19.339(6.277-59.580)**	**68.808(12.011-394.190)**	**.000**
	Diploma and above	40	17	**3.193(1.511-6.750)**	**10.191(2.040-50.913**)	**.005**
3	**Mother's occupation**					
	Housewife	95	72	1	1	
	Merchant	19	22	.864(.323-2.310)	1.313(.254-6.790)	.746
	Gov`t Employed	14	6	2.333(.684-7.959)	**9.983(1.256-79.325)**	.030
	Student	13	14	.929(.316-2.727)	.898(.010-76.902)	.962
	Commercial sex worker	1	6	.167(.018-1.585)	5.266(.748-37.065)	.095
	House servant	17	12	1.417(.488-4.115)	2.137(.464-9.845)	.330
	Daily laborer	34	31	1.097(.442-2.724)	3.627(.883-14.893)	.074
	Others	13	13	1.319(.577-3.018)		
4	**Marital status**					
	Single	17	28	1	1	
	Married	157	118	.152(0.016-1.473)	2.876(.036-230.791)	.637

	Divorced	19	22	.333(0.037-3.015)	.470(.002-95.771)	.781
	Widowed	9	7	.216(0.022-2.102)	.410(.002-90.215)	.746
5	**Husband education**					
	Unable to read and write	18	7	1		
	Read and write	12	14	1.800(0.680-4.768)	8.085(1.480-44.166)	.016
	1-8	40	38	.600(0.248-1.452)	5.002(1.055-23.712)	.043
	9-10	33	21	.737(0.397-1.369)	3.011(.948-9.566)	.062
	11-12	14	11	1.100(0.548-2.209)	2.035(.622-6.658)	.240
	Diploma and above	50	35	.8910.362-2.192)	1.366(.216-8.643)	.741
6	**Income level**					
	Less than 1000 birr	96	96	1	1	
	1000-2500 birr	45	35	1.286(.761-2.172)	1.502(.622-3.625)	.366
	2500-4000 birr	17	19	.895(.439-1.825)	.674(.212-2.145)	.504
	4000 birr and above	48	26	**1.846(1.060-3.215**)	.818(.296-2.266)	.700
7	**Do you know anyone with cervical cancer ?**					
	No	152	146	**1**	**1**	

	Yes	54	30	**1.729(1.048-2.853)**	1.080(.468-2.495)	.857
8	**Had you heard about cervical cancer?**					
	No	16	35	**1**		
	Yes	190	141	**2.948(1.569-5.536)**	1.155(.380-3.507)	.800
9	**Had you heard about the screening of cervical cancer?**					
	No	112	88	1	1	
	Yes	34	70	.382(.232-.627)	.435(.197-.962)	.040

Multivarate model adjusted for all variables. COR: crude odds ratio; AOR: adjusted odds ratio. Values in bold are statistically significant at P= 0.05.

Discussion

Cervical cancer screening is critical and the most effective method for early detection and treatment of precancerous lesions and mortality reduction of cervical cancer.This study was conducted to determine knowledge about cervical cancer amongwomen in Mekellecity,Ethiopia.The study also intended to identify socio demographic factors influencing women's knowledge about cervical cancer.This result demonstrate that only 53.9% of women had sufficent knowledge on cervical cancer.Women's educational status and occupation were found to affect their knowledge about cervical cancer.

In this study 86.6% of respondents had heard of cervical cancer which shows this study was consistent from study conducted in Gondar town 78.7% , in Roba andGoba77.1% (Getahun *et al.*, 2013; Tefera *et al.*, 2016). and lower than finding from northern Uganda,99.1% participant had heard about cervical cancer (To, 2018),this difference might be due to difference in socio demographic characteristicsofrespondents, or difference in methods of cervical cancer screening and awareness creation and time they start intervention on the cervical cancer might be earlier than Ethiopia which is still gets less attension. The main sources of information was Mass Media (Television, Radio)46.83%, followed by health professional 33.23% and health extension worker 14.2%. Even though there was figurative differenceit is similar with the study done at Roba and Gobawhich was mass media 60.4%, friends/colleagues 21.8% and health professionals 12.3%were the main sources of information for those who heard of cervical cancer.

Regarding the risk factors, about 59.4% of the study participants were able to identify two or more correct risk factors for cervical cancer which considerably higher than study carried out inRoba and Goba34.9% andGonder31%, this difference can be explained by the difference in the background of the study participants and differences in study period. And less was known about some risk factors, long time use of oral contraceptive15.2%and cigaratesmoking 17.3%.

Overall, 61.3% of the respondents mentioned vaginal bleeding and foul smellingof vaginal discharge as symptoms of cervical cancer. However, 38.3% of the respondents did not know any symptom; this finding is similar with study in Desse 43.9% and Gonder 39.6%. (Getahun *et al.*, 2013; Mitiku and Tefera, 2016),and shows improvement from the finding of Roba and Goba,which indicates 75.2%

were not know the presenting sign and symptoms of cervical cancer(Tefera *et al.*, 2016),and this gap might be due to the difference in study time and study setting. However much lower than finding from northern Uganda which shows majority (83%) of respondents mentioned at least three symptoms of cervical cancer, lower abdominal pain,vaginal bleeding andfoul smelling vaginal discharge(To, 2018), This difference is not surprising; it may be due to difference in policy issue using screening programs in terms of clinical benefits and cost-effectiveness and early starting of intervention on cervical cancer related to Ethiopia.

Prevention and early detection are keys to the reduction of incidence and progression of cervical cancer (WHO, 2014).This study revealed that about 60.2% of the respondents knew that cervical cancer can be prevented. This finding is almost similar to the finding from Gondar town 63.9%and Roba and Goba57% (Getahun *et al.*, 2013; Tefera *et al.*, 2016). This study found that about 84.8% of the respondents believe that cervical cancer can be cured if detected early, which is higher than finding from Gondar town and Desse ,which shows about 67% and 54% of the respondents believe that cervical cancer can be cured (Getahun *et al.*, 2013; Mitiku and Tefera, 2016), this difference can be explained by the difference in the background of the study participants and differences in study periodmeans that during this time gap there might be some changes on awareness creation and access to screening facility.

Concerning treatment, 70.2% of the respondents knew that cervical cancer can be treated by chemotherapy/drug/53.4%and 28.9% of the respondents said by radiation and surgery respectively, which is similar with finding from northwest Ethiopia which shows 33.9% respondents were not know any treatment option to cervical cancer(Getahun *et al.*, 2013).But this findingis in contrast with finding from Addis abebaGulele sub city which indicates ,4.1 %of respondents knew that cervical cancer is treated by radiation, 44.7% of the respondents knew that cervical cancer can be treated by surgery, were as10.6 % respondents were answer that drug can treat cervical cancer(Segni, 2017),possible reason for this difference might be difference in socio demographic characteristics of the respondents, which could be explained by the different levels of knowledge toward cervical cancer screening practices among the respondents. Similarly, time and place of the study is also another possible explanation for this difference.

Though majority of the respondents had heard of cervical cancer 86.6%, almost half of the respondentswere found to have insufficient knowledge about cervical cancer (only 53.9% of respondent have sufficient knowledge), This is consistent with finding from Desse51% of the participants had sufficient knowledge about cervical cancer and Roba and Goba 46.3% participants had adequate knowledge about cervical cancer which shows that comprehensive knowledge about cervical cancer is low(Mitiku and Tefera, 2016; Tefera *et al.*, 2016).But this finding is lower than from the result of low and middle income countries66% in India, 58.8% in Nepal and 57.7% in Srilanka(Raychaudhuri and Mandal, 2012),this difference might be difference in socio demographic characteristics of the respondents.

In this study educational status of respondents, women who attended preparatory and those who had diploma and above were 69 and 10 times more likely knowledgeable than those who were unable to read and wright.And occupation of respondents,those gov't employee were 10 times more likely knowledgeable than those who were housewife.This study were supported bymany studies, different socio demographic variables have shown an influence on knowledge of cervical cancer.Educational status is main predictor of knowledge in similar studies of Adds abebaGulele sub city,Roba and Goba, Gonder and Desse(Getahun *et al.*, 2013; Mitiku and Tefera, 2016; Tefera *et al.*, 2016; Segni, 2017).This shows education is the most important predictor of knowledge among the other socio demographic variables.

In this study practice of early sexual intercourse were 51%, which is similar with the result of EDHS survey62% had sexual intercourse before age 18(EDHS, 2016),this mightbe women lacked knowledge about the risk factors to cervical cancer.

This study shows that only 78 respondent (20.4%) have been screened for cervical cancer. The current cervical cancer-screening uptake 20.4% was similar when compared to previous, 2015 finding of service uptake in mekelle, where only less than 19.8% of age eligible women were screened,(Bayu *et al.*, 2016). Study done inArbaminchshows 15.9% of them were have been screened(Gebru Z, 2016),that shows little difference which is not satisfactory, generally this might be due to no intervention has been taking place where awareness creation about the screening is not being advocated in the country as a whole.

In this study 52.4% of the respondent had heard about screening to cervical cancer, similar study in Zimbabwa 91% had never had cervical cancer screening, and 81% had no previous knowledge of the cervical cancer screening tests(Sampselle, Ph and Johnson, 2011),this difference can be explained by the difference in the background of the study participants.

Among all respondents 285 (74.6%)of them give different reasons that limit women to undertake screening of cervical cancer, fear of pain to procedure, fear of result, feeling of healthiness, and lack of knowledge are expressed by more than half of the participant, these perceived factor are similar with study done at some countries of Sub Saharan Africa which shows: fear(Fear of pain from procedure and fear of result), Low level of knowledge and awareness about cervical cancer and screening(screening is unnecessary if no symptoms, low risk, low susceptibility, most see no benefit in screening, screening not important, and cultural issues, like shame and stigmatization(Lim, 2017),

In this finding respondents recommend that, as ANC is being advertised on TV (radio) and by health professionals, it should also be done for cervical Cancer; It should be advertised on Radio so that people will know and go for screening and those who are positive will know about the disease and get treatment for it, and all the health institutions should initiate all women to undertake screening practice, and this is similar with finding from Nigeria: that says it should be part of the topics discussed during ANC(Ndikom and Ofi, 2012).

Chapter Five: Conclusion and Recommendation

5.1 Conclusion

In this finding majority of the respondents ever heard about cervical cancer, however almost half of them did not have sufficient knowledge. Specifically, the knowledge of risk factors, sign and symptoms, prevention and treatment methods was not satisfactory.Among the socio demographic and other related factors women's occupation and educational status were significantly associated with knowledge at cervical cancer. Perceived factors like feeling of healthy, fear of result, fear of pain are the main factors that block women to undergo screening practice.

5.2 Recommendation

Even though some facility are established for women to utilize cervical cancer screening, too low women are using this service, and many activity should do to improve community awareness about cervical cancer and the education must include detailed information on these related factors of cervical cancer, such, risk factors,symptoms, and prevention methods.

- **The Ministry of Health and Stakeholders**
  - Should give focus on the non-communicable disease prevention strategy mainly cervical cancer, to be effectively implemented in health facility, and at community
  - Give focusto an important policy issue that has to be considered according to the given setting. Analyze the policy for cost-effectiveness and clinical benefits of various screening methods,
  - Different activities should be designed to tackle different community perceptions which negatively affect cervical cancer knowledge and screening activity
  - Education and screening program should be given integrated with ANC and family planning services and the screening program should extend to near community at health centers.
  - Vaccination program should be introduced

- **The Health provider at Health Facility Level**

- Should give regular health education and counseling about the disease's risk factor, symptom, prevention and treatment as well as importance of regular screening for all people in health institutions, schools, and other facilities
- The interaction of the staff with the women should be emphasized, issues such as privacy of the women, respectful interaction and informed consent are very important for a successful and effective screening program.

- **Health Extension Worker**

- Should give focus like immunization program and they should give regular health education and empower women to take regular screening

- **Researcher**

- Further study should be done at community level to get further picture of knowledge about cervical cancer

Dissemination of result

After the research paper is completed & approved by the responsible bodies of the Mekelle university (institute of population studies), it will be disseminated to the, Regional and Zonal health office, Mekelle university institute of population studies and other concerned bodies who are interested in this issue and will be published in recognized journal to be available for those who could benefit from the study.

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Appendix 1English survey questionnaire

Questionnaire for women at reproductive age/15-49/ to assess knowledge and perception towards cervical cancer inMekelle city

The researcher is a student of Mekelle University conducting a research on cervical cancer. The questionnaire is designed to seek your candid views about this topic.

the researcher will grateful if you could devote some of your quality time to study and answer this questionnaire .all answer will be treated as confidential and will be used for statistical analysis and research purpose.

Name of researcher: BisratGebremeskel Tell 0914195245

Date of interview: _____

Questionnaire number:_____

Tabiya:_____

Interviewer:_____

Questionnaire for women at reproductive age/15-49/ to assess knowledge and perception towards cervical cancer, mekelle city

Section A

Demographic characteristic of women age 15-49 in Mekelle Town, northern Ethiopia,

1. Age?

_____

2. h Religion?

1. Christian_____ 2. Muslim _____ 3.protestant_____ 4.Catolic____

_____

5. Others, please specify _____

3. **What is the highest level of education qualification you have obtained?**

1. Illiterate _____ 2.read and write_____ 3. Primary/1-8/ _____

4.Secondary/9-10/___ 5. Preparatory/11-12/_____ 6.deploma and above _____

4. **Occupation**

1. House wife_____ 2. Merchant _____ 3. Gov`t Employed _____ 4. Student _____

5. Commercial sex worker_____6 House servant 7. Daily laborer 8. un employed

Others, please specify _____

5family size

_____

1. **6 Marital status**

1. Married _____ 2. Single_____ 3. Divorced_____ 4. Widowed__

___ 5. Separated _____

7. If married husband`s education

1. Illiterate _____ 2.read and write_____ 3. Primary/1-8/ _____

4.Secondary/9-10/___ 5. Preparatory/11-12/_____ 6.deploma and above _____

8. Ethnicity

1. Tigray_____2. Amhara_____ 3. Other specify _____

9. Monthly income in birr_____

SECTION B

Reproductive Characteristics of age women 15-49inMekelleTown, northern Ethiopia,

1. Have you ever had sexual intercourse?

1.No._____2. Yes._____

If yes

1. Age of first sexual intercourse?

_____

2. Number of sexual partners?

_____

3. Have you ever smoked?

1.No._____2. Yes._____

If yes how frequently?

1. daily
2. weekly
3. infrequently
4. If daily number/day_____

4. Have you ever use of oral contraceptive pills?

1.No._____2. Yes._____

5. Previous history of STI?

1.No._____2. Yes._____

6. HIV status?

1. I don't know_____ 2. Positive_____ 3. Negative_____

7. Number of abortion?_____

8. Number of birth?_____

9. Information on cervical cancer

7.1 Did you Heard about Cervical Cancer 1.No._____2. Yes._____

7.2 Sources of information about cervical cancer

1. HP _____ 2. HEWs _____ 3.WDA _____ 4. Mass Media _____5.Friends _____

7.3 Do you know anyone with Cervical Cancer? 1.No._____2. Yes._____

10.Have you ever screen for pre-cervical cancer?

1.No._____2. Yes._____

A.If yes what was your result?

1. Positive._____ 2. Negative._____

B. If No, have you ever heard about screening program?

1.No._____2. Yes._____

Section C

Percentage distribution of Awareness of Cervical Cancer, its risk factors, sign and symptoms, prevention and treatment option of cervical cancer among women of age 15-49 at Mekelle towns, 2018.

	Variable		
1	Do you think it is possible to detect cervical cancer before s/s	**No**	
		Yes	
2	Do you think cervical cancer is easily cured if early detect	**No**	
		Yes	
3	Does all women are risk of developing cervical cancer	**No**	
		Yes	
4	Do you know the risk factor of cervical cancer	**No**	
		Yes	
	If yes Explain them		
	- Multiple sexual partner		
	- Early sexual intercourse		
	- Cigar ate smoking		
	- STI		

	- use of oral contraceptive pill for long time		
	- HIV		
5	Do you know the main sign and symptom of cervical cancer?	**No**	
	If yes Explain them	**Yes**	
	- Vaginal bleeding		
	- Foul smiling vaginal discharge		
	- persistent pelvic pain - pain during sexual intercourse		
6	Have you ever heard prevention method of cervical cancer	**No**	
	If yes Explain them	**Yes**	
	- Regular medical checkup/screening		
	- Vaccination to HPV		
	- Delayed to sexual intercourse		
	- Be faithful to sexual partner		
	- Persistence condom use		
7	Have you ever heard the treatment option of CC	**No**	
	If yes them	**Yes**	
	- Radiation		
	- Surgery		
	- Chemotherapy		
8	Is cervical cancer curable	**No**	
	If yes when	**Yes**	
	- If early treated		
	- Can be cured even at late stage		

Perceived factor that affect Cervical Cancer Screening

Variable	

9. What do you think are the reasons/perception negatively affect cervical cancer screening **If yes explain them**	**No** **Yes**
- Fear of pain	
- Feeling of healthy/Screening is unnecessary if no symptoms	
- Fear of outcomes	
- Believe on Traditional medicine	
- Stigma and discrimination	
- Lack of knowledge	
- Limited access to health service	
- Cultural and socio economic factors	
- Modesty like Embarrassed with procedure	
- Gender of care giver	
- Lack of family support /like spousal support Other specify ----------	

Section E

Method of overcoming this problem

1. What is your recommendation to overcome the problem of knowledgeon risk factor,sign and symptom ,prevention as well as perception of cervical cancer in mekelle?

……

……

……

Appendix 2 Tigrina survey questionnaire

መቐለ ዩኒቨርስቲ

ትካል ስነ-ህዝቢ

መጠይቅ

ኣፍልጦ ን ኣረኣእያን ኣብ ማህፀን ካንሰር ደ/ኣነስትዮ ንምድህሳስ ዝቀረበ ዝተፈላለዩ ትሕዝቶታት ዝሓዘ ትግርኛ መጠይቅ

እዚ ፅንዓት ንምፅናዕ ዝተቀመጠ መጠይቅ ንምምላእ ኣብ ትሕዝቶ ኣቲ ፅንዓት ቅኑዕ ዝኾነ ኣረዳድኣ ምሓዝ ኣደላይ እዩ::

እዚ መጠይቅ ብትክክል ንምምላእ ግዜ ብምሃብኩም ካብ ልቢ ብምምስጋን ካብዚ መጠይቅ ዝተረከቡ ኩሎም ሓበሬታታት ሙሉእ ብሙሉእ እምነት ብምሕዳር ነዚ ፀገም ንምፍታሕ ኣብ ምትላም ከሕግዝን ንካልኦት መፅናዕታት ከም መበገሲ ክውሰድን እዩ

ስም መፅንዒት: ብስራት ግ/መስቀል ቁፅሪ ስልኪ 0914195245

እዚ መጠይቅ ዝተመልእሉ ዕለት: _____

ቁፅሪ መጠይቅ:_____

ዝተመልእሉ ቦታ/ጣብያ :_____

እዚ መጠይቀ ዝመልእ ኣካል:_____

ክፈሊ 1:

ናይ ተጠየቅቲ ማሕበራዊ ኩነታት ዝምልከት መጠይቅ

1. **ዕድመ**

_____

2. **ሃይማኖት**

1. **ክርስትና** _____2. **ሙስሊም** _____3.**ፕሮቴስታንት** 4. **ካቶሊክ**

5. **ካሊእ እንተኮይኑ ግለፅ** _____

3. **ደረጃ ትምህርቲ**

1. **መሃይም/ዘይተማረት**___2. **ምዕሓፍን ምንባብን ትክእል**___ 3. **ቀዳማይ ብርኪ**/1-8ይ/

__

4.**ካልኣይ ብርኪ**/9ይ-10ይ/_____5.**ፕሪፓራቶሪ**/11-12**ክፍሊ**/_ 6.**ዲፕሎማን ልዕሊኡን**

_____

4. **ኩነታት ስራሕ**

1. **መንግስቲ ሰራሕተረኛ** _ 2.**ገዛ ሰራሕተኛ** ___3. **ናይ ግሊ ቁፃር ሰራሕተኛ**

_____4.**ተምሃሪት** _____ 5. **ነብሳ ሽይጣ ትሓድር**_____

__6.**መዓልታዊ ሰራሕተኛ**____

7. **ነጋዴ** _____ 8. **ስራሕ ዘይብላ**

5. **በዝሒ ስድራ**

_____

6. **ኩነታት ሓዳር**

1. ዝተመርዐወት _2. ዘይተመርዐወት_____ 3. ዝተፋትሐት_____4. ብሞት ዝተፈላለየት_____5.ተፈላልዮም ዝነብሩ _____

7. ዝተመርዐወት እንተኮይና ደረጃ ትምህርቲ ባዓል ገዝኣ

8. መሃይም/ዘይተማረት_____2. ምዕሓፍን ምንባብን ትክእል___ 3. ቀዳማይ ብርኪ/1-8ይ/ _____

4.ካልኣይ ብርኪ/9ይ-10ይ/_____5.ፕሪፓራቶሪ/11-12ክፍሊ/_ 6.ዲፕሎማን ልዕሊኡን _____

8. ዜግነት

1. ትግራወይቲ_____2. ኣምሓረይቲ _____ 3. ካሊእ እንተሃልዩ ይገለፅ_____

9. ወርሓዊ እቶት ብ ብር_____

ክፍሊ 2

ኩነታት ስነ ተዋልዶ ተጠየቅቲ ዝምልከት መጠይቅ

1. ርክብ ግብረ ስጋ ገይርኪ/ክን ትፈልጣ/ጢ ዶ?

1.ኣይፋል _____ 2 እወ_____

ሀ. መልሲ እወ እንተኮይኑ ርክብ ግብረ ስጋ ዝጀመርክለ ዕድመ ክንደይ እዩ?

_____

ለ. መልሲ እወ እንተጀኮይኑ ክንደይ ኣዕሩክ /ሰብኡት ነይሮምኪ?

_____

3. ሽጋራ ኣትኪክን/ኪ ትፈልጣ/ጢ?

1.ኣይፋል _____ 2 እወ_____

መልሲ እወ እንተኮይኑ ክንደይ ግዘ

1. መዓልታዊ
2. ሰሙናዊ
3. ስሩዕ ኣይኮነን
4. መዓልታዊ እንተኮይኑ ክንደይ ብመዓልቲ ?

4. ዝወሓጥ ክኒን መከላከሊ ጥንሲ ወሲድክን/ኪ ትፈልጣ/ጢ ዶ?

1.ኣይፋል _____ 2 እወ_____

5. ብየታዊ ርክብ ዝመሓለለፉ ሕማማት ሒዙክን/ኪ ይፈልጥ ዶ?

1.ኣይፋል _____ 2 እወ_____

6. ኩነታት ኤችኣይ ቪ?

1. ኣሎ_____2.የለን _____ 3. ዓርሰይ ኣይፈልጥን _____

7.ሓበሬታ ኣብ ማህፀን ካንሰር

7.1 ብዛዕባ ናይ ማህፀን ካንሰር ሰሚዕክን/ኪ ዶ ትፈልጣ/ጢ 1. እወ _____ 2. ኣይፋል_____

7.2 ፍልፍል ሓበሬታ ብዛዕባ ናይ ማህፀን ካንሰር

1. ባዓል ሞያ ጥዕና _____2. ጥዕና ፓኬጅ ___3.ልምዓት ጉጅለ ደ/ኣነስትዮ _____ 4.ሚድያ _____5.ዓርኪ _____

7.3 ብማህፀንካንሰር ዝሓመመት ሪኣን/ኪ ሰሚዐን/ኪ ትፈልጣ /ጢዶ ?

1.ኣይፋል _____ 2 እወ_____

7.4 መልሱ እወ እንተኾይኑ ዕድሚኣ ክንደይ እዩ?_____

8. ክንደይ ጥንሲ ምቁራፅ ኣጋጢሙክን/ኪ?_____

9. ክንደይ ወሊድክን/ኪ? _____

10.ናይ ማህፀን ቅድመ ካንሰር ምርመራ ገይርክን/ኪ ትፈልጣ/ጢ ዶ?

1.ኣይፋል _____ 2 እወ_____

ሀ. መልሱ እወ እንተኾይኑ ውፅኢቱ እንታይ እዩ?

1. የለን _____2. ኣሎ _____

ለ.መልሲ ኣይፋል እንተኾይኑ ስለ ምርመራ ቅድሚ ማህፀን ካንሰር ሰሚዕክን/ኪ ዶ ትፈልጣ/ጢ?

1.ኣይፋል _____ 2 እወ_____

ክፍሊ 3

ብዛዕባ ማህፀን ካንሰር ዘሎ ፍልጠት ዝድህስስ ጥያቄ

	ጥያቄ		
1	ናይ ማህፀን ካንሰር ምልክት ቅድሚ ምርኣዩ ምንዛር ይከኣል ዶ ይመስለክን/ኪ?	ኣይፋል	
		እወ	

2	ኣቀዲሙ እንተተነሚሩ ብቀሊሉ ዝድሕን ዶ ይመስለክን/ኪ?	ኣይፋል	
		እወ	
3	ኩለን ደ/ኣነስትዮ ንናይ ማህፀን ካንሰር ንናይ ምትሓዝ ሓደጋ ኣለወን ዶ ይብላ?	ኣይፋል	
		እወ	
4	ዋና ዋና መልዐሊ ማህፀን ካንሰር ትፈልጠኦም/ዮም ዶ?	ኣይፋል	
		እወ	
	መልሱ እወ እንተኾይኑ ግለፃ/ፂ		
	- ካብ ሓደ ንላዕሊ ርክብ ግብረ ስጋ ምፍፃም		
	ርክብ ግብረ ስጋ ቀልጠፍካ ምጅማር		
	- ምትካክ ሽጋራ		
	- ብያታዊ ርክን ዝመሓላለፉ ሕማማት		
	- ንነዊሕ ግዘ ክኒን መከላከሊ ጥንሲ ምውሳድ		
	- ኤች ኣይ ቪ		
5	ዋና ዋና ምልክታት ማህፀን ካንሰር ትፈልጠኦም/ዮም ዶ?	ኣይፋል	
		እወ	
	መልሱ እወ እንተኾይኑ ግለፃ/ፂ		
	- ካብ ማህፀን ደም ምፍሳስ		
	- ሽታ ዘለዎ ፈሳሲ ካብ ማህፀን ምፍሳስ		
	- ንነዊሕ ግዘ ዝፀንሕ ሕማም ሕቆ - ቃንዛ ኣብ እዋን ያታዊ ርክብ		
6	መከላከሊ መንገዲታት ማህፀን ካንሰር ትፈልጠኦም/ዮም ዶ?	ኣይፋል	
		እወ	
	መልሱ እወ እንተኾይኑ ግለፃ/ፂ		
	- ስሩዕ ምርመራ ምግባር		
	- ክትባት		
	- ርክብ ግብረ ስጋ ቀልጢፍካ ዘይምጅማር - ሓደ ንሓደ ተኣማኒ ምኳን		

	- ኩሉ ግዘ ኮንደም ምጥቃም		
7	ሜላታት ሕክምና ማህፀን ካንሰር ትፈልጠኦም/ዮም ዶ? መልሱ እወ እንተኮይኑ ግለፃ/ፂ	ኣይፋል	
		እወ	
	- Radiation/ጨረር		
	- Surgery /መጥባሕቲ		
	- Chemotherapy/መድሓኒት		
8	ሕማም ማህፀን ካንሰር ዝድሕን እዩ ዶ ትብላ/ሊ? መልሱ እወእንተኮይኑ መዓዝ ?	ኣይፋል	
		እወ	
	- ተለሞ እንተተሓኪሙ		
	- ዲሑሩ እንተተሓኪሙ እውን ይድሕን እዩ		

ክፍሊ 4

ንናይ ማህፀን በሪ ቅድሚ ካንሰር ምርመራ ድሌትና እምነት ተፅዕኖ ዘለዎም ኣረኣእያታት ንምድህሳስ ዝቀረበ ጥያቄ

ጥያቄ		
9. ንናይ ማህፀን በሪ ቅድሚ ካንሰር ምርመራ ኣለኹዋ ተፅዕኖ ዘለዎም ግንዛበ ሕ/ሰብ ኣለው ዶ ይመስለክን/ኪ ? መልሱ እወ እንተኮይኑ ግለፃ/ፂ	ኣይፋል	
	እወ	
- ቃንዛ ምፍራሕ		
- ጥዕይቲ እየ ኢልካ ምሕሳብ/ ናይ ሕማም ምልክት ሕንተዘይሃልዩ ምርመራ ትርጉም የብሉን ኢልካ ምሕሳብ		
- ውፅኢት ምርመራ ምፍራሕ		
- በባህላዊ ሕክምና ምእማን		
ኣድልዎ እና ምግላል ምፍራሕ		
- ኣፍልጦ ዘይምህላው		

- ኣቅርቦት ጥዕና ትካል ዘይምህላው		
- ባህላውን ኢኮኖምያውን ምክንያታት		
- ሕፍረት ንከይዲ ምርመራ		
- ዕታ ናይቲ ሓኪም		
- ናይ ቤተ ሰብ ምትብባዕ ዘይምላው/ከም ሰብኣይ		
ካልእ እንተሃልዩ ግለፃ/ፂ ---------- ----------		

ክፍሊ 5

መፍትሒ እዚ ፀገም

1. ሪኢዮ ኣብ ምርመራ ማህፀን ካንሰር ዘሎ ናይ ኣፍልጦ ን ኣረኣእያ ን ፀገም መፍትሒ ክኸን ኣለዎ ትብልኦ/ዮ እንተሃልዩ

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