ADDIS ABABA UNIVERSITY COLLEGE OF HEALTH SCIENCES SCHOOL OF PUBLIC HEALTH

MAGNITUDE OF BREAST AND CERVICAL CANCER AND ASSOCIATED RISK FACTORS OF BREAST CANCER IN ADDIS ABABA, ETHIOPIA.

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This thesis by Getachew Letta is accepted in its present form by the Board of Examiners as satisfying thesis requirement for the Degree of Masters in Public Health.

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List of Abbreviations and Acronyms

AA ---------- ----------Addis Ababa

AOR----------Adjusted Odd Ratio

AAU----------Addis Ababa University

BMI----------Body Mass Index

CC----------Continuity correction

COR----------Crude Odd Ratio

DRC----------Departmental Review Committee

E.C----------Ethiopian Calendar

FIGO---------- International Federation of gynecology and Obstetrics

Gyn/Obs----------Gynecology and obstetric

HR----------Hazard/Risk Ratio

HPV----------Human papiloma Virus

ICO----------international cancer organization

Kg----------Kilogram

M^2----------Meter square

MOH----------Ministry of Health

NOS----------Non other specific

OPD---------- ----------Out Patient Department

QOL----------Quality of Life

SPSS----------Statistical Package for Social Science

TASRH ----------Tikur Anbessa Specialized Referral Hospital

WHO----------World Health Organization

Abstract

BACKGROUND

The major health problem of the country, Ethiopia has been largely preventable communicable diseases and nutritional disorders. Breast and cervical cancer is the primary non infectious disease following hypertension and diabetes. Breast and cervical cancers are public health problem and the most common cause of cancer deaths among women in developed or developing countries. However there is no adequate information regarding magnitude and associated risk factors of breast and cervical cancer in Ethiopia. This study identifies the magnitude and associated risk factors of breast and cervical cancer and some useful input for National Health Care Service.

General Objective

To assess the magnitude of breast and cervical cancer and associated risk factors for breast cancer in Addis Ababa, Tikur Anbessa Specialized referral hospital from March1/2013-april 15/2013.

Methodology

Cross-sectional study of retrospective secondary data and case control study were conducted in Addis Ababa, Tikur Anbessa Specialized referral Hospital.

Result

Breast and cervical cancers cross-sectional retrospective data were 753 and case control directly collected from cancer radiotherapy department and Gyn/Obs department were 357 included in the study. The mean age for breast cancer was 47.6 years with Sd 14.1, minimum age 15 years and maximum was 99 years and cervical cancer mean age 51.6 years with Sd 12.8 minimum age 20 and maximum 92 years. The incidence rate of breast cancer was 28.4 from 100,000 female and 15.7 from 100,000 female for cervical cancer. The breast cancer incidence was very high among A.A city dwellers. The body mass index of participants above 25.1kg/m^2 4.6 times (AOR= 4.643 (95% CI: 1.819, 12.896) more likely affected than body mass index less 25.1kg/m^2. Age 50 years and above 6 time (AOR=6.003 (95% CI: 2.606, 13.830) more likely affected than lower age groups.

Conclusion

Incidence of breast cancer in Addis Ababa city was higher, which is needed more health check up and intervention. Ministry of health should have set clinical and self breast examination and cervical screening every six month for all age above 40 yrs, BMI greater than 25.1kg/m^2 and those live in rented house.

Background

Geography

Ethiopia is the tenth largest country in Africa, covering 1,104,300 square kilometers (with 1 million sq km land area and 104,300 sq km water) and is the major constituent of the landmass known as the Horn of Africa(2).

Ethiopia is a country with geographical diversity ranging from peaks up to 4,550m (Ras Dashin) above sea level down to a depression of 110m (Dalloli) below sea level. The predominant climate type's tropical heavy rain, with three broad climatic variations: the "Kolla", or hot lowlands, blow approximately 1,500 meters, the "Wayna Dega" or mid climate at 1,500-2,400 meters and the "Dega" or cool temperate highlands above 2,400 meters. The temperature varies with the topography, from as high as 55c^{o} degrees Celsius in the Affar Depression to as low as 10 degrees Celsius in the highlands(1). Ethiopia's mean annual distribution of rainfall is influenced by the direction of both westerly and southeasterly winds. Thus, in Ethiopia the general pattern of annual rainfall distribution remains seasonal, varying in amount, space, and time, as the rain moves from the southwest to the northeast of the country(2).

Demography

The Projected of Ethiopian populations' housing census 2007 estimated a total Population in 2012/13 to be 89.8 million. Ethiopia is having more than 80 different spoken languages. According to the 2007 census, it is one of the least urbanized countries in the world with about 5/6 of the population living in rural areas (83.6% rural versus only 16.4% in urban) (2). The largest city in the country is the capital, Addis Ababa, with 3.048631 million people (4%). Fertility decreased only slightly between 2000 and 2005, from 5.5 children per woman to 5.4 respectively, and then decreased further to 4.8 children in DHS 2011. Rural women still have an average of three more births per woman compared to women in urban areas. Overall, even with the fertility decline, the population is still growing at an annual rate of 2.6%. The lowest rate of population growth is in the Amhara region, which at 1.7% is lower than population replacement (2).

Health status

The major health problems of the country are largely preventable communicable diseases and nutritional disorders (1). More than 90% of children deaths are due to pneumonia, diarrhoea, malaria, neonatal problems, malnutrition and HIV/AIDS, and often as a combination of these conditions. The non infection diseases are increased from time to time in Ethiopia. Cancer is one of the primaries non infectious diseases following hypertension and diabetes. Most people fear cancer and consider a cancer diagnosis to involve suffering and death (12).

Recently, Ethiopia has introduced a three-tier health care delivery system: The Primary Hospital, Health Centers and Health Posts form a Primary Health Care Unit (PHCU): Primary level one covering about 60,000-100,000 people; Level two is a General Hospital covering a population of 1-1.5 million people and level three is a Specialized Hospital covering a population of 3.5-5 million people(3).

Tikur Anbessa Hospital

Tikur Anbessa Specialized Referral Hospital has been established cancer treatment department since 1998 E.C. Recently, from November 2011, it has set up a center for cancer treatment and cancer registry project pilot. Cancer registry department human resources are three signor Doctors (oncologists), three residence Doctors, one Gp Doctor and 18 nurses, 4 Radiotherapy technologists, 2 porters 8 cleaners and 3 medical record office workers.

Many patients with cancer are also seen at the surgical, gastrointestinal and gynecology departments. The department registers 10-15 new patients' daily and total registered 2880 patients in 2012. The hospital has focal persons in 20 governments and privates health facilities which are provide diagnostic of cancer. Those focal persons weekly send the information for general registry in Tikur Anbessa hospital cancer registry department for update registry.

Introduction

Breast and cervical cancers are major public health problems of great importance and the most common causes of cancer deaths among women in developing countries. Cervical Cancer is the second most common cancer among women worldwide, with an estimated 529,409 new cases and 274,883 deaths in 2008. About 86% of the cases occur in developing countries, representing 13% of female cancers(4). The eastern Africa is among the highest of whole in the world and is more than three times the rate in Europe and North America case load(5). In affluent countries, more than 50% of people diagnosed with cancer are cured, and thousands of other lives 5 years or longer after diagnosis (6).

In Ethiopia, even if there is no national cancer registry, data collected from retrospective analysis of medical records from hospitals with cancer clinics have clearly indicated that cervical cancer is the most frequent cancer among women of reproductive age group(6). Each year an estimated 4648 women are diagnosed with cervical cancer and 3235 die from the disease (2010). Crude incidence rates of cervical cancer in Ethiopian women estimated to be 11.5 per 100 000 population per year (5). The rising cancer rate will be greatest in developing countries. Likewise, in Ethiopia, breast and cervical cancer is a fatal disease with high mortality, unlike the experience of the Western world where breast cancer is frequently treatable and with lower mortality (7, 8, 9)

Ethiopian women lack awareness and knowledge of cancer signs and symptoms, and health care system over load continue to account for delays in early seeking for health care. Ethiopian women normally present for care at a late stage in the disease, where treatment is most ineffective. Early medical care in a few types of cancers can be prevented; others have better cure rates if diagnosed close to the beginning. The aim of this retrospective and case control study is to analyze the magnitude of breast and cervical cancers and associated risk factors among Addis Ababa city women.

Statement of the Problem

Ethiopia has a population of 20.9 million women age 15 years and older who are at risk of developing breast and cervical cancer (9). The reports have shown every year 4648 women are diagnosed with cervical cancer and 3235 die from the disease (9). Cervical cancer ranks as the first and breast cancer ranks as the 2nd most frequent cancer among women in Ethiopia, and most frequent cancer among women between 15 and 44 years of age with an incidence rate of 11.5 per 100,000 women was cervical cancer (5).

Ethiopia needs to develop strategy to have a population based clinical examination and cancer screening program emphasizing among women to have a good evidence to put forward the detailed information about severity of breast and cervical cancers in the country. Until now, there is no well organized information on incidence and associate risk factor of breast and cervical cancer in our circumstances to develop good strategy to minimize these public health problems. This study was identify the incidence, associated risk factors and other important information that can to help to improve health of women, and development of population- based cancer clinical examination and screening program among women of the country. In Addition to it gives, and contribution for Ministry of Health and country, as well as, useful baseline for those interested to investigate more on related issues. On the other hand, the result of the study may influence planner and policy makers to give necessary attention for delivery of comprehensive health care of breast and cervical cancers.

Literature review

Globally, the highest 5-year prevalence is seen in Eastern Asia, with near 7 million alive in 2008 and diagnosed with cancer within the previous 5 years. Western Europe (1.9%) and Australia/New Zealand (1.8%) have the highest prevalence, follow by Northern America and the rest of Europe. Japan and Eastern Europe form the next group with 1.0% and 0.7%, followed by Latin America and the Caribbean 0.4%, and all remaining regions and Africa are around 0.3%(7). Cancer occurrence in developed countries is alike in men and women, while in developing countries the prevalence is 25% larger in women than men (12).

In general, there were 10.9 million new cases (2008), 6.7 million deaths and 24.6 million persons alive with cancer (within 5 years of diagnosis). The mainly diagnosed cancers are lung (1.35 million), breast (1.15 million), and colorectal (1 million). The ratio between prevalence and incidence are an indicator of prognosis; thus, breast cancer is the large amount prevalent cancer in the global, even though there being fewer new cases than for lung cancer (12, 13).

For the world as a whole, the sex ratio for cancer deaths is 1:3 (Male to Female), greater than the sex ratio of incidence (1:15). In men, collectively mortality is just 18% higher in developed than developing countries, whereas in women, mortality in developing countries is actually higher than in the developed country. There are a number of reasons for this. Majority of cancers in developed countries are those associated with prosperity—the so-called Western standard of living—such as cancers of the colon and rectum, breast and prostate, to a certain extent good prognosis (11, 14).

According WHO/ICO information center 529,409 new cases and 274,883 deaths happen every year from cervical cancer, of these 86% occur in developing countries where only has chance to less than 5% of global cancer treatment resources (9, 13).

Eastern Africa cervical cancer is 34.5 per 100,000 as 1st and 2nd in Africa 25.2 among the highest in the world and is more than three times the rates in Europe and North America. Absence of effective screening programs to identify precancerous conditions, and inadequate attention to women's health are the possible factors for the observed higher incidence rate of cervical cancer in these developing countries. In Ethiopia (2005), a report from a retrospective review of biopsy results has revealed that cervical cancer is the common prevalent malignancy in women living in the country (15, 16). According to the WHO report, the age-adjusted incidence rate of cervical cancer in Ethiopia is 35.5 per 100,000 patients (24). However, although this fact was only some women receive Pap smear screening service in Ethiopia (15).

Breast cancer in Africa was 1st rate, is 28 per 100,000 with in East Africa 2nd rated is 19.3 per 100,000 of age standardized to the world population (24). Breast cancer incidence in Uganda was 22: 100 000 by 1995 (Wabinga et al, 2000(11). The prognosis from breast cancer is relatively good, as estimated survival rates in developed countries is 73% and in developing countries 57%. Because of its high incidence and relatively good prognosis, breast cancer is the most prevalent cancer in the world today; there are an estimated 4.4 million women alive who have had breast cancer diagnosed within the last 5 years(8). General causes of breast cancer are not fully known. However, researchers have identified a number of factors that increase one's chances of getting breast cancer (19, 20). In Ethiopia where illiteracy rate is high; poverty, culture and religion play an important role for health seeking behavior. Also, in developing countries, cancer is more likely to be diagnosed at a later stage and, therefore, to be less responsive to treatment (25). Especially for women in rural areas individual can easily think that knowledge will be poor and practice will be even poorer. There is lack of an ordinary information, education and communication about breast and cervical cancer. Ethiopian breast cancer risk factors still not well known because of small number of study undertook. The burden of the case is not easy according to hospital and health facility reports (7).

Tobacco smoke was the most prevalent cause of cancer death, contributing for 20% of cancer deaths worldwide and for about 6% of cancer deaths in Africa. The smaller contribution of tobacco use to cancer deaths in Africa was show the early stage of the tobacco epidemic and low smoking prevalence, especially in women. Adult smoking prevalence is less than 10% in men and 2% in women in several African countries, including Nigeria and Ethiopia, the two most heavily populated nations in the African continent. However, cigarette consumption is increasing in this region due to the taking up of new behaviors related with economic growth which was risk of cancers. According to the Global Youth Tobacco study in a few African countries, the smoking prevalence among boys is higher than among adults (22, 23).

Many research indicated those who breast feeding their children are protective from breast cancer (26). Also the duration of breastfed has its own factors. Those breastfed at least six month and more was more protective from breast cancers (27). Additionally, number of giving birth was one protective factor of breast cancer (28). Contraceptive user duration was characterized by no consistencies both within and between studies. According to Weir, R, et al 2007, from Meta analysis of their study was not possible to draw any firm conclusions about this exposure. Also other determinants like age and time of contraceptives users were basic issue of factors did not appear to be usefully discriminating for determining a group at increased risk of breast cancer (29).

Most information about breast cancer risk associated with contraception has focused on injection and the available data are mostly reassuring. Limited data on the contraceptive leave unresolved the question of increased risk linked to recent use; however, the effect, if real, would be very small. There are no data specifically addressing use of progestin contraceptives in breast cancer survivors. Basic science data recommend that progestin's can have a proliferative and possibly mitogenic cause on breast tissue depending on the timing, type, and amount of progestin, even though experts in the field give the impression to have contradictory viewpoints on these effects. The complex

relationships governing growth and differentiation of breast epithelial tissues are still not fully understood (30).

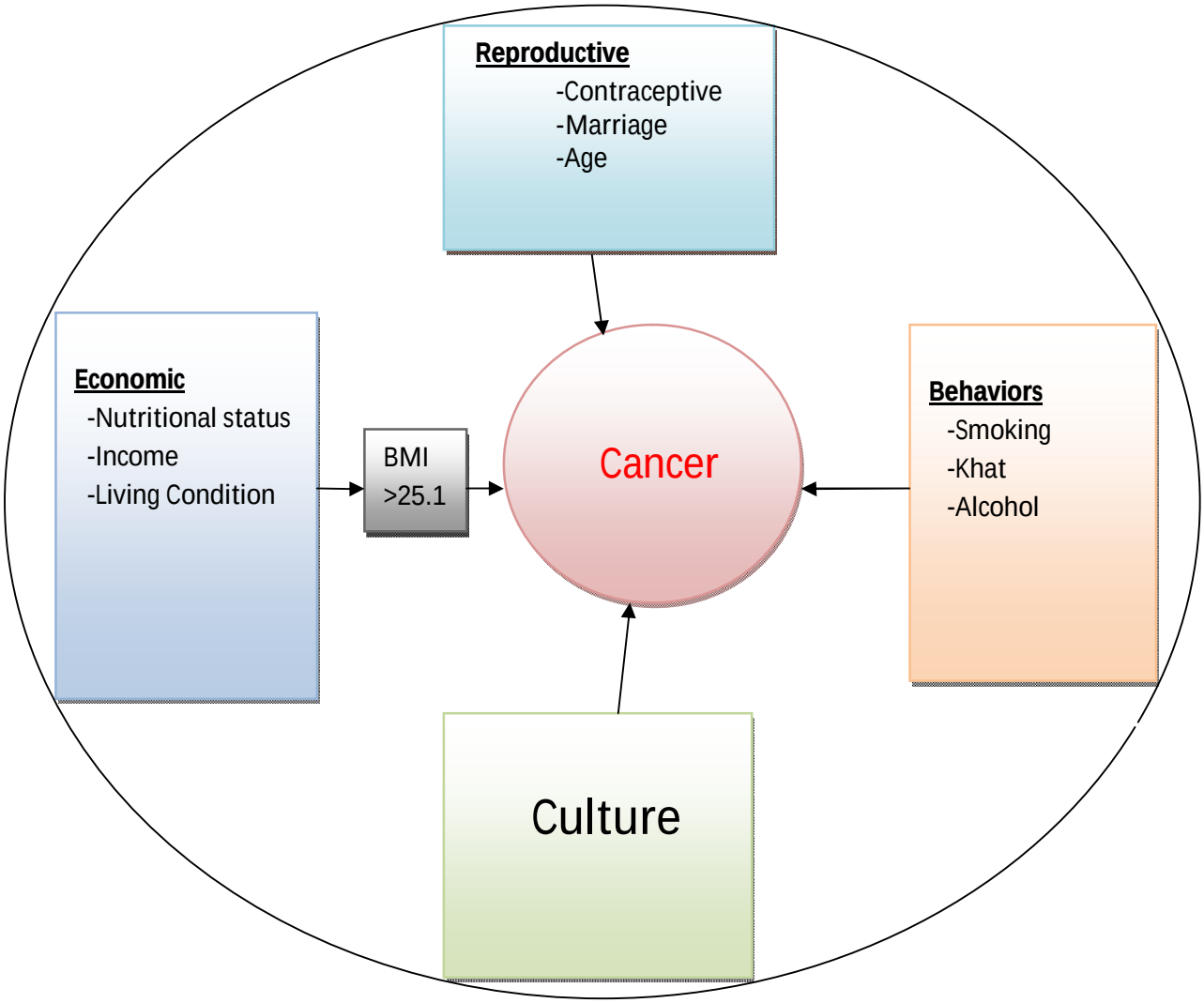
According to Suzuki R, et al. in Sweden a large amount of epidemiological evidence suggests BMI has been positively associated with an increased risk of breast cancer. The mechanisms various impacts between BMI on breast cancer risk and the life-stage of women remain poorly understood (31).

Other former Cecchini RS, Costantino et al, presented among premenopausal participants, an increased risk of invasive breast cancer with higher BMI (P = 0.01). Compared with BMI less than 25 adjusted HRs for premenopausal women 1.59 (32, 36).

Living house is very essential for survival of human being. Radon is radioactive gas that is found in soil and rock in all parts of world. It is found by the decay of uranium, which is natural process. Radon may be found in all types of homes and buildings. People living in rented house and apartment building can find out have high radon concentration in their residences. Building owners can fix radon problems by having repairs made to the building (38).

General this literature review used for breast and cervical cancer and case control study of this research.

Conceptual framework



OBJECTIVES

General Objective

To assess the magnitude of breast and cervical cancer and associated risk factors of breast cancer in Addis Ababa city women in Tikur Anbessa Specialized referral hospital, from March 1/2013-April 15/2015

Specific objective

- To identify the incidence of breast and cervical cancer.
- To determine the associated risk factors of breast cancer.

METHODS AND MATERIALS

Methodology

Study design

Cross-sectional retrospective study and case control study design was conducted at the Department of cancer registry, and Gyn/Obs OPD in Tikur Anbessa Specialized referral Hospital, Addis Ababa University.

Study Area

The study was conducted in Addis Ababa. Addis Ababa is the Capital City and the seat of the Federal Government and Parliaments. The City has gained international status by being the seat of the African Union, several international organizations and numerous Embassies. Addis Ababa is located in the Central part of Ethiopia. All sides of the capital city is bordered by Oromia Regional State, and covers an area of 530 sq. km (53,000 ha). The capital city, Addis Ababa is divided into ten sub cities and into 99 Kebeles. The spatial organization shows that Lideta, Kirkos, Arada and Addis Ketema represent the central areas, whereas Akaki Kaliti, Nefas Silk Lafto, Kolfe Keraniyo, Gulele, Yeka and Bole correspond partly to the expansion areas at their peripheries. Addis Ababa City Administration has a total population of 2004 E.C equal to 3,048,631, from this, females 1,595,968 and males 1,452,663 of population (3, 21). Addis Ababa city has 39 Hospital, 41 Health Center and 359 clinics (8).

Study Period

The study was conducted from March 1/2013 to April15 /2013

Source Population

All Addis Ababa city population was a source population of the study.

Study Population

For cross-sectional study

All breast and cervical cancer diagnosed women who registered in Tikur Anbessa Specialized Referral Hospital from Addis Ababa during past one year was the study population. Tikur Anbessa hospital established cancer registry project pilot since November 20011. The hospital assigns 20 focal persons in government and private health facilities which have done diagnostic of cancer. Those people are responsible to send weekly the information for Tikur Anbessa hospital for general cancer registry.

For case control

Case study population women of breast cancer on treatment following in radiotherapy department and control study population female cancer free (screened) visited Gyn/Obs OPD department for their medical follow up and treatments was the study population.

Sample population

For cross-sectional study

The sample population was taken from Tikur Anbessa referral hospital cancer registry pilot, Addis Ababa city women with breast and cervical cancers. One year of recorded data reviewed for incidence rate of cancer.

Case control Sample population

Associate risk factors unmatched case control study between non breast cancer and breast cancer patient, different sample sizes were calculated by taking account of the major determinant factors

Inclusion Criteria

For cross-sectional study

All breast and cervical cancer registered past one year in Tikur Anbessa Specialized Referral Hospital from Addis Ababa city Administration was included in this study.

Case control data analysis

Breast cancer Case was from radiotherapy department and control from Gyn/Obs cancer free (screened) female included into the study.

Exclusive Criteria

For cross-sectional study

All adult women patients who were not registered in breast and cervical cancer registry were excluded

Case control data analysis

For breast cancer case Cancer free and in control cancer ill and unwillingness to participate in the study were exclude from the study. Also critically ill patients were excluded from the study as it will not believe to get appropriate response to the questions.

Sample size Determination

The sample size determined for incidence rate of breast and cervical cancer all one year recorded data was taken from cancer registry pilot. For the investigation unmatched case–control study and associate risk factors of breast cancer and non breast cancer patient, different sample sizes were calculated by taking who account the major risk factors such as BMI and contraceptive using the Open EPI statistical package. In this regard, a minimum detectable 95% confidence level, odd ratio for exposed 2 as thumb rule, a power of 80% and a two to one allocation ratio of control to case (2:1) were assumed.

Based on the above assumptions used Open Epi soft ware calculation, 108 case plus 10% contingency =119 and 215 control plus10% contingency = 238 we took with breast cancer is logistically possible and reasonably large enough.

Two- side confidence level (1-alpha)	95%
Power (% chance of detecting	80
Ratio of control to case	2:1
Hypothetical proportion of control with exposure	40
Hypothetical proportion of case with exposure	57.14
Last extreme odds to be detected	2.00

	Kelsey	Fleiss	Fleiss with CC
Sample Size – Cases	100	99	108
Sample Size - Controls	199	198	215

Sampling Technique

The sampling technique used in this study was convenience sampling methods in Tikur Anbessa Especial Referral Hospital from March1 to April 15/2013 was used.

Data Collection

Data was collected by using structured questionnaires for case control and checklists for recorded reviewing. All study participants were interviewed by data collectors from the prepared structured questionnaires and reviewed patient record with checklists (On annex attached).

Data Collectors

Data was collected by two trained diploma nurses and one supervisor with the same qualification.

Instruments

A structured and semi structured questionnaires was designed based on study objectives, and contain three parts; 1, Questions related to socio-demographic information. 2, Questions related to associate risk factors was developed. 3, checklist related to incidence rate. The questionnaire was initially prepared in English language and then translated into Amharic to make it easily understood by most of study subjects.

Pre-test

Ten days before actual data collection period, clarity and completeness of the questionnaire was checked by principal investigator on 15 similar study populations in St. Paulo's Hospital. The focus was to screen out potential confusions and to make early modification.

Validity and Reliability of Instrument

The questionnaires and Checklist was examined by senior experts to the area of study for content validity. The instruments translated from English to Amharic then back to English to assure the validity and quality.

Study Variables

Independent Variables

1.1 Socio-demographic variables

For secondary data

- Age
- Ethnicity
- Stage of breast and cervical cancer
- Behavior of cancer
- Basis of diagnosis
- Morphology of cancer
- Treatment

For case control

1.2 Socio demography

- Age
- Marital status
- Religion
- Education
- Occupation

2. Substance abuse.
   - Smoking
   - Chewing Kchat
   - Alcohol drinking
3. Contraceptive use
4. BMI

Dependent Variables

- Breast cancer

Data Quality Control

Before data collection, discussion was made on the questionnaires and checklist among data collectors in order to have common understanding of the research objectives. Potential problems was identified and discussed and amendments were made before the actual work. All data collectors and supervisor have had one day training on the methods and procedures of data collection. During data collection time continuous supervision and cross checking was carried out by supervisor and principal investigator for making sure of completeness and consistency of each checklist.

Operational definition

- Case = cancer ill which is confirmed by hematology or histology
- Cervical cancer = Tumor affect the cervix of uterus or womb which was confirmed through screening of cervix.
- Control = cancer free confirmed by screening or histological examination or mammography instrument.
- Breast cancer = the malignant or tumor affect of breast or metastasis other organ and was confirmed Histology or Hematology
- Behavior of cancer = the way it acts within the body or a tumor can grow in Place of the organs.

Data Processing and Analysis

The collected data was cleaned, coded, and entered into Epi-info 3.5.1 and transported SPSS 20 software for analysis.

Descriptive/Univariate analysis: Calculations of Proportions and actual number of cases were used to describe frequency outputs for categorical variables. A result of the descriptive analysis was presented using tables, graphs and numerical summaries.

Bivariate analysis: Cross-tabulations were used to explore and display the relation between two categorical variables. Binary and Multivariate logistic regression, Odd ratio analysis were also used to identify the strength of association of the various potential risk factors

Ethical Considerations

Initially the proposal was ethically cleared from the School of public health ethical review committee. Prior to data collection period, permission letter was taken from TASRH for study was insured for preservation of confidentiality and privacy of data by code patient name. Permission letter was received for case control group study participants and informed about the objective of the study during data collection and asked to cooperate for an interview through oral consent. The participants of this study were insured for preservation of confidentiality and anonymity. Moreover, they were given opportunity to consent or reject to take part in the study.

Dissemination of the Result

The result of the study will be presented to AAU College of Health Science, school of public health. It will be send to local journals; attempts will be taken to have opportunity for publication to different national and international journals. Different governmental and other relevant supporter organizations working on cancer can have the access to get the results for their health care activities.

RESULT

Breast and cervical cancer cross-sectional retrospective data 703 were including in the descriptive study and case control from Tikur Anbessa Specialized Referral Hospital 357 were included.

Cross-sectional study

From cross-sectional retrospective data 453(65.8%) of breast and 250(34.2%) of cervical cancer were observed. The breast cancer 163(36.0%) and Cervical cancer 157(62.8%) were in the age group 50 years and above. The mean age of breast cancer 47.6 with Sd 14.1, minimum age for breast cancer was 15 years and maximum was 99 years and cervical cancer mean age 51.6 years with Sd 12.8 minimum age 20 and maximum age 92 years old. Ethnically, breast cancer 207(45.7%) and cervical cancer 124(49.6%) of the studies subject were from Amhara ethnic group followed by Oromo breast 62(13.7%) and cervical cancer 55(22.0%) respectively (Table-1).

Table -1 Socio demographic characteristics of retrospective study subjects in Tikur Anbessa Hospital, 2013.

		Breast No=453		Cervical No=250	
	Age	frequency	percentage	frequency	%
Age	15-29 years	40	8.8	7	2.8
	30-39 years	128	28.3	41	16.4
	40-49 years	122	26.9	45	18.0
	50+ Years	163	36.0	157	62.8
	Breast cancer	Mean age=47.6,	Sd=14.1 15 to	99	Years
	Cervical cancer	Mean age 51.6	Sd=12.8 20 to	92	years
Ethnicity	Amhara	207	45.7	124	49.6
	Oromo	62	13.7	55	22.0
	Gurage	48	10.6	21	8.4
	Tigre	12	4.8	12	4.8

Incidence for breast was 453/1,595,968 and for cervical cancers was 250/1,595,968 of female population. The incidence rate in Addis Ababa was equals to 28.4 from 100,000 women for breast cancer and 15.7 from 100,000 women for cervical cancer. The denominator of population of A.A was the mean year of 2012 from census office of Ethiopia asked by letter (Table-2).

Table –2 The incidence rate of retrospective in TASRH, 2013

	Cases	Denominator	Incidence rate	Per100,000popn
Cervical CA	250	1595968	0.00015664	15.7
Breast CA	453	1595968	0.00028384	28.4
Combined	703	1595968	0.0004405	44.05

Behavior of the cancer, malignant primary site or begin to grow at another site 448 (97.9%) of breast cancer and 240(96%) of cervical cancer. Also the morphology of breast cancer were intraductal carcinoma, Non infiltrating, non other specific (NOS) or Intraductal was 267(55.5%) followed by Epithelial tumor, carcinoma in situ was 118(24.5) and cervical cancer morphology squamous cell carcinoma, NOS Epidermoid carcinoma was 84(33.6%), squamous cell carcinoma, large cell was 58(23.2%), squamous cell carcinoma, NOS squamous cell carcinoma was 53(21.2%) (Table-3).

Table -3 characteristics of Behavior of breast and cervical cancer in TASRH, 2013.

	Breast		Cervical	
Behavior of cancer	frequency	%	Freq.	%
Uncertain whether benign or malignant	3	0.7	1	0.4
Carcinoma in situ	2	0.4	9	3.6
Malignant primary site or begin to grow at another site	448	97.9	240	96.0

The basis of diagnosis of breast cancer was Histology of primary 245 (54.1%) and Cytology/hematology 159(35.1%), and also the basis of diagnosis of cervical cancer was Histology of primary 227(90.8%) (Figure-1).

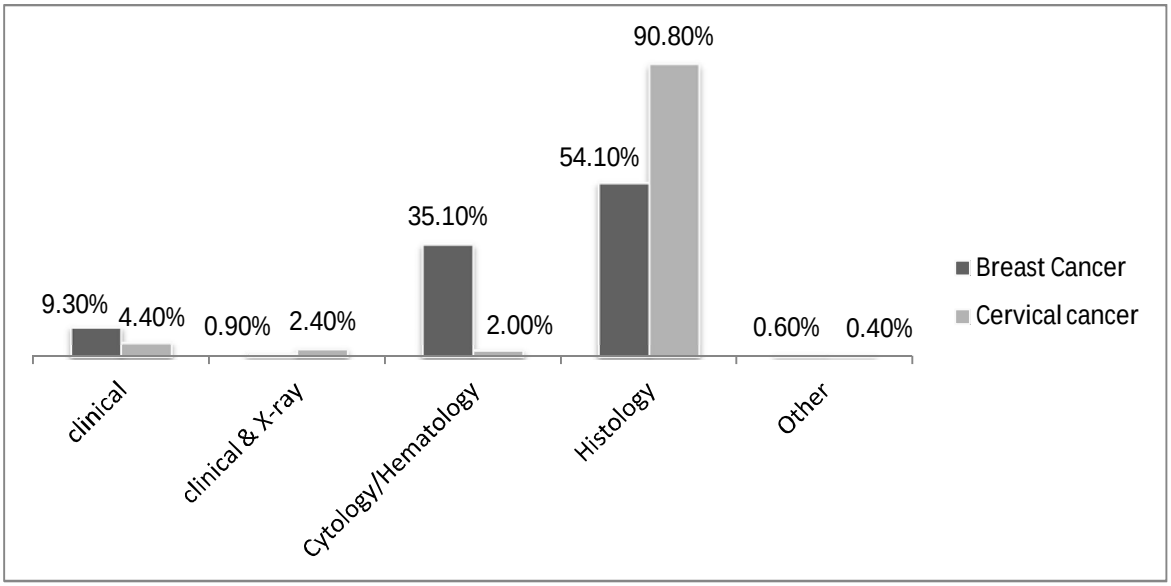


Figure-1 The characteristic basis of diagnosis of breast and cervical cancer in TASRH, 2013.

The cross-sectional retrospective study for cancer stage of one year data observation of breast cancer clients came to health facility at stage two 46(10%), stage four 46(9.1%), stage three 25(5.6%) and stage one 20(4.2%). Cervical cancer not absolutely staged during diagnosis of clients to decide the stage of cervical cancer (Figure-2).

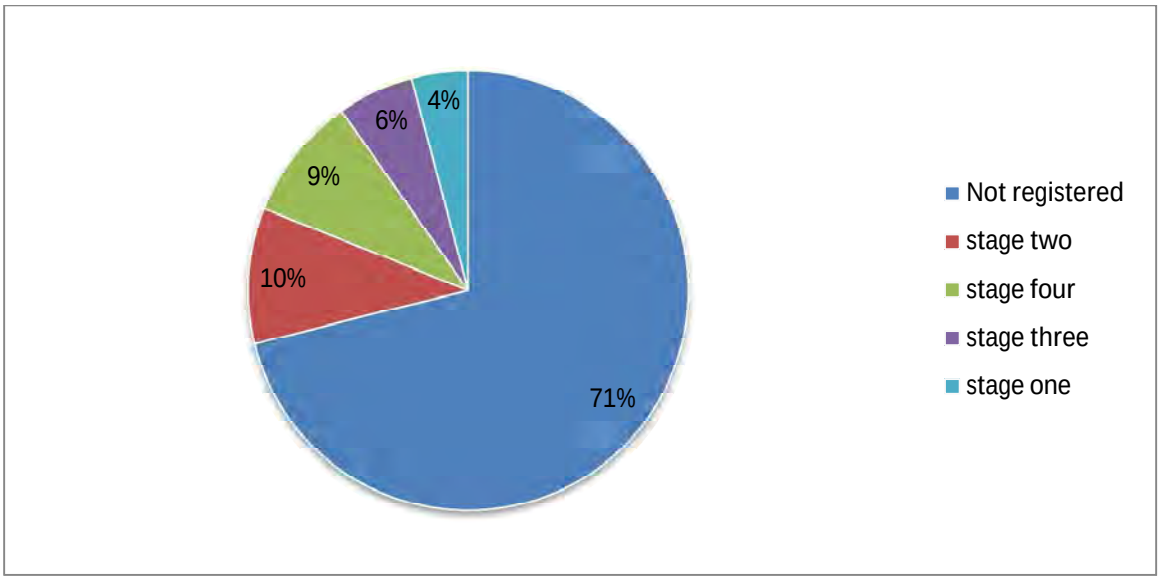


Figure-2 The data recorded of breast cancer staging during diagnosis of cancer in TASRH, 2013.

The distribution of breast and cervical cancer in Addis Ababa sub city was almost similar. But Yeka sub city was higher than other sub city in both breast 67(14.5%and cervical cancer 35(14.0) followed by bole sub city 58(12.8%) breast cancer and Kirkos 55(11.2%) for cervical cancer (Table-4).

Table-4 Characteristic of distribution of breast and cervical cancers in AA sub city, TASRH, 2013

	Breast No=453		Cervical No=250	
Sub city	frequency	percent	frequency	Percent
Addis ababa(NOS)	5	1.1	1	0.4
Addis ketema	45	9.9	22	8.8
Akaki	28	6.2	18	7.2
Arada	46	10.2	18	7.2
Bole	58	12.8	22	8.8
Gulale	31	6.8	27	10.8
Kirkos	40	8.8	28	11.2
Kofle karanio	46	10.2	26	10.4
lideta	33	7.3	22	8.8
Lafto Nefas silik	54	11.7	28	11.2
Yeka	67	14.5	35	14.0

The treatments have been given breast 271(64.2) and cervical 92(37.0% in Tikur Anbessa Specialized referral hospital for both diseases very low which is not considerable with case load visited the hospital (Table-5).

Table-5 characteristics of treatment of client of breast and cervical in TASRH, 2013

Treatment	Breast No= 453		Cervical No=250	
	Yes Ferq	%	Yes Ferq	%
Surgery	145	33.0	29	12.0
Radiotherapy	30	6.9	46	18.0
Chemotherapy	105	24.1	17	0.7
Hormone therapy	1	0.2	0	0.0
Total	271	64.2	92	37.0

Determinants or risk factors of breast cancer

The Determinants data was directly collected from cancer radiotherapy department for cases 119(33.3%) and Gyn/Obs 238(66.7%) for controls were included in the study and they had completed the interview and made response rate 100%.

Addis Ababa sub city dweller of breast cancer cases and control distribution more or less was similar. The proportion of age 30 and above years was 109(91.6%) cases and 170(71.5%) controls. The mean of age 39.8 with SD=12.5, minimum age 15 and Maximum was 80 years of case and control (Table-6).

Table-6 The characteristics of sub city dweller, age case control distribution in AA, 2013

	Case=119		Control=358	
Characteristic	frequency	Percent	frequency	Percent
Sub City				
NOS(Addis Ababa	33	27.7	66	27.7
Addis Ketema	8	6.7	13	5.5
Akaki	5	4.2	9	3.8
arada	8	6.7	21	8.8
bole	5	4.2	16	6.7
Gulale	6	5.0	23	9.7
Kirkos	7	5.9	10	4.2
Kolife karanio	5	4.2	23	9.2
Lidata	5	4.2	18	7.6
Lafito nifas silk	14	11.8	14	5.9
yeka	6	5.0	13	5.5
Others[1]	17	14.3	12	5.0
Age				
15-29	10	8.4	68	28.6
30-39	28	23.5	83	34.9
40-49	31	26.1	44	18.5
50+	50	42.0	43	18.1
Mean age	39.8	SD=12.5 Min=15 yrs, Max = 80 yrs		

Marital status of study respondent the majority was married 79(66.4%) from case group and 162(68.1%) control groups. Age of first marriage of study subject were 15-19 Years 58(48.7%) of case and 73(30.7%) of control followed 20-24 years were 24(20.2%) of case and 61(25.6%) of control. Study participant once marriage were 77(64.7%) of case and 160(67.2%) of control followed twice were 19(16.0%) of case and 24(10.1%) of control (Table-7).

[1] Clients come from Oromia, Amhara, SNNPR and Harari

Table-7 The distribution of marital status, age at first marriage and number of marriage in AA, 2013

	Case No=119		Control No=238			
Variable	Freq.	Percent	Freq.	Percent	X^2	Pv
Marital status						
single	14	11.8	45	18.9	6.23	0.101
Married	79	66.4	162	68.1	1.78	0.180
Widowed	18	15.1	22	9.2	4.80	0.028
Divorced	8	6.7	9	3.8	3.34	0.680
First age of marriage						
Not married	16	13.4	37	15.5	10.97	0.089
10-14 Years	6	5.0	16	6.7	0.06	0.801
15-19 Years	58	48.7	73	30.7	3.07	0.080
20—24Years	24	20.2	61	25.6	0.60	0.806
25-29 Years	10	8.4	33	13.9	0.57	0.448
30-34	5	4.2	15	6.3	0.90	0.663
35+ years	0	0.0	3	1.3	0.00	0.999
Number of Marriages						
Not married	15	12.6	38	16.0	2.92	0.713
Once	77	64.7	160	67.2	0.35	0.554
Twice	19	16.0	24	10.1	2.59	0.108
Three time	7	5.9	14	5.9	0.18	0.670
Four time	1	0.8	0	0.0	0.00	1.000
Five time	0	0.0	2	0.8	0.00	0.002
Number of give Birth						
Not give birth	23	19.3	81	34.0	13.56	0.035
Once	19	16.0	45	18.9	7.51	0.006
Twice	22	18.5	31	13.0	2.64	0.105
Three time	14	11.8	25	10.5	0.13	0.716
Four time	13	10.9	13	5.5	0.73	0.393
Five time	9	7.6	20	8.4	0.15	0.702
Six & above	19	16.0	23	9.7	1.44	0.231

Duration of breast feed was different between study participants from less than six month to four years. The majority of study participant were breast fed 92(77.3%) of case and 152(63.9) of control (Figure-3).

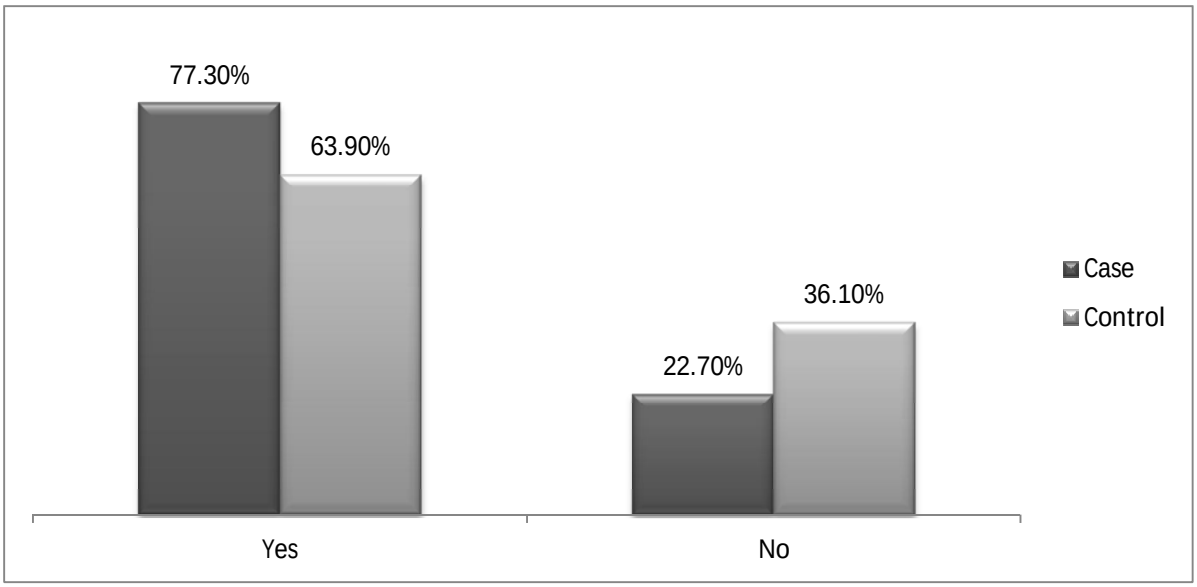


Figure-3 The study subjects breast feeding their children cases control in Tikur Anbessa Specialized referral hospital, 2013.

Most of study subjects were not responded to monthly income 83(69.7%) of case and 142(59.7%) of control.

The study subject living owned house 66(55.5) case and 105(44.1%) control, rented house case 38(31.9%) and 70(29.4%) control followed live with family and relatives and 15(12.6%) case and 63(26.6%) of control (Figure-4).

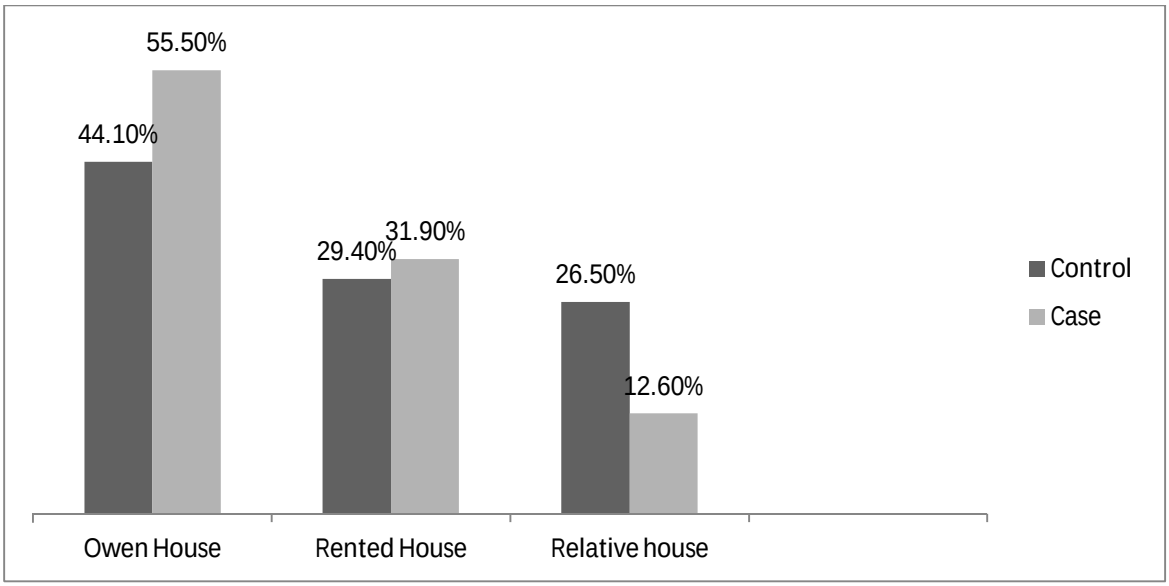


Figure-4 characteristics of ownership of house between case and control in TASRH, 2013.

The most study participant religion respondents was orthodox 80(67.2%) case and 150(63.0% of control. Educational status of respondents 35(29.4%) of case and 77(32.4%) control was illiterate followed grade 5-10 was 24(20.2%) case and 56(23.5%) of control. Also the occupational status of respondents was house wife 60(50.4%) case and 107(45.0%) of control (Table 8).

Table –8 The characteristics of Religion, Educational status and occupation case control in TASRH, 2013.

	Case		control			
	frequency	%	Freq	%	X^2	Pv
Religion						
Orthodox	80	67.2	150	63.0	0.39	0.534
Protestant	19	16.0	27	11.3	0.11	0.736
Muslim	16	13.4	59	24.8	1.58	0.209
Catholic	2	1.7	0	0.0	0.00	0.999
Others	2	1.7	2	0.8	0.00	1.000
Education						
Illiterate	35	29.4	77	32.4	7.07	0.315
1-4 Grade	17	14.3	30	12.6	0.36	0.574
5-10 Grade	24	20.2	56	23.5	0.03	0.853
11-12 Grade	30	25.2	38	16.0	3.01	0.083
Diploma	9	7.6	25	10.5	0.28	0.595
1st Degree	2	1.7	12	5.0	1.61	0.204
Other	2	1.7	0	0.0	0.00	0.999
Occupation						
Government	15	12.6	45	18.5	0.27	0.602
Private	17	14.3	29	12.2	0.62	0.431
Trader	9	7.6	12	5.0	1.20	0.274
House wife	60	50.4	107	45.0	0.73	0.392
Daily laborer	3	2.5	7	2.9	0.00	0.970
Work in Hotel	0	0.0	2	0.8	0.00	0.999
Others	15	12.6	36	15.1	3.85	0.697

The majority of common food has been eaten by study participants was “Injera with shiro watti” 99(83.2%) of case and 207(87.0% of control (Figure-5).

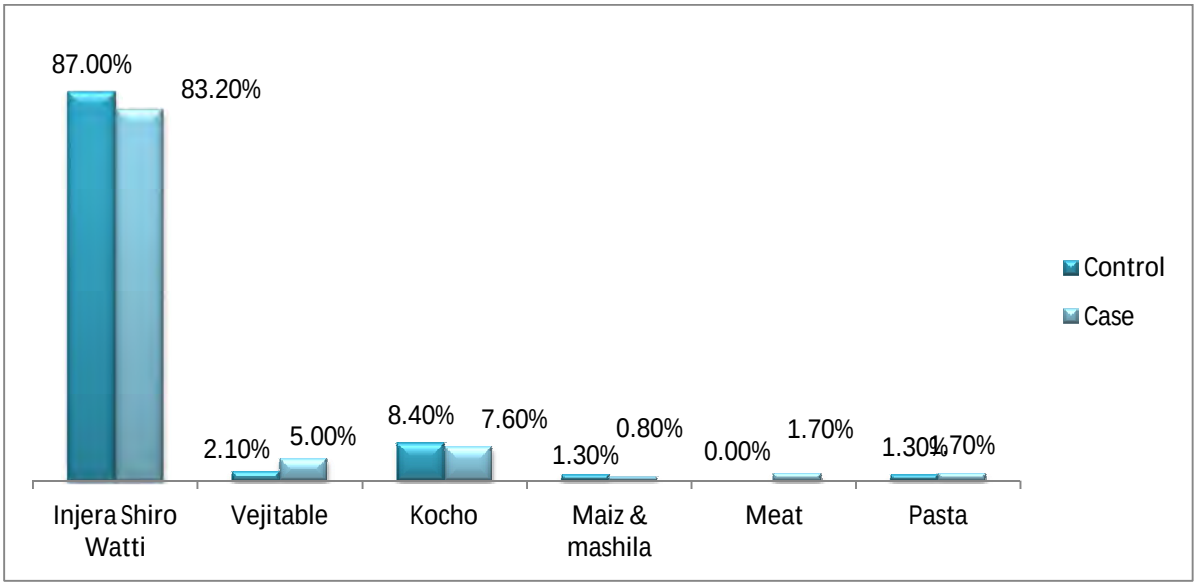


Figure-5 Common food eaten by case control in Tikur Anbessa Specialized referral hospital, 2013.

Almost all of participants were not smoking 119(100%) of case and 237(99.6%) of control. Chewing kchat was not common in majority of participants 115(96.6%) of case and 231(97.1%) of control. Those did not drink alcohol were among cases 101(84.9%) and control 198(83.2%). Study participants were not used of contraceptive 71(59.7%) of case and 151(63.4%) of control (Table-9).

Table-9 show substance use in case control in Tikur Anbessa Hospital, 2013

	Case		Control			
	frequency	%	Freq	%	X^2	Pv
Smoking						
Yes	0	0	1	0.4	0.00	1.000
Not	119	100	237	99.6	----	-----
Khat chewing						
Yes	4	3.4	7	2.9	0.05	0.829
No	115	96.6	231	97.1	--------	----------
Alcohol drink						
Yes	18	15.1	40	16.8	0.17	0.685
No	101	84.9	198	83.2	--------	----------
Yearof use contraceptive						
Not use	71	59.7	151	63.4	5.80	0.326
Less than 6 months	7	5.9	14	5.9	0.02	0.899
1year	14	11.8	23	9.7	0.49	0.483
2-3 years	10	8.4	27	11.3	0.36	0.548
4_5years	7	5.9	16	6.7	0.02	0.880
5+ years	10	8.4	7	2.9	4.69	0.030
Types of contraceptive						
Pills	27	22.7	25	10.9	6.53	0.034
Injection	15	12.6	48	20.2	1.55	0.011
Loop	5	4.2	6	2.5	0.84	0.358
Implants	0	0	5	2.1	0.00	0.999
Not use contraceptive	72	60.5	153	64.5	10.4	0.034

Table-10 Distribution of Addis Ababa dwellers by BMI, of work of husband, and monthly income of case control in Tikur Anbessa Hospital, 2013.

	Case		Control			
	Freq.	%	Freq	%	X^2	Pv
Body mass index						
<18.4kg/ht^2	8	6.7	37	15.5	17.21	0.000
18.5-25kg/ht^2	75	63.0	170	71.4	2.97	0.085
>25.1kg/ht^2	36	30.3	31	13	13.33	0.000
Work of husband						
No husband	44	37.0	90	37.8	0.35	0.554
Retied	13	10.9	4	1.7	4.17	0.041
Military	2	1.7	3	1.3	0.46	0.497
trader	9	7.6	8	3.4	1.52	0.217
Private	14	11.8	61	25.6	0.01	0.941
Government	22	18.5	27	11.3	1.05	0.306
farmer	14	11.8	41	17.2	0.07	0.788
Driver	1	0.8	4	1.7	25.29	0.001
Monthly in come						
Not respond	83	69.7	142	59.7	7.41	0.060
Less than 500	7	5.9	35	14.7	6.04	0.014
501-1000	22	18.5	39	16.4	0.01	0.905
1001-2000	7	5.9	22	9.2	1.78	0.182
Breastfed						
Yes	92	77.3	152	63.9	6.52	0.011
No	27	22.7	86	36.1	---------	------
How long breast fed 1st baby						
Not breast feed	28	23.5	87	36.6	7.75	0.257
Less than 6 months	3	2.5	11	4.6	0.06	0.809
6 months	8	6.7	14	5.9	1.35	0.245
1 year	21	17.6	27	11.3	5.91	0.015
2 years	32	26.9	56	23.5	3.42	0.064
3 years	19	16.0	43	18.1	0.82	0.366
4 years & above	8	6.7	0	0.0	0.00	0.999

The analysis cheeked each variable with binary model for all variables with P-value less than 0.2 separately. Determinants are Age, educational status, marital status, Husband income, age at Marriage, number of give birth, number of pregnancy, number of live children, breast feeding, years of breast feeding, use of contraceptives, year of use contraceptive, smoking, chewing kchat, drinking of alcohol and BMI were fitted for binary model. But the multivariate analysis MBI, Age, monthly income and rented house were showed association.

Among women who had body mass index were above 25.1kg/m^2 4.843 times (AOR= 4.843 (95% CI: 1.819-12.896) more likely to be affected by breast cancer than women having body mass index less than 18kg/m^2. Also women who age 50 years and above were 6.003 times (AOR =6.003 (95% CI: 2.606, 13.830) more likely affected than women less 50 years.

Women who were lived in rented house 2.577 times (AOR=2.577 (95% CI: 1.187, 5.595) more likely affected than women lived in their owned house. In other hand those women who have less 500 Birr monthly income 66% (AOR=0.339(0.135, 0.852) less likely developed breast cancer than higher monthly income.

Table-11 Risk of Breast Cancer Associated with Socio-Demographic Characteristics of Adjusted OR-Table

	case	control	COR	pv	AOR , CI=95%	pv
BMI						
<18.4 kg/ht²	8	37	1.00	0.0001		0.002
18.5-25 kg/ht²	75	170	2.040(0.907,4.592)	0.085	2.033(0.845,4.890)	0.113
>25 kg/ht²	36	31	5.371(2.178,13.244)	<0.0001	4.843(1.819,12.896)	0.002
Age group						
15-29	10	68	1.00	0.0001		<0.0001
30-39	*28*	83	2.292(1.041,5.055)	0.0391	1.970(0.851,4.561)	0.114
40-49	31	44	4.791(2.137, 10.741)	0.0001	3.682(1.532,8.848)	0.004
>50	50	43	7.907(3.628, 17.231)	<0.0001	6.003(2.606,13.830)	0.0001
Marital status						
Single	14	45	1.00	<0.101		
married	79	162	1.567(0.812, 3.025)	0.180		
widowed	18	22	2.630(1.108, 6.244)	0.028		
divorced	8	9	2.857(0.927, 8.805)	0.068		
Living House						
Owen	66	105	2.640(1.390, 5.016)	<0.012	2.064(0.984,4.329)	0.055
Rented	38	70	2.280(1.146, 4.536)	0.003	2.577(1.187,5.595)	0.017
Family & relative	15	63	1.00	0.019		<0.055
Monthly income						
Not answer	83	142	1.00	<0.060		0.037
<500 Birr	7	35	0.342(0.145,0.805)	0.014	0.0339(0.135,0.852)	0.021
501-1000 Birr	22	39	0.965(0.536, 1.739)	0.906	0.907(0.477,1.726)	0.767
1001-2000 Birr	7	22	0.544(0.223, 1.329)	0.182	0.368(0.138,0.977)	0.045
Breast feed						
No	27	86	1.00	<0.000		
Yes	92	152	1.928(1.165,3.191)	0.011		
How long breast fed 1st baby						
N0	28	87	1.00	0.257		
<1/2 yr	3	11	0.847(0.221, 3.255)	0.809		
1/2yr	8	14	1.776(0.675, 4.672)	0.245		
1 Yr	21	27	2.417(1.186, 4.924)	0.015		
2 yr	32	56	1.776(0.966, 3.262)	0.064		
3yr	19	43	1.373(0.690, 2.731)	0.366		
4+	8	0	----------	-------		
Types of contraceptive						
Pills	27	26	2.207(1.203, 4.049)	0.011		
Injection	15	48	0.664(0.349, 1.264)	0.213		
Loop	5	6	1.771(0.523, 5.995)	0.358		
Implant	0	5	----------	------	.	
Not used contraceptive	72	153	1.00	0.035		
Years of use contraceptive						
Not used	151	71	1.00	0.030		
<1/2 year	7	14	1.060(0.411,2.750)	0.120		
1 Year	14	23	1.295(0.629,2.664)	0.154		
2-3 years	10	27	0.788(0.362,1.716)	0.029		
4-5 years	7	16	0.930(0.366,2,363)	0.077		
>5 years	10	7	3.038(1.111,8.310)			
Alcohol drinking						
Yes	18	40	0.882(0.481,1.617)	0.685		
No	101	198	1.00	0.0001		

Discussion

This study was cross-sectional retrospective secondary data reviewing and case control study design under took in Tikur Anbessa Specialized referral hospital in Addis Ababa.

The incidence rate estimate in each of the national population of the country obtained from cancer registries. They may cover entire national populations or selected regions. Tikur Anbessa Specialized Referral Hospital stared cancer registry project pilot only for Addis Ababa City. According to this information in Addis Ababa breast and cervical cancer are the most frequent cancer of women, with estimated new cases of breast cancer 453 and cervical cancer 250 in Addis Ababa city, in 2012.

According to this study information in Tikur Anbessa Specialized Referral Hospital breast cancer new cases were 453 in 2012. The incidence rate was 453/1,595,968 of female population in Addis Ababa city in the same year. The breast cancer incidence rate was equals 28.4 per 100,000 female populations. This incidence rate estimate was higher than the American cancer society research report in 2012, Africa 28 per 100,000 female population and east Africa 19.5 per 100,000 female populations (24). Breast cancer was the second predominant cancer disease in Africa and Ethiopia (15). This finding was showed that higher incidence of breast cancer in Addis Ababa City.

The cervical cancer incidence was also seen. The cervical cancer new cases 250 in Tikur Anbessa Specialized Referral Hospital were registered in 2012. The estimation of incidence rate from 1,595,968 female population of in Addis Ababa in 2012 was 15.7 per 100,000 female populations. This finding was larger than North America study 19.5 per 100,000 populations (5), but was lower when compare to study conducted by WHO, which was 35.5 per 100,000

populations (9). Eastern Africa is 34.5 per 100,000 and in Africa 25.2 among the highest in the world and more than three times the rate in Europe and North America (24). Study conducted in Ethiopia a very few women receive PAP smear screening service (15).This study was show very low screening service in our health facility since the incidence rate was very higher than this study result.

The retrospective data reviewed for stage not fully registered. The record had missing rate 342(71.1%) the stage of breast during diagnosis. The remaining information on stage of health seek behavior was different in different clients. From the document the important information on recording book was not registered according to format. From the available information the most health seeking behavior of breast cancer in Addis Ababa city was at stage two 48(10%), stage four 44(9.1%), stage three 27(5.6%) and stage one 20(4.2%). The rest of study participants were not at the stage of cancer during diagnosis recorded. But on retrospective data of breast cancer were collected during this study the behavior of cancer during diagnosis 476(99%) Malignant, primary site or begin to grow at another site. Since the cancer started to grow at another site the stage may be more than stage one. Many of clients reach health facility at late stage of cancer. The result of this study was likely similar to report of Global Initiative for Cancer Registry, FACT 2012. In developing countries, cancer ill clients are more likely to be diagnosed at a later stage (25). Even if cervical cancer was registered in the department of cancer registry, the stage of cervical cancer not booked as well in registration format. For this reason it was difficult to conclude the cervical cancer stage of health seeking behavior in this study.

Multivariate analysis show that age 50 years and above 6 times more likely affected than lower ages. (AOR=6.003 (95% CI: 2.606, 13.830). As data collected from TASRH for this study was 267(55.5%) intraductal carcinoma or intraductal adnocarcinoma occur in cancer case women with age 50 yrs and

above 183(38.0%). According to Canadian partnership against cancer study report the percentage of dangerous breast cancer with ductal histology increased from 63.6% to 77%. A diagnosis of loular carcinoma was made more often among women age 50 and older than in women less than 50 yrs (33). This finding shows that increasing of age 50 years and above was increase risk of breast cancer.

According to this study Alcohol drinking behavior was rare. Alcohol drinking rate was only 18(15.1%) from case and 40(16.8%) from control. According to study conducted in New Zealand, alcohol user duration was characterized by no consistencies between studies. They suggested, from Meta analysis of their study was not possible to draw any concrete conclusions about this exposure (29). Others studies show that alcohol dirking was one of risk factors for breast cancers (37). This finding was not give final decision, because of rare alcohol drinkers and multivariate analysis not show statistically significant in this study participant.

Also female were used hormone contraceptive pills bivariate analysis 2.207 (95% CI: 1.203, 4.049) more likely affected than not used contraceptive. Some research paper not clearly supported the idea hormone contraceptive can cause of breast cancer (36). Meta analysis study done Chris Kahlenborn et al., addressing use of oral contraceptives was one of breast cancer risk factor (35). Basic science data suggest that progestin's can have a proliferative and possibly mitogenic effect on breast tissue depending on the timing, type, and amount of progestin, although experts in the field seem to have contradictory viewpoints on these effects. The complex relationships governing growth and differentiation of breast epithelial tissues are still not fully understood (30). Since the result of this study not showed by multivariate analysis hormone contraceptive not risk factors of breast cancer. I may suggest the result obtain in this study need additional further study.

The body mass index of participants were one of risk factor 25.1kg/m^2 4.8 times (95% CI: 1.819,12.896) more likely affected compare to less than 25kg/m^2 body mass index. According to study conducted in New Zealand 2007 BMI has been positively associated with an increased risk of breast cancer (29). Other study conducted in University of Vienna, Austria, presented among premenopausal participants, an increased risk of invasive breast cancer was significantly associated with higher BMI (32). This finding showed BMI one of risk factor of breast cancer as other study.

This study showed less than 500 Birr monthly income 66% less (AOR=0.339(95% CI: 0.135, 0.852) more exposed than higher monthly income. Canadian partnership against cancer(2012) breast cancer control in Canada suggest that women living in the highest income had significantly higher breast cancer incidence rate than women living in lower-income(33). As many research findings show those living in affluent life style more exposed to breast cancers (16, 17). The other study proposes high-income women tend to experience higher rate of incidence than low-income women; they also experience significantly higher rate of survival than lower income (34). This was true newly economical developed country increasing the incidence rate of breast cancer. This finding shows that the higher income increased the risk of breast cancer like other study.

Also those lived in rented house 2.57 times (AOR=2.577(95% CI: 1.87-5.595) more likely affected than live owned house. This might be due to Radon which is radioactive gases affected people from crack aspartames or house those living in rented house. Those live with owned house make fix their house to prevent themselves from radon gases. The other possible reasoned higher incomes live in rented house than lower incomes. Also the other factor might be stress of living in rented house. The conclusion was difficult because need

farther study on Owen house and rented house as risk factors for breast cancer.

Strength

Cross-sectional Retrospective study

- Registration done by trained and expert in the area and all registry recapped every week from 20 government and private health facility by assigned focal person in A.A
- Case control study design of breast cancer was one strength

Limitation

- Data were not fully documented according to the format of registry. This made difficult the process of getting the rich information for investigation.
- Since the study was facility base some study participants not came at study time so data may not be representative.
- Data were collected by nurse which was lead informational bias.
- Some study participants give wrong information about their address since only radiotherapy department in country.

Conclusions

- Incidence of breast cancer in Addis Ababa city was very high, which is needed intervention to decrease the incidence of cancers.
- Higher age was one of risk factors of breast cancer
- Body mass index (BMI) above normal was one risk factor of breast cancer development.

Recommendations

- Minister of health should have set clinical examination and self breast examination and cervical screening every six month for all age 40 and above yrs, BMI greater than 25.1kg/m^2 and those live in rented house.
- It is important to strengthen health professionals capacity on breast cancer clinical examination and screening cervical cancer in the country to make access and available to the community.
- The government should need to include HPV vaccine to prevent cervical cancer in the national immunization program.
- Cancer registry will be very important in all hospital throughout the country to determine the incidence and prevalence rate of cancer national wise, so ministry of health make farther implementation of cancer registry in all healthy facility.
- The local health profession could increase the awareness of community on body mass index in normal to prevent from breast cancer.

  Give education on dietary, eat fruit and vegetable regularly and decrease fat food and regular Physical exercise.

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Annex -1

FIGO standard staging of cervical carcinomas

Stage I

Stage I is carcinoma strictly confined to the cervix; extension to the uterine corpus should be disregarded. The diagnosis of both Stages IA1 and IA2 should be based on microscopic examination of removed tissue, preferably a cone, which must include the entire lesion.

Stage IA: Invasive cancer identified only microscopically. Invasion is limited to measured stromal invasion with a maximum depth of 5 mm and no wider than 7 mm.

Stage IA1: Measured invasion of the stroma no greater than 3 mm in depth and no wider than 7 mm diameter.

Stage IA2: Measured invasion of stroma greater than 3 mm but no greater than 5 mm in depth and no wider than 7 mm in diameter.

Stage IB: Clinical lesions confined to the cervix or preclinical lesions greater than Stage IA. All gross lesions even with superficial invasion are Stage IB cancers.

Stage IB1: Clinical lesions no greater than 4 cm in size.

Stage IB2: Clinical lesions greater than 4 cm in size.

Stage II

Stage II is carcinoma that extends beyond the cervix, but does not extend into the pelvic wall. The carcinoma involves the vagina, but not as far as the lower third.

Stage IIA: No obvious parametrial involvement. Involvement of up to the upper two thirds of the vagina.

Stage IIB: Obvious parametrial involvement, but not into the pelvic sidewall.

Stage III

Stage III is carcinoma that has extended into the pelvic sidewall. On rectal examination, there is no cancer-free space between the tumour and the pelvic sidewall. The tumour involves the lower third of the vagina. All cases with hydronephrosis or a non-functioning kidney are Stage III cancers.

Stage IIIA: No extension into the pelvic sidewall but involvement of the lower third of the vagina.

Stage IIIB: Extension into the pelvic sidewall or hydronephrosis or non-functioning kidney.

Stage IV

Stage IV is carcinoma that has extended beyond the true pelvis or has clinically involved the mucosa of the bladder and/or rectum.

Stage IVA: Spread of the tumour into adjacent pelvic organs.

Stage IVB: Spread to distant organs.

Staging of Breast cancer used during investigation.

- Normal = TX, T0No and Tis
- Stage 1 = T1, T1mi, T1a, T1b And T1c
- Stage 2 = T2
- Stage 3 = T3
- Stage 4 = T4, T4a, T4b, T4c, and T4d

Annex -2

WHO STANDARD STAGING OF BREAST CANCER

TX ----------Primary tumor cannot be assessed.

T0 ----------No evidence of primary tumor.

Tis ----------Carcinoma *in situ*.

T1---------- --Tumor ≤20 mm in greatest dimension.

T1mi----------Tumor ≤1 mm in greatest dimension.

T1a----------Tumor >1 mm but ≤5 mm in greatest dimension.

T1b---------- --Tumor >5 mm but ≤10 mm in greatest dimension.

T1c----------Tumor >10 mm but ≤20 mm in greatest dimension.

T2T ----------Tumor >20 mm but ≤50 mm in greatest dimension.

T3 ----------Tumor >50 mm in greatest dimension.

T4----------Tumor of any size with direct extension to the chest wall and/or to the skin (ulceration or skin nodules).

T4a----------Extension to the chest wall, not including only pectoralis muscle adherence/invasion.

T4b----------Ulceration and/or ipsilateral satellite nodules and/or edema (Including peau d'orange) of the skin, which do not meet the criteria for inflammatory carcinoma.

T4a. T4b. T4c and T4d. ---------- Inflammatory carcinoma.

Annex-3 Questionnaire of English version

GENERAL INTRODUCTION Interview number: ☐☐☐☐

Hello. My name is.... We are doing a study to collect information about the health of women in this area. You can help if you answer some questions. The interview takes quarter of an hour. Whatever information you provide will be kept strictly confidential. The results of this survey will help to improve health services. Are you willing to take part in the interview? Yes ☐ No☐

Date: __ __/__ /2005

Part I: Questions related to socio-demographic information:

1. Address:- Sub city _____ Woredas: _____ Kebele: _____
2. Height: _____cm; weight: _____ kg BMI: _____
3. Age (in year); 1. _____
4. Marital status; 1. Single
   2. Married
   3. Widowed
   4. Divorced
   5. Other /specify_____
5. Religion; 1. Orthodox Christianity
   2. Protestant
   3. Muslim
   4. Catholic Christianity
   5. Others (specify) _____
6. Education; 1. Illiterate
   2. 1-4 grades
   3. 5- 10th grade
   4.11-12th grades

5. Diploma

6. 1th degree

7. Others (specify) ____

7. Occupation; 1. Government employee

2. Private employee

3. Trader

4. House wife

5. Daly laborer

6. Worker in Hotel

7. Others (specify) ____

8. Do you live in: 1. Own house

2. Rented

3. Other: _____

9. Your husband occupation? _____

10. Monthly income (in Ethiopian birr) _____

11. Ethnicity; _____

12. Common food feed: 1. _____

2. _____

3._____

Part II: Risk factors for NCDs

13. G1. How old have you been when you married the first time? _____

14. G2. How many times have you been married? _____

15. G4. How many children did you give birth to?_____

16. G5. How many times have you been pregnant?_____

17. G6. How many of your born children are alive?_____

18. G7. Have you breastfed your children? 1. Yes 2. No

19. If Q 21 yes how long did you breastfeed your children? (in years)

Child 1: □ no □ < ½ □ ½ □ 1 □ 2 □ 3 □

Child 2: □ no □ < ½ □ ½ □ 1 □ 2 □ 3 □

Child 3: □ no □ < ½ □ ½ □ 1 □ 2 □ 3 □

Child 4: □ no □ < ½ □ ½ □ 1 □ 2 □ 3 □

Child 5: □ no □ < ½ □ ½ □ 1 □ 2 □ 3 □

Child 6: □ no □ < ½ □ ½ □ 1 □ 2 □ 3 □

20. R1. Do you smoke? Yes ☐ No ☐

21. If yes 1. Weekly
2. 2-3 day per wk
3. 4-6 day's per wk
D4. Daily

22. R2. Are you chewing khat? Yes ☐ No ☐

23. If question 23 yes1. Weekly
2. 2-3 day per wk
3. 4-6 day's per wk
4. Daily

24. R3. Do you drink alcohol sometimes? Yes ☐ No ☐

25. If question 25 yes
1. Weekly
2. 2-3 day per wk
3. 4-6 day's per wk
4. Daily

26. Which kind?_____

27. R4. How long do you have use contraceptive?
1. 0 yr
2. < ½ yr
3. For 1 yr
4. 2-3 yrs
5. 4-5 yrs

6. >5yrs

28. What types of contraceptive?_____

Part-III Questions related to breast cancer type & stage

Checklist for patient registry.

29. Age (in year); _____

30. Basis of diagnosis

1. Clinical only
2. Clinical investigation (x-ray)
3. Specific Tumor marker
4. Cytology
5. Hematology
6. Histology of metastasis
7. Histology primary
8. Unknown

31. Type of cancer Dx: _____

32. Morphology _____

33. Behavior_____

34. Stage of cancer During Dx _____

35. Type of Rx

1. Surgery
2. Radiotherapy
3. Chemotherapy
4. Hormone therapy

Annex-4 Amaharic questionnaire

ጥያቄዎች

የተጠያቂ ቁጥር ☐☐☐ ☐

ጤና ይስጥልኝ ። ስሜ ---------ይባላል። እኛ የምናደርገው ጥናት የሴቶችን ጤንነት በሚመለከት ነው። እርስዎ የሚቀርበውን ጥያቄ ከመለሱ ከፍተኛ እገዛ እንዳደረጉ ይቆጠራል። መጠይቁ የሚፈጀው ጊዜ አሥር ደቂቃ ያህል ብቻ ነው። የሚነግሩን ሁሉ ሃሰብ ሚስጥሩ የተጠበቀ ነው። የዚህ ጥናት ውጤት የጤና አገልግሎትን ለወደ ፊት ሊያሻሽል ይችላል። እርስዎ በዚህ ጥናት ተሳታፊ ለመሆን ፈቀደኛነዎት? አዎ☐ አደለሁም☐

ቀን: __ __/__ /2005

ክፍል I: የአኗኗር ሁኔታ የሚመለከት ጥያቄውች:

1. **አድራሻ ፡- ክፍለ-ከተማ** _____ **ወረዳ**: _____ **ቀበሌ**: _____
2. **ቁመት**: _____**ሴንቲሜትር**: **ክብደት**:_____ **ኪ.ግ** BMI: _____
3. **እድሜ** (**በዓመት**); _____
4. **የትዳር ሁኔታ**;
   1. **ያላገባ**
   2. **ያገባ**
   3. **ባል የሞተባት**
   4. **የተፋታች**
   5. **ሌለ /ይገለፅ**_____
5. **ሐይማኖት**;
   1. **ዖርቶዶክስ**
   2. **ፕሮቴስታንት**
   3. **ሙስሊም**
   4. **ካቶሊክ**
   5. **ሌላ** (**ይገለፅ**) _____
6. **የትምህርት ደረጃ**;
   1. **ያልተማሩ**
   2. **ከ1-4ኛ ክፍል**
   3. **ከ5- 10ኛ ክፍል**
   4. **ከ11-12ኛ ክፍል**
   5. **ዲፕሎማ**
   6. **የመጀመሪያ ድግሪ**

7. ሌላ (ይግለፁ) _____

7. ሥራ; 1. የመንግስት ሰራተኛ
2. የግል ሰራተኛ
3. ነጋዴ
4. የቤት እመቤት
5. የቀን ሰራተኛ
6. የቡና ቤት ሰራተኛ
7. ሌላ (ይግለፁ) _____

8. የምትኖሪበት ቤት: 1. የራስ ነው
2. የክራይ ቤት ነው
3. ሌላ(ይግለፁ) _____

9. የባለቤትሽ ስራ ምንድርነው?_____

10. የወር ገቢያችሁ ስንት ነው (በኢትዮጲያ ብር) _____

11. ብዜረሰብ; _____

12. ዘወትር የሚመገቡት ምግብ : 1. _____
2. _____
3._____

ክፍል ሁለት II: Risk factors for NCDs

13. G1. መጀመሪያ ያገባሽ በስንት አመትሽ ነው? _____

14. G2. ስንት ጊዜ አገባሽ? _____

15. G4. ስንት ልጆች ወለድሽ?_____

16. G5. ስንት ጊዜ አረገዝሽ?_____

17. G6. የወለድሻቸው ልጆች ስንቶች በህይወት አሉ?_____

18. G7. ልጆችሽን ሁሉ ጡት አጥብተሻል?

19. ጥያቄ 19 አዎን ከሆነ ለምን ጊዜ ያህል አጠባሽቸው? (በዓመት)

የመጀመሪያው ልጅ: □ አላጠባውም □ < ½ □ ½ □ 1 □ 2 □ 3 □

ሁለተኛ ልጅ: □ አላጠባውም □ < ½ □ ½ □ 1 □ 2 □ 3 □

ሶስተኛ ልጅ: □ አላጠባውም □ < ½ □ ½ □ 1 □ 2 □ 3 □

አረተኛ ልጅ: □ አላጠባውም □ < ½ □ ½ □ 1 □ 2 □ 3 □

አምስተኛ ልጅ: □ አላጠባውም □ < ½ □ ½ □ 1 □ 2 □ 3 □

ስድስተኛ ልጅ: □ አላጠባውም □ < ½ □ ½ □ 1 □ 2 □ 3 □

20. R1. ሲጋራ አጢሰው ያውቃሉ? አዎን ☐ **አላጤስኩም** ☐

21. 21ኛ ጥያቄ አዎን ከሆነ

1. በሳምንት አንድ ጊዜ
2. ከ2-3 ቀን በሳምንት
3. ከ4-6 ቀን በሳምንት
4. በየቀኑ

22. R2. ጫት ይቅማሉ? አዎን ☐ አልቅምም ☐

23. 23ኛ ጥያቄ አዎን ከሆነ 1. በሳምንት አንዴ _____
2. ከ2-3 ቀን በሳምንት
3. ከ4-6 ቀን በሳምንት
4. በየቀኑ

24. R3. አልኮል ጠጥተው ያውቃሉ? አዎን ☐ አልጠጣም ☐

25. 25ኛ ጥያቄ አዎን ከሆነ 1. በሳምንት አንዴ _____
2. ከ2-3 ቀን በሳምንት
3. ከ4-6 ቀን በሳምንት
4. በየቀኑ

26. R4. የትኛው አልኮል?_____

27. R5. የቤተሰብ እቅድ ለስንት ዓመት ተጠቅመዋል?

1. አልተጠቀምኩም
2. ከግማሽ ዓመት በታች ተጠቀምኩ
3. ለአንድ ዓመት ተጠቀምኩ
4. ከ2-3 ዓመት ተጠቀምኩ
5. ከ4-5 ዓመት ተጠቀምኩ
6. ከ5 ዓመት በላይ ተጠቀምኩ

28. ምን ዓይነት የቤተሰብ እቅድ ተጠቀሙ?_____

I, the undersigned senior MPH student declare that this thesis is my own original work in partial fulfillment of the requirement for the degree of MPH in General MPH

Name Getachew Letta Signature _____

Place of submission:- Addis Ababa University College of Health Sciences School of Public Health

.

Date of submission _____

This thesis work has been submitted for examination with my/our approval as university advisor(s).

Advisor

Dr. Adamu Addissie
☒⓪∾⑤ᔓ❼❶⑨∾ ??????????????????????