**ADDIS ABABA UNIVERSITY**

**COLLEGE OF HEALTH SCIENCE**

**SCHOOL OF PUBLIC HEALTH**


# Predictors of Breast Self-Examination among Female Secondary School Teachers in Addis Ababa, Ethiopia using the Health Belief Model

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By: Bisrat Tewelde (BSc in public health)

**Approved by Examining Board**

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**Acronym and Abbreviations**

AA: Addis Ababa

AACAEB: Addis Ababa City Administration Education Bureau

ACS: American Cancer Society

AIDS: Acquired Immunodeficiency Syndrome

BC: Breast Cancer

BCC: Behavior change communication

BSE: Breast Self-Examination

CBE: Clinical Breast Examination

CHBMS: Champion Health Believe Model Scale

GLOBOCCAN: Global Burden of Cancer

HBM: Health Believe Model

HCWs: Health Care Workers

HDA: Human Development Army

HEWs: Health Extension Workers

HIV: Human Immunodeficiency Virus

IARC: International Agency for Research of Cancer

IEC: Information Education Communication

LICs: Low Income Countries

LMICs: Low-and Middle income Countries

NCDs: Non Communicable Disease

REC: Research Ethical Committee

SPSS: Statistical Package for Social Sciences

ROCs: Reproductive Organ Cancers

WHO: World Health Organization

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**Abstract**

**Background:** Breast cancer is the most frequently diagnosed reproductive organ cancers (ROCs) among women in Ethiopia. Even though breast self-examination (BSE) is shown to be the least expensive, less time consuming and noninvasive screening method, various studies conducted in Ethiopia showed that the practice of breast self-examination is poor. Women's perception to breast cancer and BSE, which is considered as an important influencing factor in determining the likelihood of performing BSE, have not received enough attention particularly among female teachers. Therefore this study examined the predictors of BSE among female secondary school teachers based on the health belief model (HBM).

**Method:** Institution based cross sectional study was conducted among female secondary school teachers in Addis Ababa, from March to April 2018. Structured self-administered questionnaire based on the revised champions health belief model instrument (RCHBM) was used for data collection. Sample size was 589 and teachers were selected randomly from thirty four public secondary schools after proportionally allocating to each school. Data was analyzed using SPSS version 21 for descriptive and logistic regression analysis was used to identify factors associated with BSE performance with corresponding 95% confidence interval.

**Result:** a total of 566 female teachers participated in this study with 96.1% response rate. Majority of respondents 430(76%) have ever heard about BSE. More than half of the participants 56.4% reported that they never performed BSE. After controlling possible confounding variables in the multivariable logistic regression, personal history of breast problem, teaching experience, knowledge and perceived self-efficacy were significantly associated with performing BSE.

**Conclusion and recommendation:** The practice of breast self-examination was discovered to be relatively low. Perceived self-efficacy, personal history of breast problem, teaching experience and knowledge were significant predictors of BSE performance. This emphasizes the need for designing and implementing well-designed school based education programs to improve their awareness that underline the necessity of early screening and enhancing their self-efficacy through demonstration of correct procedures on performing breast self-examination.

**Key words:** breast self-examination, female teachers, Ethiopia, health belief model

# 1. Introduction

## 1.1 Background

Cancer is public global health burden, touching every region and socioeconomic group causing 12 % of all cancer deaths globally (1, 2). Breast cancer is the leading cause of cancer death among women in developing countries and the second leading cause of cancer death (following lung cancer) among women in developed countries (3). It forms in the tissues of the breast, usually the ducts (tubules that carry milk to the nipples) and lobules (glands that make milk) and starts when cells in the breast begin to grow out of control and typically detected either during a screening examination, before symptoms have developed, or after a woman notices a lump. Although it can occur in both men and women, breast cancer in men is rare (4).

It is the most commonly diagnosed cancer among women worldwide with nearly 1.7 million new cases diagnosed in the year 2012, also accounting for 25% of all new cancer cases in women among majority (140 of 184 ) countries worldwide (3). According to International Agency for Research of Cancer (IARC) estimates new breast cancer cases which occurred in 2012 among 24 countries were 934,832 accounting for 27.9 % of all female cancer cases (3). Since the 2008 estimates breast cancer incidence has increased by more than 20%, while mortality has increased by 14% (3).

According to estimates from GLOBOCCAN 2012, there were 100,000 cases and 49,000 deaths due to female breast cancer in the African region (3). Despite this increasing cancer burden in Africa, it continues to receive a low public health priority, mainly due to limited resources and other pressing public health problems, including communicable diseases such as Human Immunodeficiency Virus( HIV) /(Acquired Immunodeficiency Syndrome (AIDS) infection, malaria, and tuberculosis (5).

Breast cancer, a preventable disease with early detection measures, is on the rise globally, and women in low-resource settings are bearing a disproportionate share of the burden (6). In Ethiopia, despite many competing public health challenges, including high maternal mortality and a rising HIV/AIDS incidence, the Ministry of Health does put a great deal of emphasis on chronic disease management, including cancer control (7).

Besides being female, potentially modifiable risk factors including being overweight or obese, use of combined estrogen and progestin menopausal hormone therapy (8) physical inactivity, alcohol consumption. Reproductive factors such as use of oral contraceptives, never having children and having one's first child after age 30 can also increase the risk of developing breast cancer. In addition, non-modifiable factors including long menstrual history (menstrual periods that start early and/or end later in life), previous breast biopsy showing atypical changes (9) getting older, and it is shown to have two times higher risk among women with family history particularly having one or more first-degree relatives with breast cancer (1, 4).

Screening for breast cancer aims to reduce mortality as well as the morbidity associated with advanced stages of the disease, through early detection in asymptomatic women (10). The American Cancer Society recommends early detection methods of breast cancer which vary depending on women age including mammography and clinical breast examination (CBE) and breast self-examination (BSE). Although the ACS no longer recommends that all women perform monthly breast self-exams (BSE), all women should become familiar with both the appearance and feel of their breasts and report any changes promptly to their physician (4, 11).

BSE is when a woman systematically palpates each breast using her contra lateral hand, with her ipsilateral arm raised above her head. She performs the examination in both lying and standing or sitting positions (11). The goal of regular BSE, as with CBE, is to detect palpable tumors and increase awareness of normal breast composition, so that there is increased awareness of changes that may be detected during BSE. Therefore, women beginning in their 20s should be told about the benefits and limitations of BSE (12).

Though CBE and Mammography are also other screening modalities for breast cancer CBE requires visits to health facility and has variability in its sensitivity and specificity depending on the HCWs experience. The high cost and technical complexity of mammography makes it less feasible to be used in resource limited countries like Ethiopia and is less efficacious in younger women (13-15).

## 1.2 Statement of the problem

Breast cancer is the most commonly diagnosed cancer in women both in the developed and less developed world (16). It has the highest incidence rate of all cancers in women worldwide with around 1.67 million new cases and cause of over 500,000 deaths annually. Breast cancer is the top common female cancer in Sub Saharan Africa accounting for 25.5% (3).

In Ethiopia, Breast cancer is the most frequently diagnosed reproductive organ cancer (ROCs). According to Addis Ababa city cancer registry, from 5701 total registered cancer cases from 2011 to 2014, breast cancer is the most commonly leading cancer among females accounting for 33% of the cases followed by cervix uteri (17%) (17).

Advanced breast cancer is more difficult to manage and often has poor prognosis (13). Therefore, early diagnosis remains to be an important strategy in improving breast cancer outcome and survival particularly in low-and middle-income countries (LMICs) where women present to health care facility when the disease is diagnosed in late stages and resources required for treatment are limited. Evidence showed that breast cancer deaths can be reduced significantly if the tumor is discovered at an early stage (14, 16). It has been shown that approximately 71% of cases of breast cancer in women younger than 50 years are found by women themselves (18).

Even though BSE is shown to be the least expensive, less time consuming and noninvasive screening method, various studies conducted in Ethiopia showed that the practice of breast self-examination is poor (19-22) and the most commonly mentioned reasons for not practicing this behavior were not knowing the technique of performing BSE, not having breast related problem or symptoms, afraid of being diagnosed with breast cancer and no advice or recommendation from HCWs (19, 20, 22-24).

The knowledge, attitude, practices of breast self-examination and other related factors have been studied in Ethiopia. However, women's perception on breast cancer and BSE, is considered as an important influencing factor in determining the likelihood of performing BSE, it have not received enough attention particularly among female teachers (25, 26). It is also recommended to consider female teachers as a target group of women who should receive information about breast cancer and other health issues (27). Therefore, this study aimed to assess female teacher's perception and its influence on performing breast self-examination.

### 1.3 Significance of the study

Understanding the perception of female school teachers about breast self-examination (BSE) may assist health care providers, health educators and other concerned bodies in addressing the factors that determine the participation or nonparticipation in the BSE through effective strategies and programs. The findings of this study could be used to reduce barriers to BSE, and to enhance the benefits by developing culturally appropriate communication materials to increase the rate of BSE practice among the general women by advocating the importance of using female school teachers as agents of change and health promoters since those educated group of women are seen as a role model both in the school campus and outside in the community which they may influence the behavior of others (27, 28). Therefore it was important to identify factors that influence their behavior in performing BSE.

## 2. Literature Review

### 2.1 Global burden of cancer

Cancer is a leading cause of death in both developed and less developed countries. Although the disease has often been regarded principally as a problem of the developed world, in fact, more than half of all cancers occur in the developing countries due to the increasingly adoption of behaviors and lifestyle factors that are known to increase the risk of developing cancer such as smoking, poor diet, physical inactivity, and reproductive changes (including lower parity and later age at first birth). Today, cancer accounts for about one in seven deaths worldwide ,more than HIV/AIDS, tuberculosis, and malaria deaths combined (1). According to estimates from the World Health Organization (WHO) International Agency for Research on Cancer (IARC), in 2012, globally there were 14.1 million new cancer cases, 8.2 million cancer deaths and 32.6 million people living with cancer (within 5 years of diagnosis). Over the years, the burden has shifted to less developed countries, accounting for about 57% of new cancer cases and 65% of the cancer deaths in 2012 (3, 29). Overall, 645,000 new cancer cases and 456,000 cancer deaths were estimated to have occurred in 2012 in the African region (3).

Worldwide, the top five most commonly diagnosed cancers among both sexes are lung cancer, breast cancer, colorectal cancer followed by prostate and cancer of the stomach (3). Based on Addis Ababa Cancer registry report from 2011 to 2014; 5701 cancer cases have been collected. The most commonly diagnosed cancers among females were cancers of the breast (33%) and Cervix uteri (17%) (17).

### 2.2 Global burden of Breast Cancer

The three most frequently diagnosed cancers among women in less economically developed countries are breast, cervix, and lung cancers (30). Breast cancer is the second most common cancer in the world and, by far, the most frequently diagnosed cancer among women. It ranks as the $5^{th}$ cause of death related to cancer with 522,000 deaths occurred in 2012. It is the most common cancer in women both in more and less developed regions with slightly more cases in less developed regions (883,000 cases) (3).

The incidence rates of breast cancer are highest in the developed world such as North America, Australia/New Zealand, and Northern and Western Europe, while the lowest are in Africa and Asia. However, mortality rates are low compared to the less developed regions. Mortality reflects the

occurrence of the disease as well as the availability of early detection and treatment. Breast cancer mortality rates are higher in many LMICs, such as those in sub-Saharan Africa, despite their lower incidence because of late presentation to healthcare and limited access to treatment (30). The burden of breast cancer is growing in the developing world (31, 32) and is expected to reach around 1.3 million cases and above 500,000 deaths by 2030. In Ethiopia, breast and cervical cancer are the two preventable and most common diagnosed ROCs accounting for 31.5% and 17.3% respectively (3).

The high mortality of breast cancer in LICs is unsurprising for two important reasons. First, cancer treatment facilities are inaccessible and unaffordable in most of the LICs. In Ethiopia, the Oncologic service is limited to only one Radiotherapy Center at Black Lion Specialized Hospital. The waiting period for radiotherapy at this institution can be almost a year (33). Second, and more importantly, a high proportion of breast cancer patients in LICs seek health care at advanced stage, when the cancer has already progressed beyond the stage of cure. Women's preference and considering traditional medicine as affordable and readily accessible over modern medicine and beliefs that mastectomy violates cultural notions about the 'whole' body are one of the common reasons women present to health facility late (13).

### 2.3 Breast Cancer screening methods

Breast cancer screening modalities include breast self-examination (BSE), clinical breast examination (CBE), and screening mammography (34). The effectiveness and efficiency of each of these strategies must be considered in the context of resource availability (35).

Mammography screening is the single screening method that has proven to be effective (16, 35). Although there are evidences that organized population-based mammography screening programmes can reduce mortality from breast cancer by around 20% in the screened group versus the unscreened group across all age groups, in general there appears to be a narrow balance of benefits compared with harms, particularly in younger. Countries that have demonstrated decreasing age-adjusted breast cancer mortality rates have adopted mammography as a screening tool for down-staging disease (16). The American Cancer Society continues to recommend average-risk women to undergo annual screening mammography beginning at 45 years of age and continue screening as long as their overall health is good (4).

CBE may be important for women who do not receive regular mammograms for example for women aged 40 and younger in which mammography is not recommended. CBE presents an opportunity for

HCWs to educate women about breast cancer, its symptoms, risk factors, and advances in its early detection, as well as normal breast composition and variability. It also lets HCWs discuss the benefits and limits of breast self-examination (BSE) and demonstrate BSE for women who choose to do it. The revised 2003 guidelines of the ACS recommends CBE as part of a periodic health examination, preferably at least every 3 years for women in their 20s and 30s and annually among asymptomatic women aged 40 years or older (36). Beginning in their early 20s, women should be told about the advantages and limitations of BSE (37).

## 2.4 Factors affecting breast self-examination practice

### 2.4.1 Knowledge regarding breast cancer and breast self-examination

A study conducted in debrebirhan showed that 256 (64%) have heard of BSE and 143 (35%) of the participants knew the techniques of performing the behavior, and only 3 out of 10 students were aware of the correct time to perform BSE. The major reason for not practicing BSE, in which only 28.3% performed, was lacking the knowledge on how to perform BSE which was reported by 32.8% female students (20). A study from Nigeria showed that 94.9% final medical students have heard about BSE as a screening method for breast cancer, but only 5% of those knew how to correctly perform and 29 (74.4%) responded that they practice BSE (38).

In one study in Ethiopia, 52 (16.5%) female teachers have heard about BSE while 263 (84.5%) did not receive any information from any source. And 38 (12 %) of the female school teachers reported performing BSE. In this study it was shown that as knowledge of the female teachers' increases the odds of practicing BSE also increases by 1.1 times (19). Level of breast cancer knowledge was significant in explaining BSE performance among female school teachers in Malaysia (39).

A study in Cairo showed knowledge about BC was significantly related with screening practice. Not having knowledge was mentioned by about 83% of women as a main cause for not performing BSE (34).

### 2.4.2 Socio demographic characteristics and breast self- examination practice

A study conducted among Nigerian women attending a tertiary outpatient clinic regarding their BSE practices showed that women who had highest educational level or tertiary education were shown to practice BSE than those with low educational level (40). Another study carried out among women household heads in northern Ethiopia shows that education is a significant predictor of BSE behavior. It

has found that those women who went to college or university and who practiced BSE were 48.5% but only 18.2% women who are illiterate or have informal education performed BSE (23). There are also other studies that showed education as a significant predictor of BSE practice (34, 41).

A cross sectional study conducted among Malaysian undergraduate students with mean age 21.7 years (20-25), age was found to influence BSE practices (42). Age was found to be the only socio demographic variable that can predict BSE practice in a study of BSE practice among female nursing students in Saudi Arabia (43). However there are also studies in Yemen and United Arab Emirates (UAE) which shows no significant association between age and the practice of BSE (14, 44).

Regarding having family history of breast cancer, among women attending family health centers in Cairo, slightly more than three quarters reported they had no family history of breast cancer, and those who had family history of breast cancer stated that, their mothers were the affected person followed by their aunts (mother's sister), their sisters and their grandmothers. Also, a statistically significance correlation was found between family history of breast cancer and practicing BSE (34). Among females aged 18 and above attending general outpatient clinic in tertiary institutions of Nigeria who stated they have family history of breast cancer 7 (63.6%) practiced BSE and it showed that the prevalence of the practice of BSE was higher among those group of women (40). It was also found that having a family member diagnosed with breast cancer was an influential predictor in explaining BSE practice in a number of studies (41, 45, 46).

### 2.4.3 Constructs of Health Belief Model and breast self-examination practice

#### 2.4.3.1 Perceived susceptibility and severity towards breast cancer

In a study conducted among female teachers in Ethiopia, Perceived severity which is the belief where female teachers have on how severe breast cancer is was a good predictor to practice BSE and it showed that as a unit increases in the total score of perceived severity the odds of performing BSE was found to increase by 1.2 and teachers who perceive themselves to be at risk for breast cancer were more likely to practice BSE (19). Another study conducted among Iranian women found that women who save higher score for perceived susceptibility to breast cancer were more likely to engage in breast self-examination (46).

However there are also studies which show that perceived susceptibility was not an influential factor in performing BSE (44, 45, 47). For example in a study carried out among female university students in

Jordan it was found that 48% of the students did not agree with the idea that their chances of getting breast cancer were higher than the average woman (47).

#### 2.4.3.2 Perception of breast self-examination (Perceived benefit, barrier and self-efficacy)

Higher scores of perceived barriers indicates having more barriers ought weighted benefits to perform BSE, which reduces the likelihood of practicing the behavior (48). In a study of female university students in Jordan, most participants reported a small number of perceived barriers which predicts BSE practice. Almost half of the respondents did not agree with the idea that performing BSE within the next year would lead to worry about breast cancer (47).

Studies have showed that higher scores of perceived benefits of performing breast self-examination was a significant predictor in performing BSE and perceived benefits of BSE such as doing BSE monthly will help them identifying the lumps early, doing BSE monthly would help them detecting any changes (like lumps) before the health professionals can among women who performed BSE were significantly higher than those who never performed it (19, 49).

Regarding women's perceived self-efficacy of breast self-examination, female university academicians with greater perceived self-efficacy were shown to perform BSE than those with low self-efficacy (50). Self-efficacy was also found to be a significant predictor in performing BSE (44, 46, 51).

#### 2.4.3.3 Cues to action to breast self-examination practice

Cues to action are strategies taken to activate one's readiness to take health action may include health education, media or recommendations by a physician. In some studies cues to action was observed to predict the likelihood of performing BSE (51, 52).

## 2.5 Theoretical framework: The Health Belief Model (HBM)

The success of improving the well-being and self sufficiency of individuals, families, organizations, and communities requires behavior change at multiple levels such as at individual, organizational and community levels. In order to bring the desired behavioral outcome it is important to have a clear understanding of the targeted health behaviors and the environmental context in which they occur. Theories are useful in explaining the dynamics of health behaviors, including processes for changing them, and the influences of the many forces that affect health behaviors, including social and physical environments. Theory guides researchers, health educators and planners in identifying reasons why people do or do not engage in certain health behaviors; it helps pinpoint what planners need to know

before they develop public health program (53). Therefore, the theoretical framework for this study was based on the health belief model (HBM). The HBM was originally developed in the early 1950s by social psychologists in the United States Public Health Service to explain why very few people were participating in programs to prevent and detect disease. Since then it has been one of the widely explored models and the most commonly used theory in health education and health promotion (25, 53).

Based on this model in order for an individual to take health action to avoid a disease; (1) perceive that he or she was personally susceptible to the illness; (2) the occurrence of the illness would have at least moderate severity on some component of his life; (3) taking health action would be beneficial by reducing his susceptibility to the illness or, if the illness occurred, by reducing its severity; and (4) taking action would not require overcoming psychological barriers, such as embarrassment, pain and cultural taboos (54).

### 2.5.1 Constructs of the health belief model (HBM)

The following perceptions serve as the main constructs of the model which predict why people will take action to prevent, to screen for, or to control illness conditions; susceptibility, seriousness, benefits and barriers to a behavior, cues to action, and most recently added construct the self-efficacy (25).

- **Perceived threat:** the combination of perceived susceptibility and perceived severity of a health condition
    - **Perceived Susceptibility:** refers to a person's view of the likelihood of experiencing a potentially harmful condition.
    - **Perceived seriousness/severity:** is concerned with how threatening the condition is to the person.
- **Perceived benefits:** focuses on the effectiveness of specific behavior in reducing the threat of the condition.
- **Perceived barriers:** This is an individual's own evaluation of the obstacles in the way of him or her adopting a new behavior.
- **Cues to action:** are strategies to activate "readiness" include events, people or things that move people to change their behavior (48).
- **Self-Efficacy:** In 1988, self-efficacy was added to the HBM constructs and is defined as the belief that an individual can successfully execute a behavior that will lead to a desirable outcome (55, 56).

People generally do not try to do something new unless they think they can do it. If someone believes a new behavior is useful (Perceived benefit), but do not think he or she is able to perform, chances are that the behavior will not be tried (53). Studies have indicated that unable to perform BSE correctly was the main predictor in not practicing BSE (24, 44, 47).

Many researchers have conducted studies assessing beliefs related to cancer screening practices by applying the HBM as a theoretical framework to study breast cancer screening behaviour such as BSE (19, 44, 45, 47).

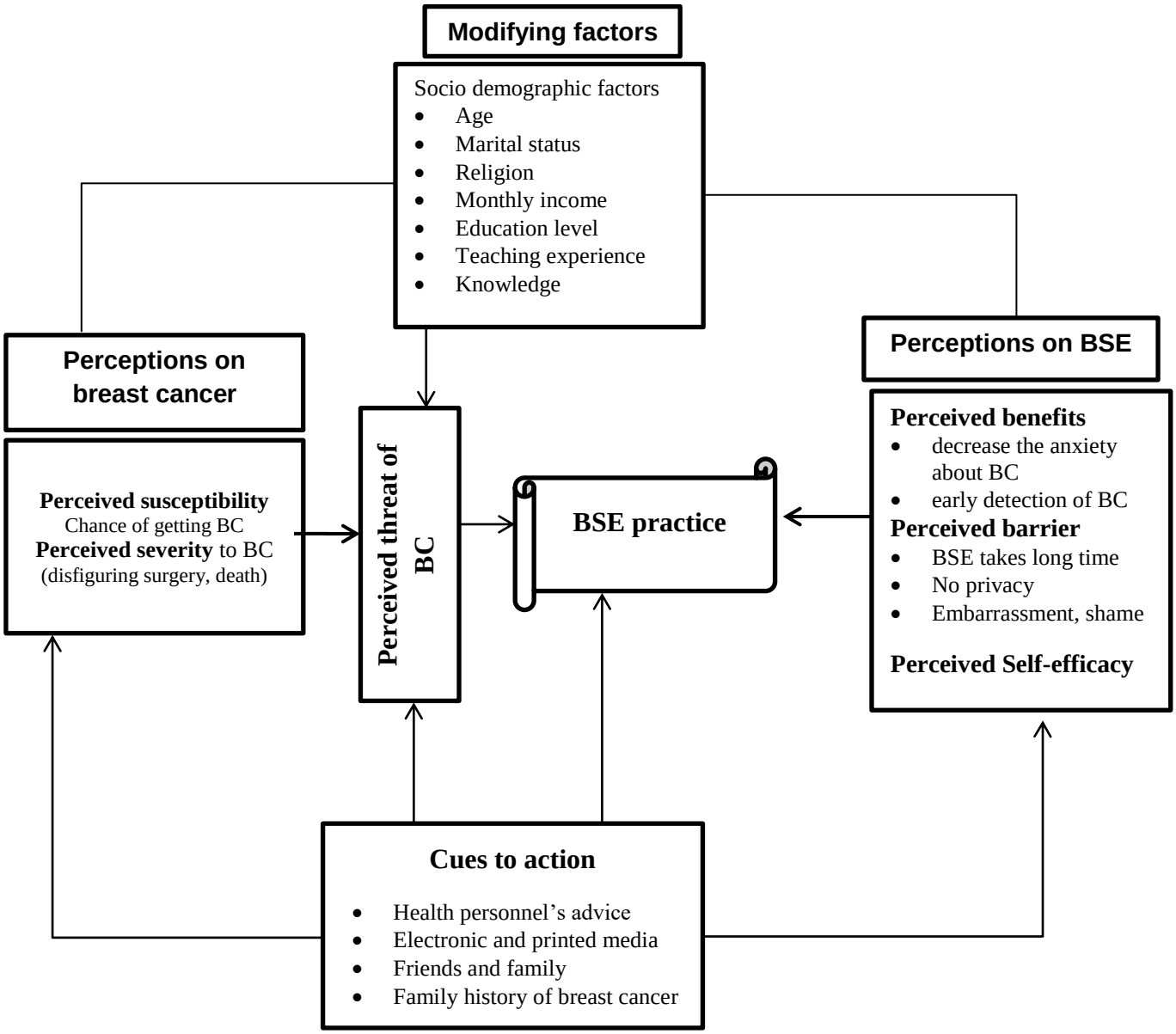



**Figure 1**: Conceptual framework of predictors of BSE practice adapted from champions health belief model & previous published studies (54, 57).

## 3. Objective of the study

### 3.1 General Objective

- To assess predictors of breast self-examination (BSE) practices among female secondary school teachers in Addis Ababa, Ethiopia using the health belief model 2018.

### 3.2 Specific Objective

- To determine the level of practice of breast self-examination.
- To assess association of the perception of female teachers towards breast cancer
- To assess association of the perception of female teachers towards breast self-examination
- To assess association between cues to action and BSE performance

## 4. Methods and materials

### 4.1 Study area and period

This study was conducted in secondary schools found in Addis Ababa which is the capital city of Federal Democratic Republic of Ethiopia. The city has 10 sub cities and 116 Woredas. The total area of the city is 54,000 hectare. Using 2.1 as annual growth rate of A.A the total population of this town is estimated to be 3,370,778 in 2016 (58). There are 96 total public health centers and 51 hospitals. The total number of schools that are established and owned by different governmental, non-governmental, and private, community and religious organizations are 2089 and this includes all schools beginning from kinder garden to secondary education cycle in Addis Ababa (59).

There are 1315 female teachers in public secondary schools (9-12) in Addis Ababa, Ethiopia.

Secondary education has been implemented in Ethiopia for many years. It is given in two cycles: first cycle includes students in grade 9-10 and second cycle 11-12. There are 72 secondary schools which are owned by the government and 103 schools under private ownership (59). The study was conducted from March to April 2018.

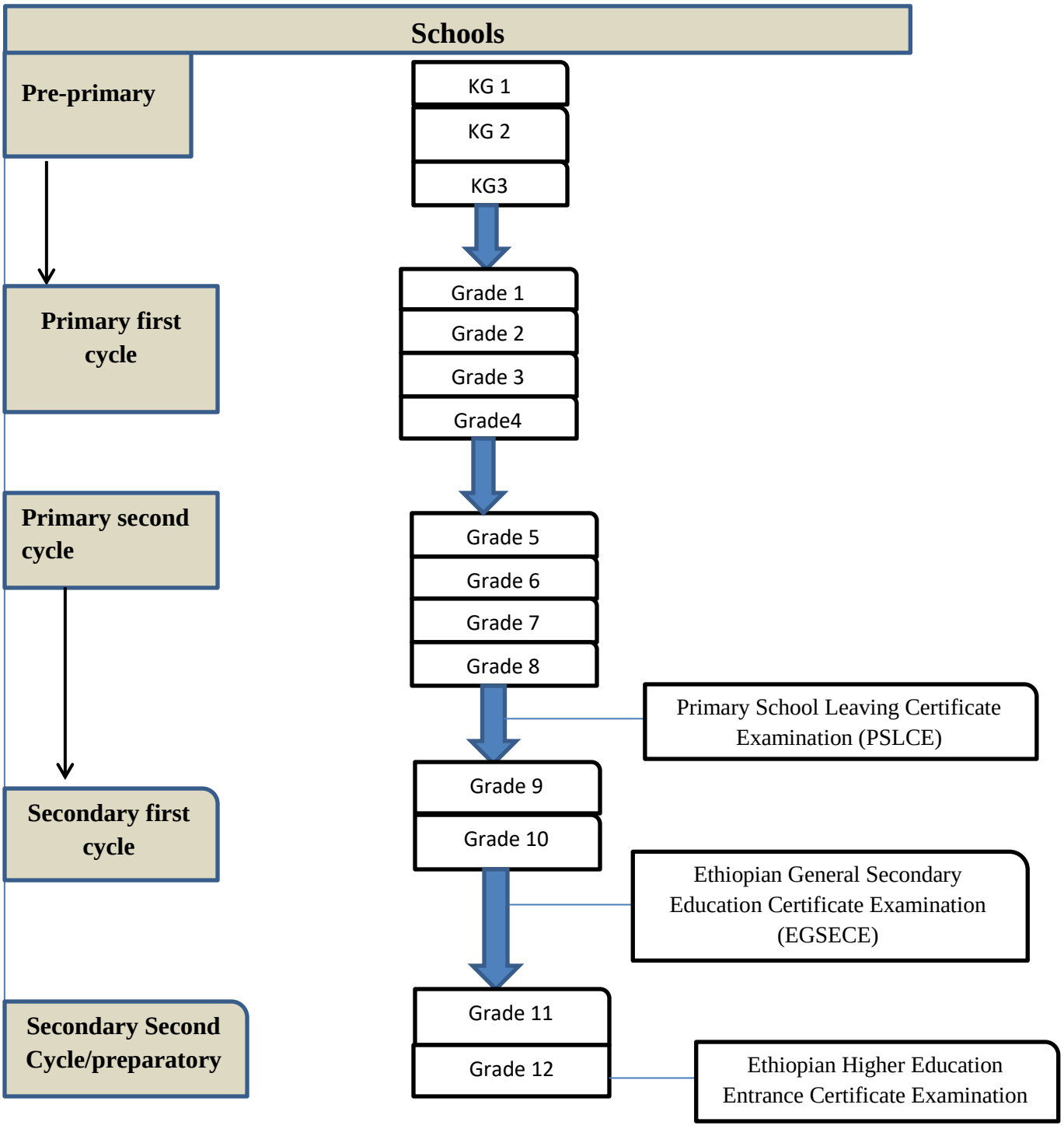



**Figure 2**: Structure of the Addis Ababa City Education System (60)

## 4.2 Study design

An institution based cross sectional study design was conducted.

## 4.3 Population

### 4.3.1 Source Population

All female secondary school teachers in Addis Ababa, Ethiopia.

### 4.3.2 Study population

All female secondary school teachers in the selected secondary schools of Addis Ababa, Ethiopia.

## 4.4 Eligibility criteria

### 4.4.1 Inclusion criteria

- Female teachers who provided service (teaching) during the time of data collection
- Female teachers with no personal history of breast cancer

### 4.4.2 Exclusion criteria

- Female teachers who had undergone mastectomy procedure
- had no one upper extremity
- who were on annual rest or not found on official work day during the time of data collection

## 4.5 Sample size determination

The required sample size was determined by using a single population proportion formula, by considering the following assumptions:-

Prevalence of breast self-examination practice from previous study was 12% (19).

Confidence level (95%)

Margin of error (d) =3%

10% of the calculated sample size was added to compensate non-response rate and the formula used for calculating the sample size (n) was;

$$n = \frac{\left[\left(Z\frac{\alpha}{2}\right)2P(1-P)\right]}{d2}$$

$Z_{\alpha/2}$ = Z statistic for a level of confidence, and was set at 1.96 for 95% CI.

P = 0.12

1-P = 0.88

$d^2$ = 0.0009

After putting those numbers in the above formula n was equal to 451 and multiplied this by design effect 2 it gave 902 but since sampling was taken from population of less than 10,000, the finite population correction formula was considered.

$n_f = \frac{n}{1+\frac{n}{N}}$ , where: n was the sample size calculated from finite population 902 and calculated sample size ($n_f$) from the above equation is 535 with 10% non-response rate consideration the final sample size was 589.

**4.6 Sampling procedure technique**

There were a total of 72 governmental secondary schools in Addis Ababa, Ethiopia in which 1315 female teachers are working.

Multi-stage sampling method was used to select the study population. First, Four sub cities were randomly selected from the ten sub cities in Addis Ababa. Those randomly selected sub cities were Akaki/kality, yeka, kolfe and Arada. Then all governmental secondary schools in each sub city were identified and listed. The number of female teachers in each selected schools was known and final sample was determined by proportionally allocating the female teachers according to their size. Finally the female teachers were selected from each school using lottery method.

P = n/N in which, P is sampling proportion

n denotes the maximum sample size

N indicates the total number of female teachers in the selected secondary schools which is 665.

P = 589/665 = 0.89 then this fraction (0.89) was multiplied by the number of female teachers in each selected school to obtain the final sample (Table 1).

**Table 1**: Proportional allocation of female teachers in the selected public schools

| No | Name of schools | Final sample by PPS | No | Name of schools | Final sample by PPS |
|---|---|---|---|---|---|
| 1 | Fitawrari | 14 | 18 | edget chora | 41 |
| 2 | Ethio japan | 16 | 19 | repi | 24 |
| 3 | gelan number 2 | 14 | 20 | ayertena | 31 |
| 4 | bulbula | 15 | 21 | ewket lefre | 20 |
| 5 | Kality | 23 | 22 | yemane birhan | 4 |
| 6 | maremia | 2 | 23 | keranyo medhanialem | 19 |
| 7 | beseka | 24 | 24 | kolfe secondary | 13 |
| 8 | derartutulu | 14 | 25 | Millennium | 17 |
| 9 | Tulu dimtu | 25 | 26 | Asko | 24 |
| 10 | keftegna 12 | 10 | 27 | Tikur anbesa | 15 |
| 11 | Kokebetsbiha | 22 | 28 | agazi | 12 |
| 12 | birhan guzo | 7 | 29 | weyzero kelemework | 15 |
| 13 | Tesfa birhan | 19 | 30 | bethelhem | 10 |
| 14 | Millennium | 15 | 31 | dejazmach belay zeleke | 12 |
| 15 | wendrad | 23 | 32 | dagmawi minilik | 17 |
| 16 | karalo | 23 | 33 | yekatit 66 | 8 |
| 17 | abado | 27 | 34 | meskerem | 14 |
| Total | | | | | 589 |

### 4.7 Data collection procedure

Structured self-administered questionnaire was used to collect information from female school teachers. The questionnaire was derived from previous published studies and the revised champion's health belief model (RCHBM).

The questionnaire had the following parts; the first part includes socio demographic background such as age, educational status, marital status, religion, monthly income, teaching experience, personal history of breast problem, family history of breast cancer, the second part was questions related to practice of BSE the third part had questions about knowledge on breast cancer and BSE, the fourth part contained questions on source of information, and the fifth part included questions on the six constructs of HBM.

With sub sections of perceived susceptibility and severity, perceived benefits and barriers, perceived self-efficacy and cues to action questions. The questionnaire was prepared in Amharic version. First the questionnaire was prepared in English then it was translated to Amharic by a translator. The teachers were given a two or three days to fill the questionnaires.

The original Champion's Health Belief Model Scale (CHBMS) was prepared in 1984 and modified in 1993. The questionnaire of this study used the revised version and Items were prepared and scored on a five point likert scale which ranged from strongly disagree (score 1) to strongly agree (score 5). The knowledge part contained 12 items, perceived susceptibility 3 items, perceived severity 8 items, perceived benefit 6 items, perceived barrier 11items, self-efficacy 10 items and cues to action 4 items.

The questionnaire was first pretested on 30 female teachers who were similar to the study population but not included in the actual study. Four nursing students were selected as data collectors and one day training was given on the objective of the study, contents of the questionnaire and data collection techniques and there was continuous supervision to see the data collection procedure.

### 4.8 Measurement variables

#### 4.8.1 Dependent variable

- BSE Practice

### 4.8.2 Independent variables

- Socio demographic characteristics
  - Age
  - Sex
  - Educational level
  - Marital status
  - Monthly income
  - Religion
  - Teaching experience
  - Family history of breast cancer
  - Personal history of breast problem
- Source of information
- Knowledge
- Perceived susceptibility of breast cancer
- Perceived seriousness of breast cancer
- Perceived benefits of practicing BSE
- Perceived barriers to practice BSE
- Cues to action
- Self-efficacy to practice BSE

## 4.9 Data analysis procedure

After the data collection, data was checked manually for its completeness every day by data collectors and principal investigator. After code was assigned for the questionnaires, data was entered to Epi-data software version 4.2 and was exported to Statistical Package for Social Sciences (SPSS) version 21 for data analysis. Descriptive statistics was used to present the results with frequency distribution, proportion, measures of central tendency. Perceptions of participants measured based on HBM constructs and were treated as continuous variables. Mean and standard deviation were generated for each of HBM constructs. For all constructs of HBM, the responses were summed up and a total score was computed with possible values ranging from minimum to maximum value. The high scores indicated having higher perception towards performing breast self-examination except for barriers in which higher score indicated higher barrier to perform BSE. The relationship between each independent variable and the outcome

variable of interest (BSE practice) was assessed with binary logistic regression. Those variables having P-value less than 0.25 were considered significant in bivariate logistic regression and entered into multivariable logistic regression. Multivariable logistic regression was used to identify the significant predictors of BSE practice after handling possible confounders. The findings were considered at significant level $p< 0.05$ with confidence interval (CI) 95%. The internal consistency of the subscales of HBM questions was calculated using Cronbach's alpha reliability coefficient with 0.6 used as a cutoff point of reliability (61) and the result ranged from was as the following

- Perceived susceptibility 0.628
- Perceived severity 0.708
- Perceived benefit 0.825
- Perceived barrier 0.892
- Perceived self-efficacy 0.893
- Cues to action 0.617

### 4.10 Data Quality management

The questionnaire was pretested on female secondary school teachers to see the clarity of the questions and identify difficulties that may arise in the data collection process. Based on the results of the pretest necessary modification of the tool contents was made. Completeness and consistency of the questionnaires was checked daily by supervisors and principal investigator. Data collectors were collecting data under close supervision of the principal investigator. Both data collectors and supervisors were given one day training about the objective of the study and data collection procedure.

### 4.11 Operational definition

- **Perceived susceptibility**: The responses of perceived susceptibility were summed up and a total score computed with possible values ranging from 3 to15. The higher scores indicated having high perceived susceptibility towards breast cancer.
- **Perceived severity**: The responses of perceived severity were summed up and a total score computed with possible values ranging from 8 to 40. The higher scores indicated having high perceived severity towards breast cancer.

- **Perceived benefit**: The responses of perceived benefit were summed up and a total score computed with possible values ranging from 6 to 30. The higher scores indicated having high perceived benefit towards BSE.
- **Perceived barrier:** The responses of perceived barrier were summed up and a total score computed with possible values ranging from 11 to 55. The higher scores indicated having high perceived barrier towards BSE.
- **Self-efficacy**: The responses of perceived self-efficacy were summed up and a total score computed with possible values ranging from 10 to 50. The higher scores indicated having high perceived self-efficacy towards BSE.
- **Knowledge:** the responses to knowledge were summed up and mean value was computed from total sum score.

### 4.12 Ethical consideration

First Ethical approval was obtained from the Research Ethical Committee (REC) of School of Public Health, Addis Ababa University. Permission to collect data was requested from regional education bureau after explaining the aim of this study and a letter of cooperation to every selected school was obtained. The principals of selected schools were requested for permission and obtain further approval before contacting the female teachers. Female teachers who fulfilled the selection criteria were informed about the aim of the study, which the responses they gave are highly confidential and their responses only used for meeting this study's objectives, they were told not to write their names and their participation was voluntary and choosing not to participate will not affect their employment. The data collectors explained participating in the study has no risks or direct benefits to the respondents. Information sheet and written consent form was presented to individual female teachers after verbal consent is obtained.

### 4.13 Dissemination plan

The results of this study will be submitted to School of Public Health, Addis Ababa University as partial fulfillment for Master's degree in public health. The findings from this study will also be disseminated to Addis Ababa Education Bureau, Addis Ababa Regional Health Bureau, governmental and non-governmental organizations. It will also be presented in research related conferences and events. Manuscript will be submitted to different journals for publication.

## 5. Result

### 5.1 Socio- demographic characteristics of the study participants

Five hundred sixty-six female teachers returned their questionnaire, giving a response rate of 96.09%. Their mean age was 34.19± SD8.07 (range: 22 to 59). The majority of the participants 244(43.1) were in the age group of 30 to 39. Regarding their religion 394 (69.6%) were orthodox Christians and 373(65.9%) were married. Majority of the respondents, 485 (85.7%) had first University degree, 49(8.7%) had second University degree and 32(5.7%) had diploma. Majority of the participants 354 (62.5%) had less than ten years of experience in teaching. While 212 (37.5%) had ten and above years of work experience.

Most of the study participants 533(94.2%) had no previous history of breast problem and 47(8.3%) had history of breast cancer in their families (Table 2).

**Table 2**: Socio-demographic characteristics of female secondary school teachers in Addis Ababa, Ethiopia

| Category | Frequency | Percentage (%) |
|---|---|---|
| Age (years) | (n=566) | |
| 20-29 | 209 | 36.9 |
| 30-39 | 244 | 43.1 |
| 40-49 | 80 | 14.1 |
| >50 | 33 | 5.8 |
| Education | | |
| Diploma | 32 | 5.7 |
| Degree | 485 | 85.7 |
| Second degree | 49 | 8.7 |
| Marital status | | |
| Single | 153 | 27 |
| Married | 373 | 65.9 |
| Divorced | 25 | 4.4 |
| Widowed | 15 | 2.7 |

| | | |
|---|---|---|
| Religion | | |
| Orthodox | 394 | 69.6 |
| Muslim | 53 | 9.4 |
| Protestant | 103 | 18.2 |
| Catholic | 13 | 2.3 |
| Other | 3 | 0.5 |
| Monthly income | | |
| 1st Quartile | 143 | 25.3 |
| 2nd Quartile | 165 | 29.2 |
| 3rd Quartile | 119 | 21 |
| 4th Quartile | 139 | 24.6 |
| Teaching experience | | |
| <10 | 354 | 62.5 |
| ≥10 | 212 | 37.5 |
| History of previous breast disease | | |
| Yes | 33 | 5.8 |
| No | 533 | 94.2 |
| Family history of breast cancer | | |
| Yes | 47 | 8.3 |
| No | 519 | 91.7 |

*others Adventist, have no religion

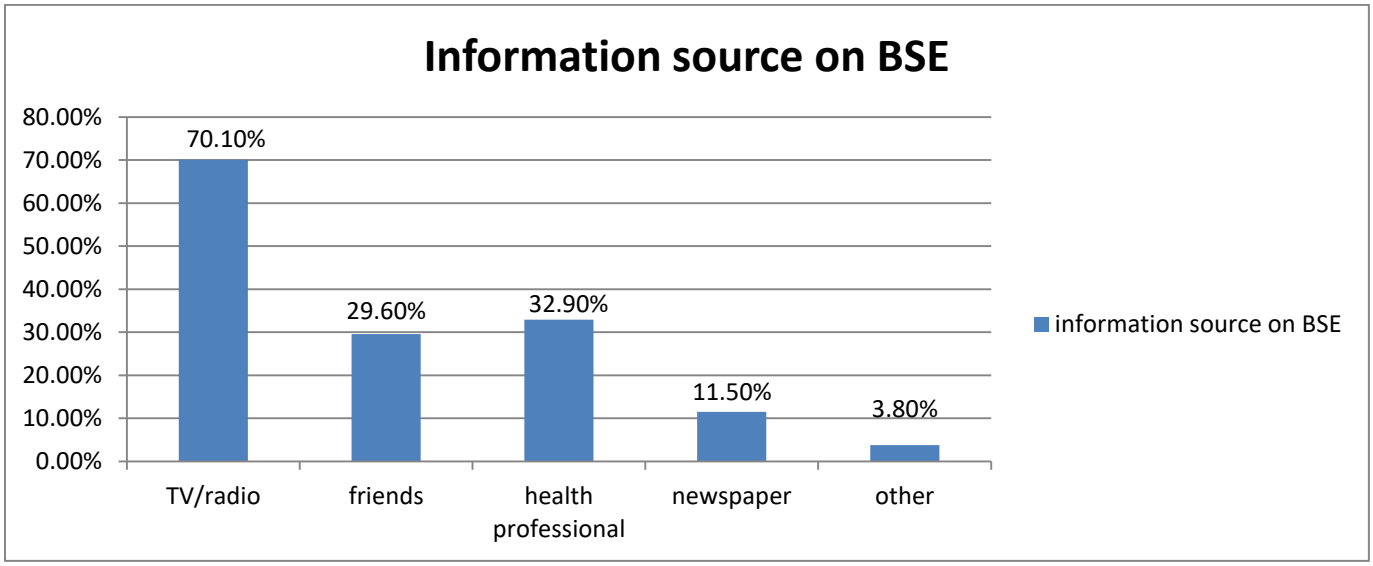
### 5.2 Knowledge and source of information about breast cancer and breast self-examination

Almost all of the study participants 561(99.1%) were aware of breast cancer and only five of the study participants stated that they had never heard of breast cancer at some point of their life. Majority of the respondents 426 (75.9%) reported that they had heard of the breast cancer screening method, breast self-examination before while 135 (24.1%) female teachers had never heard of it.

**Table 3:** Ever heard of breast cancer and BSE among female secondary school teachers

| Variable | Category | Frequency (n= 566) | Percentage (%) |
|---|---|---|---|
| Ever heard of breast cancer | Yes<br>No | 561<br>5 | 99.1<br>0.9 |
| Ever heard of breast self-examination (BSE) | <br>Yes<br>No | (N= 561)<br>426<br>135 | <br>75.9<br>24.1 |
| Knowledge* | Mean<br>9.13 | SD<br>4.59 | |

For those participants who reported that they are aware of breast cancer, they were asked from which source they had heard and choosing more than one source was possible. The most identified source of information for breast cancer was Television and radio (48.3%) followed by friends (22.4%), health care workers (17.1%), printed media (8.6%) and from other sources (3.6%). Regarding sources of information about the breast cancer screening measures, breast self-examination (BSE), Television and radio (70.1%) was the main media mentioned followed by friends (29.6%) (Figure 3).




*other- internet, brochures

**Figure 3**: Source of information about breast self-examination (BSE) among female secondary school teachers

Concerning knowledge about breast cancer and BSE. The knowledge Mean score of the study participants was 9.13 (SD± 4.59).

### 5.3 Practice of breast self-examination (BSE) of the respondents

Among all respondents of this study, more than half of them 319 (56.4%) reported that they never examined themselves while 247(43.6%) have ever performed BSE. Out of those who performed BSE only 62(25.1%) reported to practice as recommended on monthly interval.

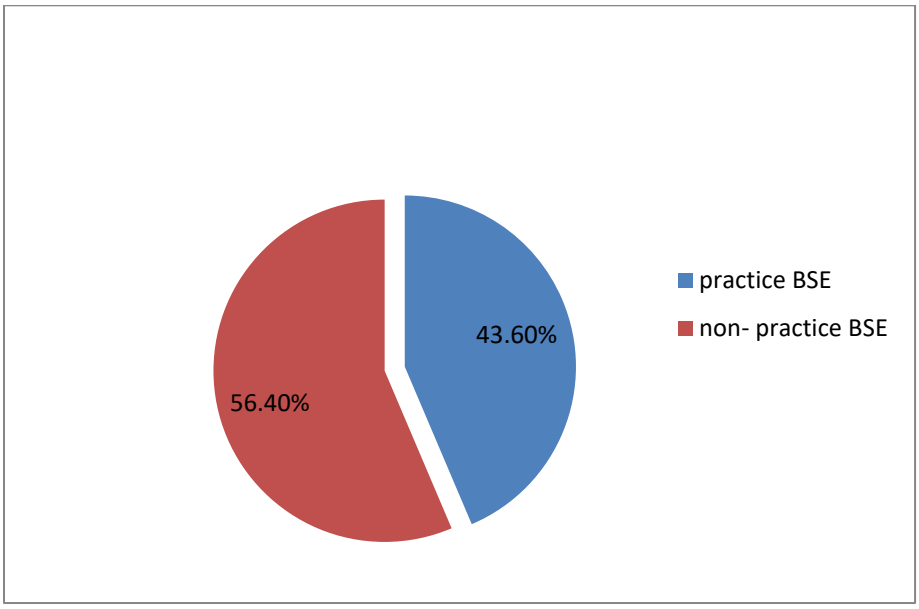



**Figure 4:** Percentage distribution of breast self-examination (BSE) practice among female secondary school teachers

**Table 4:** Practices of breast self-examination of female secondary school teachers Addis Ababa, Ethiopia

| Variable | Category | Frequency | Percentage (%) |
|---|---|---|---|
| Perform BSE | Yes | 247 | 43.6 |
| | No | 319 | 56.4 |
| Frequency of BSE | Weekly | 42 | 17 |
| | Monthly | 62 | 25 |
| | Every three month | 42 | 17 |
| | Every six month | 50 | 20.2 |
| | Every year | 16 | 6.5 |
| | As I remember | 35 | 14.2 |
| Reason to practice BSE (n=247) | I have previous self-history of breast problem | 8 | 3.2 |
| | I have family history of breast cancer | 11 | 4.5 |
| | Health professionals recommendation | 116 | 47 |
| | I fear developing breast cancer | 112 | 45.3 |

### 5.4 Perception towards BSE

Perception of female teachers on BSE was measured using the constructs of health belief model and all were analyzed as continuous variables ranging with possible values from 3 to 15 for perceived susceptibility with a mean score of 7.37 (SD± 2.5), for perceived severity value ranging from 8 to 40 with a mean score of 26.38 (SD± 5.56), for perceived benefits value ranges from 6 to 30 with a mean score 22.87 (SD± 4.65), for barrier questions the response score ranges from 11 to 55 with mean score of 23.3 (SD± 8.06), the possible value of self-efficacy is between 10 to 50 with a mean score of 31.37 (SD±7.74). For cues to action with possible values ranging from 4 to 8, mean score was 3.68 (SD± 0.85).

**Table 5**: Description of health belief model constructs among female secondary school teachers

| Variables | Mean | SD |
|---|---|---|
| Perceived threat | 33.75 | 6.57 |
| BSE net benefit | -.434 | 10.16 |
| BSE self-efficacy | 31.37 | 7.74 |
| Cues to action | 3.68 | 0.85 |
| Perceived susceptibility | 7.32 | 2.5 |
| Perceived severity | 26.38 | 5.56 |
| Perceived barrier | 23.3 | 8 |
| Perceived benefit | 22.87 | 4.65 |

The result of binary logistic regression analysis showed that all constructs of the health belief model were significantly associated with performance of breast self-exam except perceived threat with COR= 1.014, 95%CI (0.988-1.04) (Table 6).

**Table 6:** Bivariate analysis of CHBMS subscales and breast self-examination performance among female secondary school teachers

| Variables | B | COR(95% CI) | P |
|---|---|---|---|
| Perceived threat | 0.014 | 1.014(0.988-1.04) | 0.289 |
| BSE net benefit | 0.036 | 1.037(1.019-1.055) | **P<0.001** |
| BSE self-efficacy | 0.088 | 1.092 (1.064-1.121) | **P<0.001** |
| Cues to action | 0.323 | 1.381 (1.134-1.682) | **0.001** |
| Perceived susceptibility | 0.034 | 1.035(0.969-1.106) | 0.311 |
| Perceived severity | 0.012 | 1.012(0.982-1.043) | 0.425 |
| Perceived barrier | -.037 | 0.964(0.943-0.985) | **0.001** |
| Perceived benefit | 0.063 | 1.065(1.026-1.106) | **0.001** |

### 5.5 Association of socio-demographic variables and BSE performance

Binary logistic regression was used to show the association between socio-demographic variables and breast self-examination performance of the study participants.

Among the socio-demographic variables marital status, personal history of breast problem, experience of teaching, income, age and knowledge were shown to have significant association with ever performing BSE. Educational status and family history of breast cancer were not associated with ever performing BSE.

Those who were married were 1.5 times more likely to practice BSE compared to others COR=1.558, 95%CI (1.057-2.296). Those who had personal history of benign breast disease were three times more likely to perform BSE than those who never had breast disease (COR= 2.738, 95%CI (1.301-5.761). length of time in the teaching field was also significantly associated with performance in that, those who had ten and more years of teaching experience were 2 times more likely to perform BSE compared to those who worked less than ten years as a school teacher COR=2.190, 95%CI(1.548-3.097). knowledge was also associated with self-exam performance. A unit increase in the total score of knowledge of the study participants about breast cancer and BSE, the odds of performing BSE was also shown to increase by 1.1 COR=1.179, 95%CI (1.131-1.230) (Table 7).

**Table 7**: Bivariate analysis between socio demographic factors and breast self-examination (BSE) among female secondary school teachers

| Variables | Breast self-examination | | COR (95% CI) | P |
|---|---|---|---|---|
| | Yes | No | | |
| Educational status | | | | |
| Diploma | 14 | 18 | **1** | |
| Degree | 204 | 281 | 0.933 (0.454-1.920) | 0.851 |
| Master's degree | 29 | 20 | 1.864 (0.757-4.591) | 0.176 |
| Marital status | | | | |
| Single | 55 | 98 | **1** | |
| Married | 174 | 199 | 1.558(1.057-2.296) | **0.025** |
| Divorced | 10 | 15 | 1.188(0.500-2.823) | 0.697 |
| Widowed | 8 | 7 | 2.036(0.701-5.918) | 0.191 |
| Personal history of breast problem | | | | |

| | | | | |
|---|---|---|---|---|
| Yes | 22 | 11 | 2.738(1.301-5.761) | **0.008** |
| No | 225 | 308 | **1** | |
| Family history of breast cancer | | | | |
| Yes | 24 | 23 | 1.385(0.762-2.518) | 0.285 |
| No | 223 | 296 | **1** | |
| Teaching experience | | | | |
| <10 | 129 | 225 | 1 | |
| >= 10 | 118 | 94 | 2.190(1.548-3.097) | **P<0.001** |
| Monthly income | | | | |
| 1st Quadrant | 59 | 84 | **1** | |
| 2 nd Quadrant | 55 | 110 | 0.712(0.447-1.133) | 0.151 |
| 3rd Quadrant | 51 | 68 | 1.068(0.652-1.748) | 0.794 |
| 4 th Quadrant | 82 | 57 | 2.048(1.274-3.292) | **0.003** |
| Age in years | | | | |
| 20-29 | 73 | 139 | **1** | |
| 30-39 | 115 | 129 | 1.661 (1.136-2.427) | **0.009** |
| 40-49 | 39 | 41 | 1.772 (1.051-2.988) | **0.032** |
| >50 | 20 | 13 | 2.866 (1.349-6.092) | **0.006** |
| Knowledge* | | | 1.179 (1.131-1.230) | **P<0.001** |

COR= Crude Odds Ratio, * continuous variable, CI= Confidence Interval

1= Reference category

### 5.6 Predictors of breast self-examination among female secondary school teachers

Among the socio-demographic variables experience of teaching, previous history of benign breast disease and knowledge of the participants were significantly associated with BSE performance. Female teachers who had previous history of breast problem were three times more likely to perform BSE than those who never had history of any breast disease AOR= 3.27, 95%CI (1.131-9.453).

In this study, it was found that those having ten and more years of teaching experience were 2 times more likely to ever perform BSE compared to those who worked less than ten years in the teaching profession AOR= 2.46, 95%CI (1.331-4.56). Keeping other variables constant, knowledge was significant in explaining BSE performance. One unit increase in the total knowledge score results in increasing the odds of performing self-examination by almost 1.1 AOR=1.069, 95%CI (1.014-1.126).

In bivariate analysis all constructs of the health belief model were significantly associated with BSE performance except perceived susceptibility and severity but after possible confounding variables are controlled only perceived self-efficacy was significant in predicting the probability of performing BSE. A unit increment in the total score of perceived self-efficacy towards breast self-exam increases the odds of BSE performance by 1.071 AOR= 1.071, 95%CI (1.017- 1.127) (Table 8).

**Table 8**: Multivariable logistic regression analysis of independent variables and BSE among female secondary school teachers

| Variables | Category | COR | P | AOR | P |
|---|---|---|---|---|---|
| Age | 20-29 | **1** | | **1** | |
| | 30-39 | 1.661 (1.136- | 0.009 | 1.158(0.663-2.021) | 0.606 |
| | 40-49 | 2.427) | 0.032 | 0.598(0.25-1.432) | 0.249 |
| | >50 | 1.772 (1.051- | 0.006 | 0.845(0.265-2.689) | 0.775 |
| | | 2.988) | | | |
| | | 2.866 (1.349- | | | |
| | | 6.092) | | | |

| | | | | | |
|---|---|---|---|---|---|
| Marital status | Single | **1** | | **1** | |
| | Married | 1.558(1.057-2.296) | 0.025 | 1.415(0.85-2.358) | 0.182 |
| | Divorced | 1.188(0.500-2.823) | 0.697 | 0.696(0.222-2.186) | 0.535 |
| | Widowed | 2.036(0.701-5.918) | 0.191 | 1.482(0.373-5.889) | 0.576 |
| Educational status | Diploma | **1** | | **1** | |
| | Degree | 0.933(0.454-1.92) | 0.851 | 0.899(0.316-2.558) | 0.842 |
| | Master's degree | 1.864(0.757-4.591) | 0.176 | 1.148(0.321-4.109) | 0.832 |
| History of breast problem | Yes | 2.738(1.301-5.761) | 0.008 | 3.27 (1.131-9.453) | **0.029*** |
| | No | **1** | | **1** | |
| Teaching experience | <10 | 1 | P<0.001 | **1** | **0.004*** |
| | ≥10 | 2.190(1.548-3.097) | | 2.46(1.331-4.56) | |
| Monthly income | 1st Quadrant | **1** | | **1** | |
| | 2 nd Quadrant | 0.712(0.447-1.133) | 0.151 | 0.563(0.302-1.05) | 0.071 |
| | 3rd Quadrant | 1.068(0.652-1.748) | 0.794 | 0.598(0.282-1.267) | 0.179 |
| | 4 th Quadrant | 2.048(1.274-3.292) | 0.003 | 0.69(0.288-1.652) | 0.405 |
| knowledge** | | 1.179 (1.131-1.230) | P<0.001 | 1.071(1.017-1.127) | **0.009*** |
| Perceived net benefit | | 1.037(1.019-1.055) | P<0.001 | 1.006(0.984-1.029) | 0.588 |
| Perceived self-efficacy** | | 1.092 (1.064-1.121) | P<0.001 | 1.063(1.028-1.099) | **P<0.001*** |
| Cues to action** | | 1.381 (1.134-1.682) | 0.001 | 0.995(0.77-1.286) | 0.971 |

1= Reference category, *= statistical significant at p<0.05

**= continuous variable

AOR= Adjusted Odds Ratio

## 6. Discussion

This study aimed to assess the practice of breast self-examination (BSE) and identify the predictors of BSE performance. It was found that majority 426 (75.9%) stated that they had heard the term breast self-examination which was much lower than a study conducted in Iraq and western Nigeria in which participants 91% and 95.6% had heard about BSE respectively (62, 63). This difference might be due to increasing sensitization and mass campaign on breast cancer awareness in Nigeria. In contrary to the present study, findings of previous studies conducted in Ethiopia showed lower proportion of participants had heard about BSE, 16.5% and 45% (19, 23). The possible reason could be difference in educational status of the participants.

Regarding information source on breast cancer screening, Television and radio were the most popular channel mentioned in this study (70.1%). This finding was also consistent in other studies (19, 62-64). This emphasizes that it is necessary to consider media in promoting health education.

In this study less than half of the participants 247(43.6%) reported ever performing BSE, yet 25.1% performed it monthly. Similar findings were observed in previous studies among female teachers in Iran (43%) and (44 %) in Turkey (28, 66). And the prevalence level of this study was higher than previous study in Ethiopia which was 12% (19) and possible explanation could be due to differences in educational level of the participants, larger sample size used in current study and increased breast cancer awareness campaigns may be higher in this largely urban setting.

Regarding the study sample's knowledge about breast cancer and breast self-examination, the current study revealed that as there is a unit increase in the total knowledge score, the probability of performing BSE was also increased. This result supports other similar studies (19, 28, 67, 68) conducted among female school teachers suggesting that knowledge was significantly related with performing BSE. This may be attributed to the fact that knowledge about breast cancer and BSE is often shown to lead or influence women's performance of BSE (19). This result could also imply that those educated group of women have higher probability of putting important facts into action. And this signals that in order to increase women's adherence of BSE performance, more efforts should be done to increase their knowledge about this deadly disease.

Among the socio demographic variables, teaching experience was found to be significantly related with BSE performance. Female teachers who have ten and above years of experience were two times more

likely to perform BSE AOR, (2.46, 95% CI(1.331-4.56). However, this finding was not in line with a study carried out in Malaysia and Nigeria where length of time in teaching was not shown to influence BSE performance (27, 39). This variation may be the more female teachers stay in the work field the more they will get training opportunities which may enhance their awareness about breast cancer and self-examination performance (56). This could imply the importance of involving female teachers with great teaching experience in health promotion activities as they may be role models to other young and low experienced female teachers.

In this study, having personal history of breast problem was found to be a significant predictor of performing BSE. This finding was similar with another study from northern Ethiopia who also observed that history of personal breast problem was significantly related with performing BSE (23). This might be because women with such experience may make them to be more concerned about their health and performing BSE in particular. Therefore, they will probably perform BSE if they had experienced such problem. In contrary to the above studies a study conducted among turkey female health care workers showed that personal history of breast problem was not associated with BSE performance (69). The possible explanation may be those health professionals could be well aware about benign breast disease and may perceive themselves not at risk to breast cancer and may not think about performing BSE.

The results of multiple logistic regression showed that among the constructs of the health belief model perceived self-efficacy was a significant predictor in performing BSE. While the rest five constructs perceived susceptibility, severity to breast cancer, perceived benefits and barriers and cues to action were not shown to predict BSE.

Perceived self-efficacy was one of the health belief model constructs found to be a strong predictor of performing BSE. This finding is also supported by a number of previous studies which also observed a significant association between those two variables (44, 46, 47, 70). This indicates that if the female teachers' confidence in the ability to perform BSE increased; their performance of BSE will also be increased (48). In contrast, a study conducted by Birhane N et al. reported that perceived self-efficacy and BSE performance were not positively related (19). The possible explanation may be the participants in the present study were more educated.

The other constructs of the health belief model which were not significantly related to BSE performance were perceived susceptibility and severity to breast cancer. In the current study both constructs were not

found to predict BSE performance. However in other previous study conducted in Ethiopia (19) the constructs of HBM which predicts women who perceive themselves to be susceptible to breast cancer (perceived susceptibility) and who also believe that breast cancer is a serious disease (perceived seriousness) are more likely to practice regular BSE, showed a positive association with BSE performance. One explanation of this finding may be related to the low level of knowledge of female teachers in this study regarding breast cancer (the total knowledge mean score was found to be 9.13 with SD of 4.59). Another explanation may be participants of current study may belief breast cancer as inevitable deadly disease which cannot be prevented but happen as God's will and women who have such belief may not see the benefit of performing BSE and as a result they will less likely perform BSE. Additional explanation could also be that perceived seriousness or severity breast cancer may not be a relevant predictor of BSE performance because it is almost universally considered serious disease (56). More efforts are necessary to improve the perceived severity and susceptibility of those educated women as these variables can increase their chance of performing the recommended behavior.

The other variable that was not a strong predictor of BSE performance was perceived net benefit which is the sum score of perceived benefits minus perceived barriers. This construct means female teachers who believe the anticipated benefit of performing BSE to prevent breast cancer outweigh the barriers to perform BSE, are probably to adhere to the screening practice (71). This is however contrary to a similar study carried out in Ethiopia which showed that perceived net benefit of BSE was significantly associated with BSE performance (19). The variation could be due to socio-demographic and sample size differences among the study population. Another possible reason could be participants in the current study may underestimate the effectiveness of BSE in preventing breast cancer.

Cues to action is another important factor of the health belief model which includes factors that can activate women's readiness to perform BSE (71). In the present study cues to action of the female teachers was not significant influencer of BSE performance. This finding was also observed in previous study among female teachers that cues to action and BSE performance were not positively related. This could be due to women in the current sample did not believe they were susceptible to breast cancer and they may give less attention to communication messages or other women with the disease thus may not motivate them to take action. Another explanation could be the lack of education in breast cancer in both studies.

In contrary to current study, a study carried out among university students of Saudi Arabia found that cues to action was a significant predictor of performing BSE (52). The variation of this finding could be attributed to the fact that those were medical students who are more likely exposed to various triggering messages which could also motivate them to perform BSE. Another fact is that the different study design employed.

## 7. Strength and limitation of the study

**Strength**

- The study included more secondary schools
- This is among the few studies in Ethiopia that focused female teachers in the secondary education cycle with the health belief model perspective

**Limitation**

- The findings of this study may not be representative of all teachers in Ethiopia.
- The data collection was based on a self-administered questionnaire and teachers were given few days to complete the questionnaire so it was difficult to ensure if there was no information exchange among the participants
- The study cannot show cause and effect relationship between perception and BSE performance due to cross-sectional nature of the data.

## 8. Conclusion

This study aimed to assess the predictors of breast self-examination (BSE) performance among female secondary school teachers based on the health belief model and it was discovered that the practice of breast self-examination among the participants was relatively low. Among the health belief model constructs perceived self-efficacy was a significant predictor of BSE performance. Other variables perceived threat, perceived net benefit and cues to action were not shown to affect BSE performance. Among the socio-demographic variables knowledge, personal history of breast problems and teaching experience were identified as predictors for performing BSE.

## 9. Recommendation

Female teachers are considered as important health advocators who have regular contact not only with young female students but also with the community who see them as role models (72). Therefore if female teachers are going to play this role it is important to give greater focus on breast cancer education program to improve the knowledge about breast cancer and change wrong believes. In this study knowledge was found to be an important factor in determining BSE performance. This emphasizes the

need for designing and implementing well-designed education programs that underline the necessity of early screening and the correct procedures on breast self-examination.

School-based health education programs that target women teachers should be widely organized to improve knowledge on breast cancer screening behaviors and health promotion and education experts in particular should design and implement appropriate communication materials that target those group of women.

In this study perceived self-efficacy was shown to explain BSE performance therefore concerned partners should work together in providing trainings on the correct ways of performing BSE both in theory and demonstration as according to health belief model stated that the more female teachers feel the confidence in successfully performing BSE, the higher the probability in actually performing BSE.

As the finding of this study suggests it is important to involve female teachers with more years of teaching experience in breast cancer intervention activities so that they can be good health promoters.

Further research is recommended involving private owned and other schools which will allow for generalization.

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## 11. Annexes

### Annex1: Information sheet

**Addis Ababa University**

**College of Health Science**

**School of Public Health**

Dear teacher,

Good morning/Good afternoon, my name is_____. I am working as a data collector for a research study on the factors influencing the practice of breast self-examination among female teachers in public secondary schools of Addis Ababa, Ethiopia. This study is being conducted for partial fulfillment of a master degree of a student named Bisrat Tewelde who is a student in Addis Ababa University, School of Public Health.

**Title:** Predictors of Breast Self-Examination among public secondary school female teachers in Addis Ababa, Ethiopia: Application of the Health Belief Model

**Purpose of the study:** the aim is to assess the perception of female teachers and other related factors that influence the practice of breast self-examination, and findings from this study can provide useful input to different governmental and non-governmental who are working on preventing breast cancer and improving women's awareness on female cancer. As you are educated women not only you are playing a great role in the academic area but also you can be a role model to young female students and general women in the community in practicing healthy behavior.

**Process of the study**: this study includes female teachers as only females are required to participate since the objective is to assess the practice of breast self-examination and your school was selected randomly from the other schools and you are also selected randomly from the other female teachers in this school.

**Rights of the participants:** your participation in this study is voluntary. You have the full right either to participate in this study or decline to participate at all. You do not have to answer any question that you don't want to answer and you may also decide not to participate in this study any time you want. But, your honest response to each question will have a major role in attaining the objective of this study.

**Confidentiality of the study:** You do not have to write your names in the questionnaire instead it will use codes to differentiate the responses you gave from another participant and the name of the institution you are working will not be mentioned .this data will not be used for any purposes other than to achieve the objectives of this study.

**Benefit of the study:** By participating in this study you will not get directly benefits or get payment but as it was mentioned above your complete and honest answer will have useful input in the efforts of preventing breast cancer.

**Risk of the study:** Participating in this study will not have any kind of risks and the researcher is accountable that by deciding to participate in this study you will not get and harm and completing this questionnaire can take about 20 to 30 minutes of your time and we greatly appreciate your cooperation. If you have any question which is not clear for you, you welcome to ask at any time.

If you need any further information or explanation regarding to this study, you can contact the principal investigator. Here are her contact details;

Name_ Bisrat Tewelde

Phone number_ +251915513554

Email address_ bsri.tw@gmail.com

Addis Ababa University, school of public health

Do I have your permission to continue?

Yes ☐ No ☐

If yes, thank her and proceed to the informed consent and to the questionnaire

If no, thank her and go to the next participant

**Annex 2: Informed consent**

I have read the above information and I have understood the purpose of the study. I also understand that the research imposes no risk to me. I am assured that there will be confidentiality of my responses and collected data will be used only for the study. It has also been explained to me that I have the right to stop participating at any time.

But, I understood that participating in this study is important for scientific knowledge and base for further study. Therefore, I have now consented to participate in the study by signing this form.

Informed consent Certified by:

Respondent's signature _____ Date_____

Data collector: Name_____ Signature_____ Date: _____

Questionnaire number_____

Time started_____ Time completed_____

**Annex 3: English version Questionnaire**

**Part I: Socio demographic information**

**Instruction:** for each of the following questions please circle the number of alternative(s) that fit for your response.

| No | Question | Response category | Skip |
|---|---|---|---|
| 101 | What is your age in completed years? | | |
| 102 | What is the highest education level you have attained? | 1. Diploma<br>2. Degree<br>3. Master's degree | |
| 103 | What is your current marital status? | 1. Single<br>2. Married<br>3. Divorced<br>4. Separated<br>5. Widowed | |
| 104 | What is your religion? | 1. Orthodox<br>2. Muslim<br>3. Protestant | |

| | | | |
|---|---|---|---|
| | | 4. Catholic<br>5. Other specify___ | |
| 105 | What is your monthly personal income in Ethiopian Birr? | _____ birr | |
| 106 | Teaching experience | _____ years | |
| 107 | Do you have previous history of breast problem? | 1.yes<br>2.No | |
| 108 | Do you have Family history of breast cancer? | 1.yes<br>2.No | |

**Part II: Practice of breast self-examination**

| No | Question | Response category | Skip |
|---|---|---|---|
| 201 | Have you ever performed breast self-examination to screen for breast cancer? | 1. Yes<br>2. No | If No go to Q 203 |
| 202 | If you answer is yes to Q201 How often do you perform BSE? | 1. Once a week<br>2. Once a month<br>3. Every three month<br>4. Every 6 month<br>5. Once a year<br>6. If other specify……. | |
| 203 | If you answer is no to Q201 what is your reason? | 1. I have previous history of breast problem<br>2. I have family history of breast cancer<br>3. Health professional's recommendation<br>4. I fear developing breast cancer<br>5. If other specify ..... | |

**Part III: Source of information on Breast cancer and breast self-examination practice**

| No | Question | Response Category | Skip |
|---|---|---|---|
| 301 | Have you ever heard about breast cancer? | 1. Yes<br>2. No | If No go to Q 303 |
| 302 | If your answer to question 301 is yes, from where did you hear the information?<br>(More than one answer is possible) | 1. Television/Radio<br>2. Friends<br>3. Health professional<br>4. Magazines/ brochures<br>5. other specify_____ | |
| 303 | Have you ever heard about BSE? | 1. Yes<br>2. No | If No go to next section |

| | | | |
|---|---|---|---|
| 304 | If your answer is yes to question 303, from where did you hear the information? (More than one answer is possible) | 1. Television/Radio<br>2. Friends<br>3. Health professional<br>4. Magazines/ brochures<br>5. If other specify_____ | |

**Part IV: Female secondary school teachers' knowledge on breast cancer and breast self-examination**

| No | Question | Response category | Skip |
|---|---|---|---|
| 401 | How often should a BSE be performed? | 1. Weekly<br>2. Monthly<br>3. Every 6 month<br>4. Once a year<br>5. I don't know___ | |
| 402 | At what age should a woman begin BSE? | 1. Below 20 year<br>2. Starting from 20 year<br>3. Above 30 year<br>4. I don't know | |
| 403 | Breast cancer is transmittable disease | 1. Yes<br>2. No<br>3. I don't know | |
| 404 | What is the appropriate time in a woman with regular menstruation for performing BSE? | 1. during menses<br>2. few days before menses<br>3. few days after menses<br>4. At any time<br>5. I don't know | |
| 405 | What will be the position of body while performing BSE? (More than one answer is possible) | 1. standing straight in front of mirror<br>2. lying down<br>3. sitting down<br>4. I don't know | |
| 406 | How is BSE performed? | 1. Palpate with palm and three middle fingers<br>2. Palpate with any of the fingers<br>3. I don't know<br>4. If other specify…….. | |
| 407 | What are the risk factors for breast cancer? (More than one answer is possible) | 1. Positive family history of cancer<br>2. First child at late age( above 30 years old)<br>3. Early onset of menarche( under 12 years old)<br>4. 4.Late menopause (above 55 years old ) | |

| | | | |
|---|---|---|---|
| | | 5. Not breast feeding<br>6. Obesity<br>7. Alcohol consumption<br>8. Exposure to radiation<br>9. Having large breast<br>10. Punishment from God<br>11. I don't know<br>12. If other specify…….. | |
| 408 | What are the sign and symptoms of breast cancer? | 1. Lump in the breast<br>2. Nipple Discharge<br>3. Changes in shape of the breast<br>4. Change in size of the breast<br>5. Swelling under the armpit<br>6. Pain in the breast<br>7. Dimpling of the breast<br>8. Discoloration of the breast<br>9. Inversion/Pulling in of nipple<br>10. I don't know<br>11. If other specify_____ | |
| 409 | Do you know any breast cancer screening method? | 1. Yes<br>2. No | If no skip to Q 411 |
| 410 | What are the types of breast cancer screening methods?<br>(More than one answer is possible) | 1. BSE<br>2. CBE or breast exam by health personnel<br>3. Mammography<br>4. If others specify____ | |
| 411 | Is breast cancer hereditary? | 1. Yes<br>2. No<br>3. I don't know | |
| 412 | Breast cancer is curable if detected at early stage of the disease | 1. Yes<br>2. No<br>3. I don't know | |

**Part V: Perception about susceptibility to breast cancer**

**Instruction:** Please circle how you agree/disagree with the following statements

| No | Question | Response category | | | | |
|---|---|---|---|---|---|---|
| | | Strongly disagree | disagree | Neutral | agree | Strongly agree |

| | | | | | | |
|---|---|---|---|---|---|---|
| 501 | It is likely that I will get breast cancer | 1 | 2 | 3 | 4 | 5 |
| 502 | I feel I will get breast cancer sometime during my life | 1 | 2 | 3 | 4 | 5 |
| 503 | Women with family history of breast cancer are more prone to breast cancer | 1 | 2 | 3 | 4 | 5 |

**Part VI: Perception about seriousness or severity of breast cancer**

**Instruction:** Please circle how you agree/disagree with the following statements

| No | Question | Response category | | | | |
|---|---|---|---|---|---|---|
| | | Strongly disagree | disagree | Neutral | agree | Strongly agree |
| 601 | The thought of breast cancer scares me | 1 | 2 | 3 | 4 | 5 |
| 602 | When I think about breast cancer, my heart beats faster | 1 | 2 | 3 | 4 | 5 |
| 603 | Breast cancer would threaten a relationship with my boyfriend, husband. | 1 | 2 | 3 | 4 | 5 |
| 604 | I am afraid to think about breast cancer. | 1 | 2 | 3 | 4 | 5 |
| 605 | If I got BC it would be more serious than other disease | 1 | 2 | 3 | 4 | 5 |
| 606 | BC is not as serious as other types of cancers | 1 | 2 | 3 | 4 | 5 |
| 607 | I feel I would not live longer than 5 years if I got BC | 1 | 2 | 3 | 4 | 5 |
| 608 | Death resulting from BC is rare | 1 | 2 | 3 | 4 | 5 |

**Part VII: Perceptions on benefits of breast self-examination practice**

**Instruction:** Please circle how you agree/disagree with the following statements

| No | Question | Response category | | | | |
|---|---|---|---|---|---|---|
| | | Strongly disagree | disagree | Neutral | agree | Strongly agree |
| 701 | When I do BSE, I am doing something to take care of myself | 1 | 2 | 3 | 4 | 5 |
| 702 | Completing BSE each month may help me find | 1 | 2 | 3 | 4 | 5 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | breast lumps early | | | | | |
| 703 | Regular BSE each month decrease the rate of death from breast cancer | 1 | 2 | 3 | 4 | 5 |
| 704 | If I find a lump early through BSE, my treatment for breast cancer may not be as bad | 1 | 2 | 3 | 4 | 5 |
| 705 | When I complete monthly BSE I don't worry as much about BC | 1 | 2 | 3 | 4 | 5 |
| 706 | If I complete breast self-examination monthly I will decrease my chances of requiring radical or disfiguring surgery if breast cancer occurs | 1 | 2 | 3 | 4 | 5 |

**Part VIII: Perceptions on barriers to breast self-examination practice**

**Instruction:** Please circle how you agree/disagree with the following statements

| No | Question | Response category | | | | |
|---|---|---|---|---|---|---|
| | | Strongly disagree | disagree | Neutral | agree | Strongly agree |
| 801 | BSE is embarrassing to me | 1 | 2 | 3 | 4 | 5 |
| 802 | BSE will take too much time | 1 | 2 | 3 | 4 | 5 |
| 803 | It is hard to remember to do BSE | 1 | 2 | 3 | 4 | 5 |
| 804 | I don't have enough privacy to do BSE | 1 | 2 | 3 | 4 | 5 |
| 805 | BSE is not necessary if you have breast exam by a HCP . | 1 | 2 | | | |
| 806 | BSE is not necessary if you have a routine mammogram | | | | | |
| 807 | My breast too large for me to complete breast self-examination | 1 | 2 | 3 | 4 | 5 |
| 808 | I have other problems more important than doing breast self-examination. | 1 | 2 | 3 | 4 | 5 |
| 809 | If I perform BSE, it | 1 | 2 | 3 | 4 | 5 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | would lead me to worry about breast cancer. | | | | | |
| 810 | My family would make fun of me if I did self-breast exams | 1 | 2 | 3 | 4 | 5 |
| 811 | Doing BSE would require starting a new habit , which is difficult | 1 | 2 | 3 | 4 | 5 |

**Part IX: Perceptions on self-efficacy to do BSE**

**Instruction:** Please circle how you agree/disagree with the following statements

| No | Question | Response category | | | | |
|---|---|---|---|---|---|---|
| | | Strongly disagree | disagree | Neutral | agree | Strongly agree |
| 901 | I know how to perform BSE | 1 | 2 | 3 | 4 | 5 |
| 902 | I am confident I can perform BSE correctly | 1 | 2 | 3 | 4 | 5 |
| 903 | I could find a breast lump by performing BSE | 1 | 2 | 3 | 4 | 5 |
| 904 | I am able to find a breast lump that is the size of a hazelnut | 1 | 2 | 3 | 4 | 5 |
| 905 | I am sure of the steps to follow for doing BSE | 1 | 2 | 3 | 4 | 5 |
| 906 | I am able to tell something is wrong with my breast when doing breast self-examination | 1 | 2 | 3 | 4 | 5 |
| 907 | I am able to tell something is wrong with my breast when I look in the mirror | 1 | 2 | 3 | 4 | 5 |
| 908 | I can use the correct part of my fingers when examining my breasts | 1 | 2 | 3 | 4 | 5 |
| 909 | I could feel any abnormalities in my breast. | 1 | 2 | 3 | 4 | 5 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 910 | I feel confident that I perform a breast self-exam | 1 | 2 | 3 | 4 | 5 |

**Part X: Perception on cues to action to practice BSE**

| No | Question | Response category | Skip |
|---|---|---|---|
| 1001 | Do you have a family member with BC? | 1. Yes<br>2. No | |
| 1002 | Have you ever seen /heard about women who perform BSE last one month | 1. Yes<br>2. No | |
| 1003 | Have you ever seen /heard a women having BC last one month | 1. Yes<br>2. No | |
| 1004 | Have you ever heard though media /newspaper about BSE during last one month | 1. Yes<br>2. No | |

**Annex 4: Amharic version Questionnaire**

1: **የምርምር /ጥናት ማብራሪያ ቅጽ**

**አዲስ አባባ ዩኒቨርሲቲ**

**ጤና ሳይንስ ኮሌጅ**

**የማህበረ-ሰብ ጤና ትምህርት ክፍል**

**የተከበሩ መምህርት እንደምን አደሩ/ዋሉ?**

**እኔ_____ እባላለሁ፡፡ እዚህ የመጣሁት የራስ በራስ የጡት ምርመራ ትግበራና ተያያዥ ችግሮች በተመለከተ በአዲስ አባባ በሁለተኛ ደረጃ ሴት መምህራን ላይ ለሚደረገው ጥናት መረጃ ለመሰብሰብ ነው፡፡ ይህ ጥናት በብስራት ተወልደ የሚከናወን ሲሆን በአዲስ አባባ ዩኒቨርሲቲ ጤና ሳይንስ ኮሌጅ የማህበረ-ሰብ ጤና ትምህርት ክፍል ለድህረ ምረቃ ማሟያ የሚሆን ነው፡፡**

**የጥናቱ ዓላማ፡-** **የጥናቱ ዋና ዓላማ በአዲስ አበባ የሚገኙ ሁለተኛ ደረጃ ትምህርት ቤቶች ውስጥ ያሉ ሴት መምህራን ላይ የራስ በራስ የጡት ምርመራ ለካንሰር ምርመራ የማካሄድ ባህሪያቸውንና ተያያዥ ችግሮች ምን እንደሚመስል ለማጥናት ነው፡፡**

**የጥናቱ ሂደት፡-** **ጥናቱ በሁለተኛ ደረጃ የህዝብ ትምህርት ቤቶች ውስጥ የሚገኙ ሴት መምህራን የሚያካትት ሁኖ እርስዎ ከሌሎች በዚህ ጥናት የተካተቱት እንዲሁ በአጋጣሚ እንጂ ምንም የተለየ ትኩረት ተሰጥቶት አይደለም፡፡ ጥናቱ ይህን መጠይቅ ኣንብቦ በመመለስ ብቻ የሚያልቅ እንጂ ምንም ዓይነት የደምም ሆነ ሌላ ኣይነት ምርመራ አይኖረውም፡፡**

**የጥናት ተሳታፊዎች መብት፡-** **በጥናቱ ተካፋይ መሆን ሙሉ በሙሉ በፍቃደኝነት ላይ የተመሰረተ ነው፡፡በቃለ ምልልሱ ወቅት ግልፅ ያልሆነ ጥያቄ ማንሳት ይችላሉ፣ በዚህ ጥናት የመሳተፍና ያለ መሳተፍ እነዲሁም ለመመለስ የማትፈልጉት ጥያቄዎች ካሉ ያለመመለስና በማንኛውም ጊዜ በጥናቱ ላይ ላለመሳተፍ መወሰን ይችላሉ፡፡ ይሁን እንጂ ለእነዚህ ጥያቄዎች የሚሰጡት ታማኝና የተሟሉ መልሶች ጥናቱን በተሳካ ሁኔታ ለማከናወንና የጡት ካንሰርን ለመከላከል በሚደረግ እንቅስቃሴ ወስጥ ጠቀሚታው የጎላ ነው፡፡**

**የጥናቱ ምስጢራዊነት፡-** ይህ እርስዎ የሚሰጡት መረጃ በማንኛውም ሁኔታ ከዚህ ጥናት ውጪ ለሌላ ላላማ አይውልም፤ ምሰጢራዊነቱም ሁል ጊዜ የተጠበቀ ነው፡፡ የእርስዎ ስም ወይም የሚሰሩበት ትምህርት ቤት ተቋም ስም ላይጠቀስም፡፡

**የጥናቱ ጥቅም፡-** በዚህ ጥናት ላይ በመሳተፍዎ ምንም አይነት ጥቅምም ሆነ ክፍያ አይኖርም፡፡ ነገር ግን በእያንዳንዱ ጥያቄ ላይ የእርስዎ ታማኝነት እና ትክክለኛነት መልስ የጥናቱን አላማ ከግብ ለማድረስ ከፍተኛ ሚና ይኖረዋል፡፡

**የጉዳት ስጋት፡-** በዚህ ጥናት በመሳተፍዎ ምንም ዓይነት ጉዳት ላያስከትልም፡፡ ለዚህ መጠይቅ ከ20 እስከ 30 ደቂቃ ወስዳችሁ በመመላታችሁ ለትብብራችሁ በጣም እናመሰግናለን፡፡ ለሚኖርዎት ጥያቄ ከታች የተጠቀሰው ላድራሻ በመጠቀም የጥናቱ ባለቤት የሆነችው ብስራት ተወልደን ማግኘት ይችላሉ፡፡

ስ.ቁጥር፡ +251915513554

ኢሜይል፡ bsri.tw@gmail.com

**ለ: የስምምነት መግለጫ ቅፅ**

እኔ ከዚህ በላይ የተገለፀውን መረጃ በማንበብ የጥናቱ ላላማና ጠቀሜታው ተረድቼአለሁ፡፡ እኔ የምሰጠው መረጃ ለዚህ ጥናት አገልግሎት ብቻ የሚውል መሆኑንና በሚስጥር እንደሚጠበቅ እንዲሁም ማንነቴ እንደማይገለጽ ተነግሮኛል፡፡ በተጨማሪም በጥናቱ መሳተፍ ላለመሳተፍ ወይም በማንኛውም ጊዜ ከጥናቱ ተሳታፊነት ላቋርጩ መውጣት እንደምችል ሙሉ መብት እንዳለኝ ተረድቻለው፡፡ በዚህ ጥናት በመሳተፌ ምንም ጉዳትም ሆነ የተለየ ጥቅም አንደማይሰጠኝ የተረዳሁ ስሆን ይህን መጠይቅ ለመሙላት ፍቃደኛ መሆኔን በፊሪማዬ ላረጋግጣለሁ፡፡
ለመቀጠል ፈቃደኛ ነዎት?

አዎ ☐ አይደለሁም ☐

የተሳታፊ ፊርማ _____ ቀን(በኢትዮጵያ ላቆጣጠር) _____
የመረጃ ሰብሳቢ ሰም_____ ፊርማ_____
የቃለ-መጠይቁ መረጃ ቁጥር_____
የጀመረበት ሰዓት_____ ያለቀበት ሰዓት_____
የመጠይቁ ውጤት

1. ተጠናቋል
2. ፈቃደኛ ላይደሉም
3. መላሹ ላልተገኙም
4. በግማሽ ተጠናቋል

**ክፍል 1: ማህበራዊ እና የስነ- ህዝብ መረጃ**

| ተ.ቁ. | ጥያቄ | የመልስ ምድብ | ይለፉ |
|---|---|---|---|
| 101 | ዕድሜዎት ስንት ነው(በሙሉ ዓመት)? | ---------- | |
| 102 | የትምህርት ደረጃዎን ይግለፁ? | 1. ዲፕሎማ<br>2. ዲግሪ<br>3. ሁለተኛ ዲግሪ | |
| 103 | በላሁኑ ጊዜ የጋብቻ ሁኔታ? | 1. ያላገባች<br>2. ያገባች<br>3. የተፋታች<br>4. የትዳር አጋር የሞተባት | |
| 104 | ሃይማኖትዎ? | 1. ኦርቶዶክስ<br>2. ሙስሊም<br>3. ፕሮቴስታንት | |

| | | | |
|---|---|---|---|
| | | 4. ካቶሊክ<br>5. ሌላ ካለ(ይገለጽ)_____ | |
| 105 | ወርሓዊ ገቢ(ብር)? | _____ ብር | |
| 106 | የማስተማር ልምድ | _____ ዓመት | |
| 107 | ከዚህ በፊት በጡት በሽታ ታመዉ ነበር? | 1. ኣዎ<br>2. ኣልታመምኩም | |
| 108 | በቤተሰብዎ ዉስጥ የጡት ካንሰር በሽታ ያለበት ሰው ኣለ? (እናት፣እህት፣አክስት) | 1. ኣለ<br>2. የለም | |

**ክፍል 2: የራስ በራስ የጡት ምርመራ "ተግባርን" በተመለከተ**

| ተ.ቁ | ጥያቄ | የመልስ ምድብ | ይለፉ |
|---|---|---|---|
| 201 | የራስ በራስ የጡት ምርመራን ታደርጊያለሽ? | 1. ኣዎ<br>2. ኣላደርግም → | ወደ ክፍል 3 |
| 202 | ለጥያቄ ቁጥር 201 መልስዎ ኣዎ ከሆነ በምን ያህል ግዜ ያደርጋሉ? | 1. በሳምንት ኣንዴ<br>2. በወር ኣንዴ<br>3. በሶስት ወር ኣንዴ<br>4. በስድስት ወር ኣንዴ<br>5. በኣመት ኣንዴ<br>6. ሌላ ካለ ይግለጹ_____ | |
| 203 | ለጥያቄ ቁ.201 ምላሽ "ኣዎ" ከሆነ የራስ በራስ የጡት ምርመራ የምታደርጊው በምን ምክንያት ነው? | 1. ከዚህ በፊት የጡት ችግር ሰለነበረኝ<br>2. በቤተሰብ የጡት ካንሰር ሰላለና ስለምፈራ<br>3. በጤና ባለሞያ ሰለሚመከር፤በጊዜ ለማወቅና እርምጃ ለመውሰድ<br>4. በጡት ካንሰር መያዝን ሰለምፈራ<br>5. ሌላ ካለ ይግለጹ_____ | |

**ክፍል 3: በጡት ካንሰርና የራስ በራስ የጡት ምርመራ የመረጃ ምንጭ በተመለከተ**

| ተ.ቁ | ጥያቄ | የመልስ ምድብ | ይለፉ |
|---|---|---|---|
| 301 | ስለ ጡት ካንሰር ስምተው ያውቃሉ? | 1. ኣዎ<br>2. ኣላውቅም → | ወደ ቁ. 303 |
| 302 | ለተ.ቁ 301 መልስ ኣዎ ከሆነ ለመጀመርያ ግዜ የሰሙት ከየት ነው?<br>(ከአንድ በላይ መልስ መስጠት ይቻላል) | 1. ከተሌቪዥን/ራዲዩ<br>2. ከጓደኞቼ<br>3. ከጤና ባለሙያ<br>4. ጋዜጣ/መጽሄት<br>5. ሌላ ካለ ይግለጹ ------- | |
| 303 | ስለጡት የራስ በራስ ምርመራን ስምተው ያውቃሉ? | 1. ኣዎ<br>2. ኣላውቅም → | ክፍል 4 |
| 304 | ለተ.ቁ 303 መልስ ኣዎ ከሆነ ለመጀመርያ ግዜ የሰሙት ከየት ነው?<br>(ከአንድ በላይ መልስ መስጠት ይቻላል) | 1. ከተሌቪዥን/ራዲዩ<br>2. ከጓደኞቼ<br>3. ከጤና ባለሙያ<br>4. ጋዜጣ/መጽሄት<br>5. ሌላ ካለ ይግለጹ ---------- | |

**ክፍል 4: ስለ ጡት ካንሰርና ራስ በራስ የጡት ምርመራን እውቀትን በተመለከተ**

| ተ.ቁ | ጥያቄ | የመልስ ምድብ | ይለፉ |
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| 401 | የራስ በራስ የጡት ምርመራ በየስንት ጊዜ መተግበር አለበት ብለው ያስባሉ? | 1. በሳምንት አንድጊዜ<br>2. በወር አንድጊዜ<br>3. በስድስትወር አንድጊዜ<br>4. በኣመት አንድጊዜ<br>5. አላውቅም | |
| 402 | አንድ ሴት ከየትኛው የእድሜ ደረጃ ጀምሮ የራስ በራስ የጡት ምርመራ ማድረግ መጀመር አለባት ብለው ያስባሉ? | 1. ከሀያ አመት በታች<br>2. ከሀያ አመት ጀምሮ<br>3. ከሰላሳ አመት በላይ<br>4. አላውቅም | |
| 403 | የጡት ካንሰር ከሰው ወደ ሰው የሚተላለፍ በሽታ ነው | 1. ኣዎ<br>2. ኣይደለም<br>3. ኣላዉቅም | |
| 404 | መደበኛ የሆነ የወር አበባ የምታይ ሴት የራስ በራስ ጡት ምርመራ ማድረግ ያለባት መቼ ነው? | 1. የወር አበባ እየታየ<br>2. የወር አበባ ከመታየቱ ጥቂት ቀናት ቀደም ብሎ<br>3. የወር አበባ ከታየ ከጥቂት ቀናት በኋላ<br>4. በማንኛውም ጊዜ መመርመር ይቻላል<br>5. አላውቅም | |
| 405 | ራስ በራስ የጡት ምርመራ ስናደርግ የተክለ ሰውነት ሁኔታ እንዴትመሆን አለበት?<br>(ከአንድ በላይ መልስ መስጠት ይቻላል) | 1. መስታዎት ፊት ለፊት በመቆም<br>2. በጀርባ በመተኛት<br>3. በመቀመጥ<br>4. አላውቅም | |
| 406 | የራስ በራስ የጡት ምርመራ እንዴት ይተገበራል? | 1. በሶስት መሀል ጣቶችና በመዳፍ በመዳሰስ<br>2. በኣንድ ጣት በመዳሰስ<br>3. አላውቅም<br>4. ሌላ ካለ ይግለጹ_____ | |
| 407 | እርስዎ የሚያውቋቸው ለጡት ካንሰር ልያጋልጡ የሚችሉ ሁኔታዎችን ይጥቀሱልን<br>(ከአንድ በላይ መልስ መስጠት ይቻላል) | 1. በዘር ሀረግ በጡት ካንሰር የተያዘ ቤተሰብ ካለ<br>2. የመጀመሪያ ልጅ ዘግይቶ መውለድ(ከ30 ዕድሜ በላይ)<br>3. እዴሜ ሳይደርስ የወርአበባ ማየት(ከ12 ዕድሜ በታች)<br>4. የወርአበባ ዘግይቶ ማቆም (ከ55 ዕድሜ በላይ)<br>5. ጡት ኣለማጥባት<br>6. ከመጠን የለፉ የሰውነት ውፍረት<br>7. የአልኮል መጠጥ ማብዛት<br>8. ለረዥም ግዜ ለጨረር መጋለጥ<br>9. ትልቅ ጡት መኖር<br>10. እርግማን<br>11. ኣላውቅም<br>12. ሌላ ካለ ይግለጹ_____ | |
| 408 | እርስዎ የሚያቋቸው የጡት ካንሰር ምልክቶች ካለ ይጥቀሱልን<br>(ከአንድ በላይ መልስ መስጠት ይቻላል) | 1. ህመም የሌለው የጡት እጢ<br>2. ከጡት ጫፍ የሚወጣ ፈሳሽ<br>3. የጡት ቅርፅ መቀየር<br>4. የጡት መጠን መቀየር<br>5. በጡት ኣካባቢና በብብት ውስጥ እብጠት መኖር<br>6. የጡት ህመም<br>7. የጡት ቆዳ መሸብሸብ<br>8. የጡት ቆዳ መቅላት/መልክ መቀየር<br>9. የጡት ጫፍ መሰርጎድ<br>10. ኣላውቅም<br>11. ሌላ ካለ ይግለጹ _____ | |

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| 409 | የጡትካንሰር በሽታ ለማወቅ የሚያስችል የቅድመ ካንሰር ምርመራ ዘዴ ያውቃሉ? | 1. ኣዎ<br>2. ኣላውቅም ⟶ | ወደ ቁ.411 |
| 410 | ከላይ ላለው ጥያቄ መልስዎ ኣዎ ከሆነ የትኛውን የቅድመ ካንሰር ምርመራ አይነት ያውቃሉ?<br>(ከአንድ በላይ መልስ መስጠት ይቻላል) | 1. የራስን ጡት በራስ መመርመር<br>2. ጡትን በሃኪም ማስመርመር<br>3. ማሞግራፊ (የጡት ራጅ መነሳት)<br>4. ሌላ ካለ ይግለጹ | |
| 411 | ጡት ካንሰር በዘር የሚተላለፍ በሽታ ነው | 1. ኣዎ<br>2. ኣይደለም<br>3. ኣላውቅም | |
| 412 | ጡት ካንሰር በግዜው ከተደረሰበት ሊድን የሚችል በሽታ ነው | 1. ኣዎ<br>2. ኣይድንም<br>3. ኣላውቅም | |

**ክፍል 5: ለጡት ካንሰር ያለዎት ተጋላጭነት በተመለከተ**

| ተ.ቁ | ጥያቄ | የመልስ ምድብ | | | | |
|---|---|---|---|---|---|---|
| | | በፍፁም አልስማማም | አልስማማም | እርግጠኛ አደለሁም | እስማማለሁ | በጣም እስማማለሁ |
| 501 | በጡት ካንሰር የመታመም እድሌ ከፍተኛ ነው | 1 | 2 | 3 | 4 | 5 |
| 502 | በሕይወት ዘመኔ የሆነ ጊዜ ላይ በጡት ካንሰር እንደምያዝ ይሰማኛል | 1 | 2 | 3 | 4 | 5 |
| 503 | በቤተሰቧ ውስጥ የጡት ካንሰር በሽታ ታሪክ ያላት ሴት ለጡት ካንሰር የመጋለጥ እድሏ ከፍተኛ ነው | 1 | 2 | 3 | 4 | 5 |

**ክፍል 6፡ ስለ ጡት ካንሰር ከባድነት ወይም ኣደገኝነት**

| ተ.ቁ | ጥያቄ | የመልስ ምድብ | | | | |
|---|---|---|---|---|---|---|
| | | በፍፁም አልስማማም | አልስማማም | እርግጠኛ አደለሁም | እስማማለሁ | በጣም እስማማለሁ |
| 601 | ስለ ጡት ካንሰር ሲወራ እኔን በእጅጉ ያስፈራኛል | 1 | 2 | 3 | 4 | 5 |
| 602 | ስለ ጡት ካንሰር ሳስብ የልብ ትርታዬ ይጨምራል | 1 | 2 | 3 | 4 | 5 |
| 603 | የጡት ካንሰር በእኔ ላይ ቢከሰት ከፍቅር ጓደኛዬ ወይም ከባለቤቴ ጋር ያለኝን ግንኙነት አደጋ ላይ ይጥላል | 1 | 2 | 3 | 4 | 5 |
| 604 | ስለ ጡት ካንሰር ሳስብ ፍርሀት ይሰማኛል | 1 | 2 | 3 | 4 | 5 |
| 605 | የጡት ካንሰር ቢይዘኝ ከሌሎች በሽታዎች ይልቅ በጣም አደገኛ ሊሆን እንደሚችል እገምታለሁ | 1 | 2 | 3 | 4 | 5 |
| 606 | የጡት ካንሰር እንደ ሌሎች አይነት የካንሰር አይነቶች አደገኛ አይደለም | 1 | 2 | 3 | 4 | 5 |
| 607 | የጡት ካንሰር በሽታ ቢይዘኝ ከ5 አመት በላይ በሕይወት እቆያለሁ ብዬ አላስብም | 1 | 2 | 3 | 4 | 5 |
| 608 | በጡት ካንሰር ምክንያት የሚከሰት የመሞት እድል በጣም አነስተኛ ነው | 1 | 2 | 3 | 4 | 5 |

**ክፍል 7: የራስን ጡት በራስ መመርመር ስላለው ጠቀሜታ**

| ተ.ቁ | ጥያቄ | የመልስ ምድብ | | | | |
|---|---|---|---|---|---|---|
| | | በፍፁም አልስማማም | አልስማማም | እርግጠኛ አደለሁም | እስማማለሁ | በጣም እስማማለሁ |
| 701 | የራሴን ጡት በራሴ ምርመራ ማድረጌ ለራሴ ጤንነት ጥንቃቄ እያደረግሁ ነው ብዬ አስባለሁ | 1 | 2 | 3 | 4 | 5 |
| 702 | በየወሩ የራሴን ጡት በራሴ ምርመራ ማድረጌ የጡት እጢ በግዜው እንዳገኝ ይረዳኛል | 1 | 2 | 3 | 4 | 5 |
| 703 | በየወሩ የራስን ጡት በራስ ምርመራ ማድረግ በጡት ካንሰር ሳቢያ ሊመጣ የሚችለውን ሞት ይቀንሳል | 1 | 2 | 3 | 4 | 5 |
| 704 | የራሴን ጡት በራሴ ምርመራ ሳደረግ ምናልባት የካንሰር ምልክት የሆነውን እብጠት ወዲያውኑ ባገኝ የጡት ካንሰር ሕክምናዬ የተሻለ ሊሆን ይችላል | 1 | 2 | 3 | 4 | 5 |
| 705 | በየወሩ የራሴን ጡት በራሴ ምርመራ ማድረግ ስለ ጡት ካንሰር የሚኖረኝን ጭንቀት ይቀንሳል | 1 | 2 | 3 | 4 | 5 |
| 706 | በየወሩ የራስ በራስ የጡት ምርመራ ባደርግ በጡት ካንሰር ብያዝም እንኳን የሰውነት ቅርጼን ከሚለውጥ ቀዶህክምና የመጋለጥ እድሌን እቀንሳለሁ፡፡ | 1 | 2 | 3 | 4 | 5 |

**ክፍል 8: የራስን ጡት በራስ መመርመር ትግበራን የሚያግዱ/ እንከን የሚፈጥሩ**

| ተ.ቁ | ጥያቄ | የመልስ ምድብ | | | | |
|---|---|---|---|---|---|---|
| | | በፍፁም አልስማማም | አልስማማም | እርግጠኛ አደለሁም | እስማማለሁ | በጣም እስማማለሁ |
| 801 | የራስ በራስ የጡት ምርመራ ማድረግ ለእኔ ኣሳፋሪ ነው | 1 | 2 | 3 | 4 | 5 |
| 802 | የራስ በራስ የጡት ምርመራ ማድረግ ረጅም ሰኣት ይፈጅብኛል፡፡ | 1 | 2 | 3 | 4 | 5 |
| 803 | የራሴን ጡት በራሴ ለመመርመር የማካሂድበትን ጊዜ ማስታወስ ለኔ በጣም ከባድ ነው | 1 | 2 | 3 | 4 | 5 |
| 804 | የራስ በራስ የጡት ምርመራን ብቻዬን በነጻነት የማደርግበት ምቹ የሆነ ቦታ የለኝም፡፡ | 1 | 2 | 3 | 4 | 5 |
| 805 | በጤና ባለሙያ የጡት ምርመራ ከተደረገ የራስን ጡት በራስ መመርመር ብዙም | 1 | 2 | 3 | 4 | 5 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | አስፈላጊ አይደለም | | | | | |
| 806 | በጡት መመርመሪያ ማሽን(ማሞግራፊ) በየወቅቱ ምርመራ የምታደርጊ ከሆነ ራስን በራስ ጡትን መመርመር አስፈላጊ አይደለም | 1 | 2 | 3 | 4 | 5 |
| 807 | የራሴን ጡት በራሴ ለመመርመር ጡቴ በጣም ትልቅ ነው | 1 | 2 | 3 | 4 | 5 |
| 808 | ራስን በራስ የጡት ምርመራ ከማካሄድ ይልቅ ይበልጥ ሌላ አንገብጋቢ ችግር አለብኝ | 1 | 2 | 3 | 4 | 5 |
| 809 | የራሴን ጡት በራሴ ምርመራ የማደርግ ከሆነ ስለ ጡት ካንሰር እንድጨነቅ ያደርገኛል | 1 | 2 | 3 | 4 | 5 |
| 810 | የራሴን ጡት በራሴ ብመረምር ቤተሰቦቼ መሳቂያ ያደርጉኛል | 1 | 2 | 3 | 4 | 5 |
| 811 | የራስን ጡት በራስ መመርመር አዲስና አስቸጋሪ የሆነ ልማድ መጀመር ነው | 1 | 2 | 3 | 4 | 5 |

**ክፍል 9: የራስን ጡት በራስ መመርመርን በተገቢው ሁኔታ ስለማድረግ**

| ተ.ቁ | ጥያቄ | የመልስ ምድብ | | | | |
|---|---|---|---|---|---|---|
| | | በፍፁም አልስማማም | አልስማማም | እርግጠኛ አደለሁም | እስማማለሁ | በጣም እስማማለሁ |
| 901 | የራስን የጡት በራስ ምርመራ ማደረጉን እችልበታለሁ | 1 | 2 | 3 | 4 | 5 |
| 902 | የራስን የጡት በራስ ምርመራ ማድረጉን በትክክል እችላለሁ | 1 | 2 | 3 | 4 | 5 |
| 903 | የራስን ጡት በራስ በመመርመር የጡት እጢ ማግኘት እችላለሁ | 1 | 2 | 3 | 4 | 5 |
| 904 | የአተር ፍሬ የሚያክል የጡት እጢን በራሴ በመመርመር ማግኘት እችላለሁ | 1 | 2 | 3 | 4 | 5 |
| 905 | ራስን በራስ የጡት ምርመራ ለማድረግ የሚያስችሉ ቅደም ተከተሎችን በእርግጠኝነት አውቃለሁ | 1 | 2 | 3 | 4 | 5 |
| 906 | ራስን በራስ የጡት ምርመራ በማደርግበት ጊዜ የተለየ ነገር ቢገጥመኝ መናገር እችላለሁ | 1 | 2 | 3 | 4 | 5 |
| 907 | በመስተዋት ጡቴን ስመለከት የተለየ ነገር በጡቴ ላይ ባይ መናገር እችላለሁ | 1 | 2 | 3 | 4 | 5 |
| 908 | የራሴን ጡት በራሴ በምመረምርበት ጊዜ ትክክለኛውን የጣቶቼን ክፍል መጠቀም እችላለሁ | 1 | 2 | 3 | 4 | 5 |
| 909 | ጡቴን በመዳሰስ ከወትሮው ለየት ያሉ ነገሮችን መለየት እችላለሁ | 1 | 2 | 3 | 4 | 5 |
| 910 | የራሴን ጡት በራሴ ምርመራ በማድረጌ በራሴ መተማመን ይሰማኛል | 1 | 2 | 3 | 4 | 5 |

**ክፍል 10: የራስን ጡት ምርመራ ለማድረግ ተነሳሽነት**

| ተ.ቁ | ጥያቄ | የመልስ ምድብ | ይለፉ |
|---|---|---|---|
| 1001 | የጡት ካንሰር ያለባት የቤተሰብ አባል አለሆት ? | 1. አሆ | |

| | | | |
|---|---|---|---|
| | | 2. የለኝም | |
| 1002 | ባለፈው አንደ ወር ውሰጥ ራሷን በራሷ ጡቷን የምትመረምር ሴት አጋጥሞታል ወይም ስለሷ ሰምተዋል? | 1. ኣዎ<br>2. ኣልሰማሁም | |
| 1003 | ባለፈው አንደ ወር ውሰጥ በጡት ካንሰር የተያዘች ሴት አይተዋል ወይንም መያዝዋን ሰምተዋል | 1. አዎ<br>2. ኣልሰማሁም | |
| 1004 | ባለፈው አንደ ወር ውሰጥ ከሚድያ /ከጋዜጣ ወዘተ ስለጡት ካንሰር ወይንም ራስን በራስ የጡት ምርመራ ስለማድረግ ሰምተዋል /አንብበዋል | 1. አዎ<br>2. አልሰማሁም | |

Annex 5: Map of Addis Ababa City Administration