

**KNOWLEDGE, ATTITUDE AND PRACTICES AMONG FEMALE HIGH  
SCHOOL TEACHERS TOWARDS EARLY DETECTION OF BREAST  
CANCER IN ADDIS ABABA, ETHIOPIA**

by

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TEACHERS TOWARDS EARLY DETECTION OF BREAST CANCER IN ADDIS  
ABABA, ETHIOPIA**

I declare that the above dissertation is my own work and that all the sources I have used or quoted have been indicated and acknowledged by means of complete references.

I further declare that I submitted the dissertation to originality checking software and that it falls within the accepted requirements for originality.

I also declare that I have not previously submitted this work, or part of it, for examination at UNISA for another qualification or at any other higher education institution.



18 MAY 2022

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**ABSTRACT**

**Background:** Breast cancer is one of the most common cancers in females and a leading cause of annual deaths. Health education and early detection of breast cancer may reduce and prevent death, and teachers could be the key.

**Objectives:** To determine the knowledge, attitude and describe the practices of female high school teachers towards early detection of breast cancer.

**Methods:** A quantitative descriptive study was conducted in public high schools in Addis Ababa. A self-administered questionnaire collected responses from a sample of 195 respondents. Data analysis used the Statistical Package for Social Sciences (SPSS) (2019), Version 22.0 program, and presented as descriptive and inferential statistics.

**Results:** Results revealed a low level of knowledge and practice of, and a negative attitude towards the early detection of breast cancer by female high school teachers.

**Conclusion:** The knowledge, attitude and practice related to breast cancer needs to be improved among female high school teachers.

**Keywords**

Attitude; breast self-examination; clinical breast examination; knowledge; mammography; practice, school teachers



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**ACRONYMS AND ABBREVIATIONS USED**

AACAEB	Addis Ababa City Administration Education Bureau
ACS	American Cancer Society
AIDS	Acquired Immune-deficiency Syndrome
BC	Breast cancer
BCS	Breast cancer screening
BMA	British Medical Association
BSE	Breast self-examination
CBE	Clinical breast examination
DES	Diethylstilbestrol
DMPA	Depot-medroxyprogesterone acetate
DNA	Deoxyribonucleic acid
ETB	Ethiopian Birr
FMoH	Federal Ministry of Health
HBM	Health Belief Model
IARC	International Agency for Research on Cancer
IRB	Institutional Review Boards
KAP	Knowledge, attitude and practice
MoE	Ministry of Education
NCDs	Non-communicable diseases
SAQ	Self-administered questionnaire
SPSS	Statistical Package for Social Sciences
TB	Tuberculosis
UNISA	University of South Africa
WHO	World Health Organization



## CHAPTER 1

### ORIENTATION TO THE STUDY

#### 1.1 INTRODUCTION

The world is facing an increase in the burden of non-communicable diseases (NCDs). Health services, as well as social and economic development of low- and middle-income countries, are facing major challenges due to the increasing burden of NCDs. Even though all societies and economies are experiencing the adverse human, social and economic effects of NCDs, they are devastating for the poor and vulnerable populations (WHO, 2014:2). The expected pace and scale of the epidemiologic shift to non-communicable diseases will present significant challenges to the healthcare systems of many lower-income nations (Bollyky, Templin, Cohen & Dieleman, 2017:1866). Among the major NCDs that pose challenges to the health system are cancers, cardiovascular diseases, and diabetes. The World Health Organization (WHO) recommends that countries must collect local data on disease and risk burden as well as monitor the trends and determinants of NCDs and evaluate the progress in their prevention and control to set quantifiable goals and priorities for reducing NCDs (WHO 2014:3). Cancer is the second leading cause of death globally among NCDs. The World Health Organization estimated that 8.2 million people died of cancer in 2012. Low- and middle-income countries, where resources for prevention, diagnosis and treatment of cancer are limited or non-existent, account for more than 80% of all cancer deaths (WHO, 2014:9). Even though cancer is a global public health problem, many countries have not included cancer control in their national healthcare agendas as they face competing health problems such as TB, HIV malaria and other infectious diseases. Many developing countries have historically focused on acute care of major public health problems rather than preventive or chronic care that non-communicable diseases demand, hence, NCD targeted government health spending remains low in poor nations (Bollyky et al., 2017:1866). Breast cancer is the most common cancer in females and the second most frequent malignant tumour after lung cancer in overall figures worldwide (Bray, Ferlay, Soerjomataram, Siegel, Torre et al., 2018:394). Therefore, it is considered a major public health problem throughout the world as it is the most common cancer affecting women both in developed and developing

countries. Female breast cancer accounts for one in four of all new cancers diagnosed worldwide each year and considered as the principal cause of death from cancer among women globally (WHO, 2018:2). The effect of breast cancer could however be reduced to a great extent and prevent deaths among women through comprehensive cancer control that involves prevention, early detection, diagnosis and treatment, rehabilitation and palliative care (WHO, 2015a:1).

Breast cancer (BC) is the second most common cancer among women in Ethiopia (Lemlem, Sinishaw, Hailu, Abebe & Aregay, 2013:1). The estimate is that around 10,000 Ethiopian women and men have breast cancer, with thousands or more cases unreported as women living in rural areas often seek treatment from traditional healers before seeking help from the government health system (Lemlem et al., 2013:1). According to the Ethiopian Cancer Association's (2013) report, about two-thirds of Ethiopian patients with breast cancer presented with advanced stages at which time therapy offers minimal benefit. Among the estimated 60,960 annual incidents of cancer in Ethiopia, breast cancer accounted for 30.4% of the total burden. Moreover, about two-thirds of the reported annual cancer deaths occur among women, yet there is little information on the attitude and the practice of breast cancer early detection and treatment among women (FMoH, Ethiopia, 2015:8). Among the factors for the higher incidences of breast cancer in Ethiopia are low levels of awareness, lack of effective screening programmes, overshadowing by other health priorities such as AIDS, TB, malaria, and insufficient attention to women's health (Getahun, Mazengia, Abuhay & Birhanu, 2013:2).

Assessment of knowledge, attitude and behaviours among female high school teachers is essential to reduce the risk of breast cancer among future young generations. However, the practice of any of breast cancer screening methods is dependent on the awareness about breast cancer and its early detection through knowledge, attitude and the practice towards the disease. Faronbi and Abolade (2012:114) regard high school teachers as change agents who can offer counselling and health promotion among communities with low literacy levels.

This study therefore intends to explore the knowledge, attitude, and practice among female teachers toward early detection of breast cancer in the capital city of Ethiopia, Addis Ababa.

## **1.2 RESEARCH PROBLEM**

### **1.2.1 Source of the research problem**

Research problems may arise from many sources, such as clinical practice, observation of health-related patterns, interactions with stakeholders, literature, theory, ethical dilemmas and established research priorities. The research problem for this study originates from the sources mentioned by Brink, Van der Walt and Van Rensburg (2018:50) and Polit and Beck (2018:153), namely clinical practices, health sciences literature, and social issues. The researcher, as a clinician working in hospitals in Ethiopia, observed that a high number of women presented at the facilities with advanced breast cancer for treatment. Through personal experience and social contacts of cases of breast cancer treated at an early stage, the researcher observed a more favourable outcome of earlier treatment of breast cancer. To detect BC early, women need to be empowered with knowledge to detect early warning signs, and be encouraged to have a positive outlook on their own health, through the application of preventative healthcare. The researcher is of the opinion that using females in other non-medical sector professions may positively impact the public's health awareness. It is for this reason that utilising female teachers could also bring about a desired behavioural change among the youth at schools and the larger community in the knowledge, attitude, and practices related to early detection of breast cancer. Smith (2015) highlighted the concern for the rising trend of cancer in general, and breast cancer in particular, prior to the World Health Organization's annual Cancer Day in February 2015. This has further influenced the researcher's interest towards breast cancer as a priority area for a research problem. The four most important considerations in the decision-making process of selecting a research problem, the significance, researchability, and feasibility of the problem, and its interest to the researcher, were considered (Polit & Beck, 2018:164).

### **1.2.2 Background to the research problem**

Breast cancer is estimated to be the most frequently diagnosed and leading cause of cancer death in females' worldwide, accounting for 24.2% (1.45 million) of the total new cancer cases and 15% (492,214) of the total cancer deaths in 2018. The estimate

is that approximately half of the 1.45 million breast cancer cases and 60% of the deaths are estimated to occur in developing countries (Bray et al., 2018:412). Even though breast cancer was primarily a health problem of the developed world, studies show that it is becoming a public health problem in the developing world as well. A study conducted on the beliefs and the attitude about breast cancer and screening practices among Qatari women found it to be a leading cancer diagnosis among other cancers (Donnelly, Al Khater, Al-Bader, Al Kuwari, Al-Meer et al., 2013: 49). Even though breast cancer ranks fifth as a cause of cancer-related deaths in both men and women, it is the most frequent cause of cancer death among women in both developed and developing countries and is therefore a world concern (WHO, 2015b:3). Although breast cancer control has become a global imperative issue, global inequities persist regarding designing control strategies that span from creating public awareness to availing screening services (Youlden, Cramb, Dunn, Muller, Pyke et al., 2012:237). Baade (2017:2) reported that many less developed countries in Asia, Latin America and Africa lacked adequate breast cancer screening services and treatment, hence they experienced higher mortality rates compared to favourable survival from breast cancer in developed countries.

In Ethiopia, breast cancer is the most common cancer among both genders, contributing 20.9% of all cancer cases and with an incidence of 41.5 females/100,000 population in 2020 (Global Cancer Observatory 2020). Additionally, the five-year survival rate of breast cancer in Ethiopia was 46% (Kantelhardt, Zerche, Mathewos, Trocchi, Addissie et al., 2014:705); this is similar to that reported from Uganda, with a five-year survival of 46–56%, compared to 87.7% in Sweden (Hjelm, Matovu, Mugisha & Löfgren, 2019:7). Reports from the United States indicate breast cancer accounts for nearly 30% of all new cancers in women, and is the leading cause of breast cancer related deaths in women aged between 20 and 59 years (Siegel, Miller & Jemal, 2015:11, 23). A study in Ethiopia showed that breast cancer is second to cervical cancer in prevalence among women (Getahun et al., 2013:2). Such a high prevalence of breast cancer is a concern because despite the breasts being relatively accessible organs for detection of any abnormality, there is a significant delay to detect and report breast-related diseases, such as breast cancer, by women in general.

According to Heena, Durrani, Riaz, AlFayyad and Tabasim et al. (2019:2), a study conducted in Saudi Arabia to assess the knowledge, attitude and practices related to

breast cancer screening of female healthcare professionals in a tertiary institution found it was lower than expected. Other reports on studies conducted in countries such as Kuwait to evaluate the knowledge, attitude and the practice of breast cancer screening among female teachers revealed inadequate knowledge and awareness of the disease (Alharbi, Alshammari, Almutairi, Makboul & El-Shazly, 2012:80); however, the researcher observed that similar studies among female teachers could not be found in Ethiopia.

Global cancer statistics show that patients in communities with a high level of breast cancer awareness often present with less advanced stages, whilst those in communities with a low level of awareness usually present at a more advanced stage, which is of importance in the prevention and treatment of breast cancer (Akram, Iqbal, Daniyal & Khan, 2017: 1). Early detection and treatment of breast cancer is associated with better chance of long-term survival. In Ethiopia, reports show that about 70.8% (n=1,070) of patients with breast cancer present with advanced stages when therapy offers minimal benefit (Kantelhardt et al., 2014:705), which is attributed to a low awareness of the public on breast cancer (De Ver Dye, Bogale, Hobden, Tilahun, Hechter et al., 2011:719). In a multi-country population-based cancer registry study in sub-Saharan countries, for all cases combined, the 5-year age standardised relative survival was 66.3% (60.4–71.5), in contrast to a rate of 81.8% in Europe (79.2% in UK and Ireland) and 91.1% in the USA (83.1% among Black women) (Joko-Fru, Miranda-Filho, Soerjomataram, Egue, Akele-Akpo et al 2020:1210). The secondary preventive methods used for the early detection of breast cancer include mammography, clinical breast examination (CBE) and breast self-examination (BSE) (Albeshan, Hossain, Mackey & Brennan, 2020:2). When combined with an appropriate treatment, early detection through breast cancer screening (BCS) activities BSE, CBE and mammography decrease cancer mortality rates by 25-30% (Donnelly et al., 2013:49). While these methods have been effective in decreasing morbidity in developed countries, countries such as Ethiopia still need to establish a well-functioning breast cancer control programme, at the core of which should be interventions for early-stage case detection.

According to the American Cancer Society (ACS), CBE and mammography are recommended as early detection methods of breast cancer but not BSE, as there is evidence in literature that BSE does not increase survival rate (Kiguli-Malwadde,

Mubuuke, Businge, Kawooya, Nakatudde et al., 2010: 3). However, in a country like Ethiopia, which is developing and is in a resource constrained setting, BSE is still an important and viable option where access to CBE and mammography might not be easy due to travelling costs and lack of wide availability of mammography equipment in health facilities. Despite these screening methods being widely recognised, their uptake by women depends on their knowledge, attitude and practice toward the importance of early detection of breast cancer.

Breast cancer has a poorer outcome with an advanced stage at presentation for treatment, but if discovered early it can usually be cured with a possibility in reduction of mortality (Black & Richmond, 2019:9). The practice of breast cancer screening in turn is dependent on the knowledge, awareness, and attitude of communities towards breast cancer. Even though teachers are not directly involved in the care and treatment of patients with breast cancer, they can play an advocacy role in creating an environment that is supportive of screening and awareness behaviours by offering positive role modelling within the community and the school environment through communication and motivation of young students to practice breast cancer screening and health in general, and in early detection in particular. It is unnecessary to mention the fact that most women go through the education system in one way or another, and thus are accessible for information dissemination. Public advocacy can be taken as a strategy to promote breast cancer awareness among the community. Apart from the nurses, other sector professionals, such as female high school teachers, can also be regarded as important role models, and schools may present a good opportunity in the communities where they live to influence early screening and uptake for breast cancer.

Teachers as a role model can motivate and inspire other members of the community to achieve wellness, reach greatest potential, and recognise the best for health outcomes. Communities benefit from them, as a result of their dedication to greatness and capacity to inspire others to achieve personal progress. Many people look to them for advice and direction.

Female high school teachers are in a strategic position to act as role models and can play an effective role in education, communication and motivation of young students and peer teachers on breast cancer risk factors and types of screening practices, and can influence behaviours that will reduce the risk of future breast cancer morbidity and

mortality. School teachers are also classified as a 'well-educated' sector in a country, therefore it is assumed that they are well-versed on breast cancer. They may play an important role in providing health education and supporting good behaviour in relation to breast cancer screening practise for future generations.

### **1.2.3 Statement of the research problem**

A research problem is a puzzling, perplexing, or worrying circumstance that one finds in a wide topic field of interest (Polit & Beck, 2018:168). The aim of research is to "solve" or contribute to the solution of a problem by gathering relevant data. Limited or lack of correct knowledge, attitude and practices towards early detection of cancers, such as breast cancer, is the driving force for the high mortality associated with the outcome of the disease. Breast cancer has a high case-fatality rate, making it a leading cause of death among adult women in developing countries (Ferlay, Soerjomataram, Dikshit, Eser, Mathers et al., 2013). There is a need to focus on early detection of breast cancer by addressing the lack of knowledge in breast health, negative attitude associated with its early detection and the low practice of early detection methods in communities. The problem in the study is the perceived low level of the general population's awareness about breast cancer, which calls for exploring the status of breast cancer awareness among women in an urban set-up, particularly female high school teachers who could play an advocacy role in creating awareness among the youth within the school community. The researcher is of the opinion that one way to improve the low-level awareness among the community regarding breast cancer is to utilise change agents such as female high school teachers. Female high school teachers play an important role in education, and they can use their position to educate young female students about breast cancer risk factors, various forms of screening procedures and behaviour changes that will reduce their risk of breast cancer morbidity and mortality in the future.

The researcher also noted in practice that routine mammogram screening for breast cancer for most Ethiopians is not feasible and certainly unaffordable due to cost and unavailability of the appropriate equipment in the hospitals and health centres. Even with mammogram supported screening programmes, the uptake of services will eventually depend on the public's awareness about the need for early detection of breast cancer.

### **1.3 AIM OF THE STUDY**

The aim of the study is to describe the knowledge, attitude, and practices of female high school teachers towards early detection of breast cancer working in government-owned schools in an urban setting in Addis Ababa, the capital city of Ethiopia.

#### **1.3.1 Research questions**

What is the knowledge, attitude, and practices of female high school teachers towards early detection of breast cancer?

#### **1.3.2 Objectives**

The objectives of the study were to:

- Determine female high school teachers' knowledge and attitude towards early detection of breast cancer.
- Describe female high school teachers' practices towards early detection of breast cancer

### **1.4 SIGNIFICANCE OF THE STUDY**

The study will contribute in revealing the level of knowledge and practice towards early detection of breast cancer among high school teachers, which will assist in motivating for interventions toward early breast cancer detection. It can also serve as a baseline study to promote partnerships between the health and education sectors' professionals in establishing effective breast health programmes in the high school environment where the future generation prevails.

### **1.5 DEFINITION OF KEY CONCEPTS**

#### **1.5.1 Attitude**

The assessment of objects that occurs in ongoing thoughts or is stored in memory is referred to as attitude. Beliefs, affects and behaviour in relation to the attitude object may all influence and be influenced by attitude (Matsumoto, 2009:59). In this study, attitude refers to the negative or positive feelings toward breast self-examination, clinical breast examination and mammography by female high school teachers.



### **1.5.2 Breast cancer**

A disease characterised by the abnormal and unrestrained growth of cells leading to malignant growth or tumour that develops in breast tissue and destroys it; it can also spread to other parts of the body via metastasis (British Medical Association, 2018:94). In this study, breast cancer will be defined as a cancerous tumour of the breast in a woman teaching in high school.

### **1.5.3 Clinical breast examination**

Clinical breast examination refers to the procedure conducted on breasts by physicians or healthcare providers to palpate the abnormal swelling of breasts (WHO, 2018:2). In this study, a clinical breast examination refers to physical examination of the breasts of a woman teaching in a high school by a trained health professional through inspection and palpation of the breasts for the possible presence of a lump or tumour.

### **1.5.4 Early detection**

The aim of early detection or diagnosis of a disease, in this case breast cancer as it has a high potential for cure, is to diagnose the cancer when it is localised to the organ of origin, namely the breast, and before it invades the underlying tissues and distant organs (WHO, 2016a). In this study, early detection refers to the recognition of the presence of breast cancer at the onset of the illness.

### **1.5.5 Female high school teacher**

In this study, a female high school teacher will be defined as a woman educated in the field of science or social science education, and whose occupation is to teach in Grades 9-12 of a high school (Federal Ministry of Health, Ethiopia, 2015:33).

### **1.5.6 High school**

A school is a facility that provides education by the level of post-primary school education but prior to enrolment to college. In this study, it refers to an institution providing education from Grades 9-12 (Federal Ministry of Health, Ethiopia, 2015:33).

### **1.5.7 Knowledge**

The word “knowledge” refers to information shared or exchanged with others (Chinn & Kramer, 2011:3). Knowledge, in this study, is the understanding the female high school teachers have about the early detection of breast cancer with respect to symptoms, prevention and screening methods.

### **1.5.8 Mammography**

A technique using X-ray imaging to detect breast cancer before the feeling of a lump. It allows the detection of breast tumours that are too small for discovery during a physical examination, and helps to diagnose and locate tumours of the breasts (British Medical Association, 2018:354). In this study, it is an X-ray examination of the breasts of a female high school teacher.

### **1.5.9 Practices**

The description of practices, as opposed to theories, is the actual implementation or use of a concept, belief, or method. It refers to the demonstration of knowledge and attitude through actions (Matsumoto, 2009:395). In this study, activities apply to the different ways in which female high school teachers demonstrated their practice toward early breast cancer detection through their knowledge and attitude. The actions included intentions or actually performing or undergoing BSE, CBE and mammography.

## **1.6 FOUNDATIONS OF THE STUDY**

### **1.6.1 The conceptual framework applied in this study**

A theory's fundamental building blocks are concepts. Conceptual models deal with abstractions put together based on their shared theme. They can serve as springboards for generating research hypothesis (Polit & Beck, 2018:85).

- **Conceptual framework**

A conceptual structure provides guidance for a study and helps a researcher to explain the results in a rational and structured manner (Stommel & Wills, 2004:15). One of the popular conceptual frameworks in studies focused on patient compliance and preventive healthcare practices is the Health Belief Model (HBM). It is the most commonly used principle of health promotion and education. The fundamental principle of HBM is that personal beliefs or attitude about a disease, as well as the methods available to minimise its occurrence, affect health behaviour. The major components of the HBM include a perceived susceptibility, perceived severity, perceived benefits and costs, motivation, and enabling or modifying factors. Perceived susceptibility is a person's perception that a health problem is personally relevant or that a diagnosis is accurate. Even when one recognises personal susceptibility, action will not occur unless the individual perceives the severity to be high enough to have serious organic or social implications. Perceived benefits are the patients' beliefs that a given treatment will cure the illness or help prevent it, and perceived costs are complexity, duration, and accessibility of the treatment. Motivation is the desire to comply with a treatment. Among the modifying factors identified are personality variables, patient satisfaction and socio-demographic factors (Polit & Beck, 2018:197).

The current study is built upon an adapted HBM system to hypothesise that if high school teachers are insufficiently informed, as demonstrated by their knowledge and attitude toward early detection of breast cancer, they would be unable to engage in breast cancer screening activities. The practice, as displayed in their readiness to undergo screening for breast cancer, follows a feasibility assessment on whether their actions sanction or support their perceived susceptibility.

## **1.7 RESEARCH METHODOLOGY**

The study followed a quantitative cross-sectional descriptive survey design. Quantitative analysis is a method for generating numerical data about the world that is formal, analytical, comprehensive and systematic (Burns & Grove, 2017:107). As the study did not test a hypothesis nor has comparison groups, this makes it a descriptive study. The study focused on early detection of breast cancer from a representative sample of a population, which, in this study, is a population of female high school teachers, in a narrowly defined time span and geographically located

population, in this instance Addis Ababa. Thus, this study, meets the definitions and character of a cross-sectional design.

### **1.7.1 Study setting**

The study took place in Addis Ababa public high schools administered by Addis Ababa City Administration Education Bureau (AACAEB), which is a government body that overlooks the licensing and overall control of teaching-learning activities at high schools in Addis Ababa. According to evidence from City Government of Addis Ababa Education Bureau, there are 211 high schools with a mean distance between 7 to 9 Kilometres and 985 female teachers teaching at these schools (Ministry of Education, Ethiopia, 2014/15:34).

### **1.7.2 Target population**

The total population for this study were all female teachers, teaching at the 211 high schools in Addis Ababa.

### **1.7.3 Study population**

Female high school teachers on employment at high schools, accessed through simple random sampling of the target population, present during the data collection of this study were the accessible population for this research.

### **1.7.4 Sampling, sample size and sampling technique**

Selection used simple random sampling to select a representative sample of high schools in Addis Ababa. The names of all 211 high schools were obtained and numbers, randomly generated by a computer, assigned to each name. The corresponding schools to the numbers generated by the computer became the sample population and all female teachers in these schools at the time of the data collection received questionnaires. The process continued until saturation of the sample size occurred; it took 30 schools to saturate the sample size. The sample size was determined using a single population Proportion formula,  $n = z^2p(1-p)/w^2$ .

The final sample size of female teachers enrolled into the study was computed to be 195, including an estimated 10% non-response rate.

As to sampling of the population, from a list of the selected 30 high schools (Table 1.1), every female teacher on duty during the day of data collection was selected to be included in the sample. All the teachers for the study were full-time teachers; part time teachers were not included in the sample as they may work in multiple schools in different shifts and hence may participate as a respondent more than once.

**Table 1.1 Distribution of respondents by school & sub city**

Sub city	Name of High school	No Respondents
Addis Ketema sub-city	Abyssinia Secondary school	6
	Addis ketema Secondary school	4
	Efoyta Secondary school	4
AkakiKaliti Sub-city	Kality Secondary school	5
	EthioJapan Hidasie Secondary school	4
Arada Sub-city	Agazian No. 3 Secondary school	5
	W/re Kelemework Secondary school	4
	Meskerem Secondary school	6
	Dagmawi Minilik Secondary school	7
Bole Sub-city	Bole Secondary school	9
	Dr Hadis Alemayehu Secondary school	5
	Beshale Secondary school	8
Gullele Sub-city	Entoto Amba Secondary school	9
	Kechene Debreselam Secondary school	6
	Medhanealem Secondary school	7
Kirkos Sub-city	Temenja Yazh Secondary school	5
	Shimelis Habte Secondary school	8
Kolfe Sub-city	Repi Secondary school	7
	Ayer Tena Secondary school	9
	Ewket Lefre Secondary school	8
	Millinium Secondary school	10
Lideta Sub-city	Dej Balcha Abanefso Secondary school	11
	Hidassie-Lideta Secondary school	4
Nefasilk Lafto Sub-city	Ewket Lehibret Secondary school	7
	Higher 23 Secondary school	5
	Fitawrari Lake Adig Secondary school	6
	Ginbot 20 Secondary school	6
Yeka Sub-city	Kokebe Tsibha Secondary school	10
	Millinium Secondary school	5
	Karallo Secondary school	7
		195

### **1.7.5 Data collection**

The data collection approach for this study used a self-administered structured questionnaire. Data collection occurred from 2<sup>nd</sup> November to the 26<sup>th</sup>, 2018. After reviewing previous research on the subject of interest, a pre-tested standardised questionnaire was adapted from the works of Ibrahim & Odusanya and other authors which served as the origin of the questionnaire used in the current study (Faronbi & Abolade, 2012; Ibrahim & Odusanya, 2009; Akhigbe & Omuemu, 2009; Donnelly et al., 2013; Alharbi et al., 2012).

The questions were in English and in the form of closed-ended Likert scale to simplify the response. To ensure the addressing of all the objectives of the study, there was a review undertaken by colleagues experienced in research methodology. For this study, the achieving of validity was through two steps. An extensive literature search and review occurred in the related field to ensure that the instrument accounted comprehensively to the essential elements of the variables or concepts measured, i.e., all appropriate questions of knowledge, attitude and practice on early detection methods for breast cancer. Furthermore, there was consultation with a statistician and one researcher colleague, and their respective comments were included to ensure the instrument addressed all the major elements. Following this, there were amendments made to the sample size, from 195 to 215 by considering a non-response rate of 10% and rephrasing the data abstraction tool. The questionnaire was pretested on 20 high school teachers, in Addis Ababa, excluded from the actual study. Subsequently, there was a replacing of medical jargons and difficult-to-understand terms to easy-to-understand terms, for instance corrections such as rephrasing menarche to menstruation, and irradiation to X-ray. The average time taken to complete the self-administered questionnaire (SAQ) was around 35 minutes.

The collection of data took place after ethical clearance from the Higher Degrees Committee, Department of Health Studies of the University of South Africa (UNISA) (Annexure 1). Following this was seeking and granting of ethical permission from the Institutional Review Board of the Addis Ababa City Health Bureau (Annexure 2, Annexure 3). The researcher assigned the schools into random sampling and collected the data from the selected schools using a self-administered questionnaire.

The data collection procedure took place in the school premises, in the multi-purpose halls after prior arrangement with the respective school headmasters. The respondents were requested to complete the informed consent forms (Annexure 4) and questionnaires (Annexure 5) in their own time. After completing the questionnaires, the respondents had to put the questionnaires in a sealed envelope and then in to a sealed box provided by the researcher.

### **1.7.6 Data analysis**

The questionnaires were checked for completeness once removed from the sealed envelopes, and if spoilt or damaged to the extent being unreadable would be withdrawn from analysis.

The data were coded and entered using Statistical Package for Social Sciences (SPSS) (2019), Version 22. Data cleaning involved checking the data for errors against the original data. The researcher sought the assistance of a statistician. Statistical tools, such as frequency distribution, percentages, measures of central tendency, would be used when necessary for analysis. To find out the most important factors considered as predictors of having satisfactory knowledge, a logistic regression analysis was used. The presented results will be in the form of tables, graphs and diagrams in chapter four.

## **1.8 ETHICAL AND LEGAL CONSIDERATIONS**

The Higher Degrees Committee of the Department of Health Studies at UNISA (Annexure 1) and the Addis Ababa City Health Bureau Ethical Clearance Committee (Annexure 3) granted letter of authority to conduct research.

Female high school teachers received an invite to an information session in the school, at a convenient time, as arranged with the school principal. Female teachers learned about the study's intent, their right to voluntary participation, and their right to reject or withdraw from the study without penalty during this session.

- That any information respondents provide will be held in strict confidence, that any information respondents provide will not be publicly recorded in a way that reveals

them, and that any data respondents provide will not be made available to those who are not part of the study, though the researcher's supervisors may have access if they need to verify the information.

- Confidentiality of the questionnaires was observed, as only the researcher handled the questionnaires and kept them in a in a lockable cupboard ensuring its safety and security.
- The assurance of anonymity, as not even the researcher would be able to link the respondents to their data, as no personal identifier would appear on the questionnaire.
- Written consent obtained before participation in the study. The consent forms were kept separate from the questionnaire.
- There was no anticipated physical or psychological harm, except that there could be a risk of discomfort in anticipation or history of occurrence of breast cancer to some of the respondents or relatives. They were informed they could exit from the study any time during the data collection process. Additionally, in such cases, there were arrangements made for immediate linkage to counselling and referral for care and treatment services by health professionals at nearby health facilities.
- In this study, there was no payment or other form of incentive made to respondents for participating in the study.

## 1.10 STRUCTURE OF THE DISSERTATION

The content of this dissertation is organised into five chapters as described below.

**Chapter 1 (Orientation to the study):** Provides orientation and introduction to the study. This includes the background information about the research problem, the statement and significance of the research problem. It discusses the research problem along with the aim and significance of the study. The chapter briefly defined key concepts before deliberating on the foundations of the research and research design and method.

**Chapter 2 (Literature review):** Discusses the literature reviewed in the context of the study and presents a conceptual framework of *knowledge, attitude, and practices among female high school teachers towards early detection of breast cancer*. The



chapter presents a brief review of literature on breast cancer and its early detection methods, as well as the concept of the Health Belief Model to set the context of the conceptual framework to be used in the study.

**Chapter 3 (Research design and methods):** This chapter presents the research design, study population, sampling procedures, data collection method and analysis, and measures taken to improve validity and reliability of the study findings. The chapter also presents the ethical issues covered in the study.

**Chapter 4 (Analysis, presentation and interpretation of the research results):** Discussion on the data analysis procedures employed, the research findings and their correlation and contrast to findings of literature reviewed. The chapter presents a brief description of data management and analysis, highlighting the actual procedures employed during the research process and the research results, beginning with sample characteristics, through to descriptive and inferential statistics.

**Chapter 5 (Conclusions, limitations and recommendations):** Interprets the research findings concerning knowledge, attitude, and the practices among female high school teachers toward early detection of breast cancer in Addis Ababa, Ethiopia. The conclusions generated are in line with the research questions and the statement of the problem and the recommendations based on the findings. Drawing of conclusions, outlining of limitations and making recommendations based on research results are at the end of the chapter.

## **1.11 SUMMARY**

This chapter outlined the orientation of the study. The background about the research problem was presented, with an emphasis on the source of the problem, which was linked to knowledge, attitude, and practice regarding early detection of breast cancer. The chapter outlined the research problem along with the purpose and objectives, the significance, key concepts and variables, foundation of the study, the research design and methods, the data collection and analysis and ethical and legal considerations.

## **CHAPTER 2**

### **LITERATURE REVIEW**

#### **2.1 INTRODUCTION**

The previous chapter gave an overview of the study. This chapter reviews the literature in terms of types, sources of the conceptual framework, theme and content pertaining to breast cancer. A literature review provides context for what is known and unknown about a topic and allows researchers to determine which type of study will better add to the current body of knowledge (Babbie, 2016:488). It can also suggest a need to replicate a prior study in a different study population. In so doing, it can help to lay the foundation for the study, inspire new research ideas and direct the arguments about the need for a new study, research methods and the conceptual framework (Polit & Beck, 2018:171). This chapter will provide the background for understanding current knowledge and highlight the importance of the current research in the context of early detection of breast cancer in females. As it is a key step in the research process, there was an in-depth review of the literature prior to the data collection process. The researcher has undertaken an extensive literature survey regarding breast cancer in women, its early detection and use of other sector professionals, such as high school teachers, as advocates.

#### **2.2 SOURCES AND THEMES OF LITERATURE REVIEW**

The literature review, in general, is generated from primary sources. A primary source is written by the person who originated or is responsible for the ideas published. A secondary source summarises or quotes content from primary sources (Kumar, 2014:133). While using secondary data source, the author interprets the works of someone else and the interpretation, which the latter author's perception and bias could influence. Therefore, use of secondary resources increases the likelihood of errors and misinterpretation of the information conveyed in the primary source (Burns & Grove, 2017:245). There is a strong recommendation that a researcher should strive to locate and utilise primary material when undertaking a study because it provides the least biased raw material (Brink et al., 2018:61). In summary, this justifies the limited use of secondary sources in this study.

The format of reviewed literature was in various forms, which include journals, books, theses and computer databases. According to Brink et al. (2018:59), the themes of literature review are categorised in to five entities, namely facts, statistics, research findings, theories or interpretations, methods and procedures, opinions, beliefs or points of view and lastly, of anecdotes, clinical impressions or narrations of incidents and situations. In this literature review, there was more focus and alignment given to the first three categories that are more objective in nature and summarised below.

Sources for conceptual frameworks used in this study include books on health behaviour theories, a thesis and health behaviour research articles. To better understand concepts of framework and conceptual model, research methodology textbooks were also consulted. Thus, theoretical sources were useful in identifying and refining concepts and formulating their interaction and interrelationship in the context of breast cancer and knowledge, attitude and practices toward its early detection. Glanz, Rimer and Viswananth's (2015:9) publication on 'Health behaviour and health education' was particularly useful in identifying health behaviour theories that best fit this study.

## **2.3 FRAMEWORKS OF THE STUDY**

This section presents and describes the conceptual model and frameworks that lay the foundation for the study.

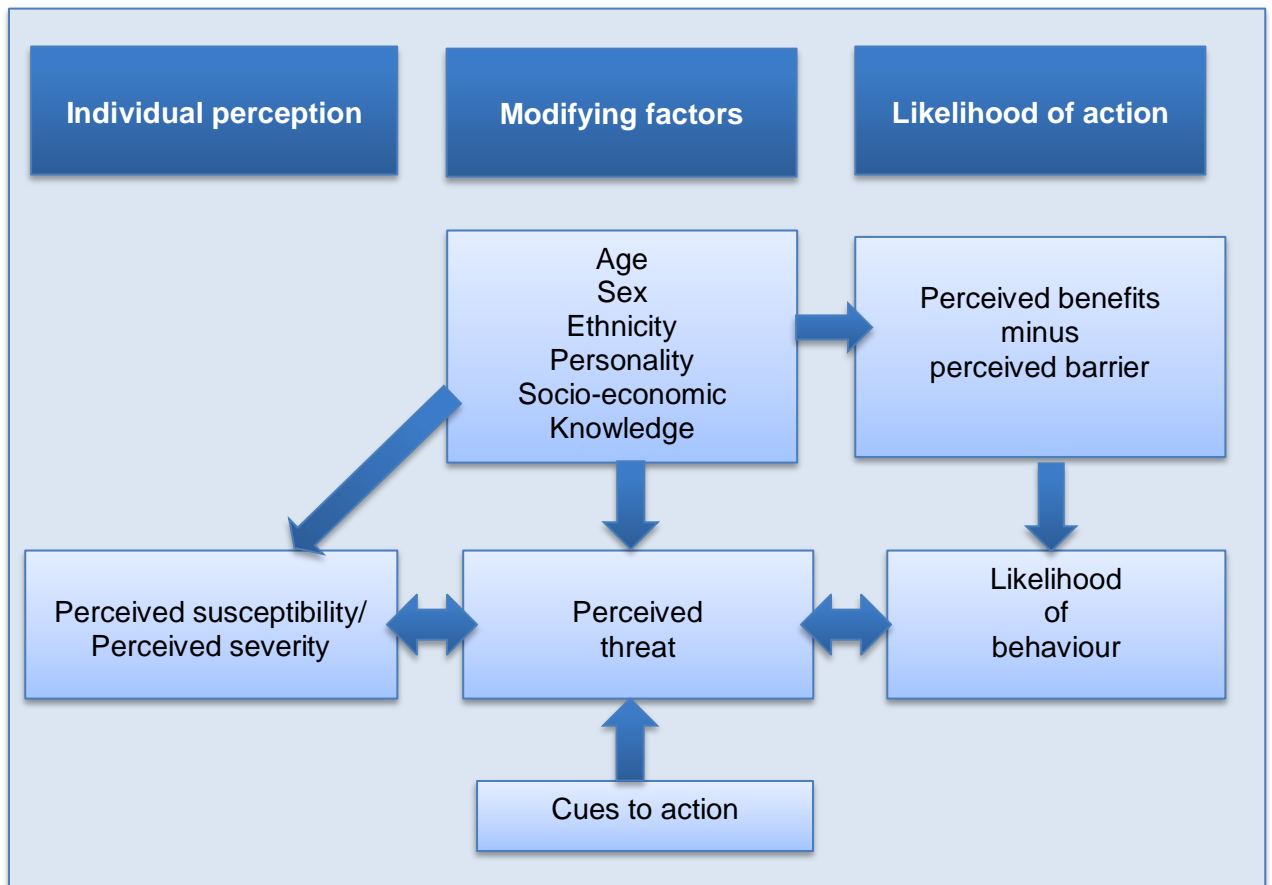
### **2.3.1 Conceptual model**

Burns and Grove (2017:278) state that the conceptual model is an integrated set of defined concepts and statements that present an outlook of a phenomenon. It is a set of highly abstract, related constructs and helps to broadly explain the phenomenon of interest, express assumptions, and reflect a philosophical position to express a concept or theory (Burns & Grove, 2017:278). A model in the form of graphic presentation better shows the interrelationship of concepts and relational statements. Therefore, to summarise and integrate what is known about a phenomenon more precisely and clearly than a literary explanation, a conceptual map is best as it allows the grasping of the "wholeness" of a phenomenon.

According to Brink et al. (2018:27), a conceptual model is a symbolic depiction of reality. It provides a schematic presentation of certain relationships in a phenomenon, and uses symbols or diagrams to represent an idea. It also helps to structure relationships while viewing a situation. Polit and Beck (2018:192) define a conceptual model as an assembly of concepts or abstractions according to their relevance to a common theme. It provides a conceptual view about an interconnected phenomenon. It can serve as a springboard for generating hypothesis. Hence, it is useful to designate a phenomenon with minimal use of words.

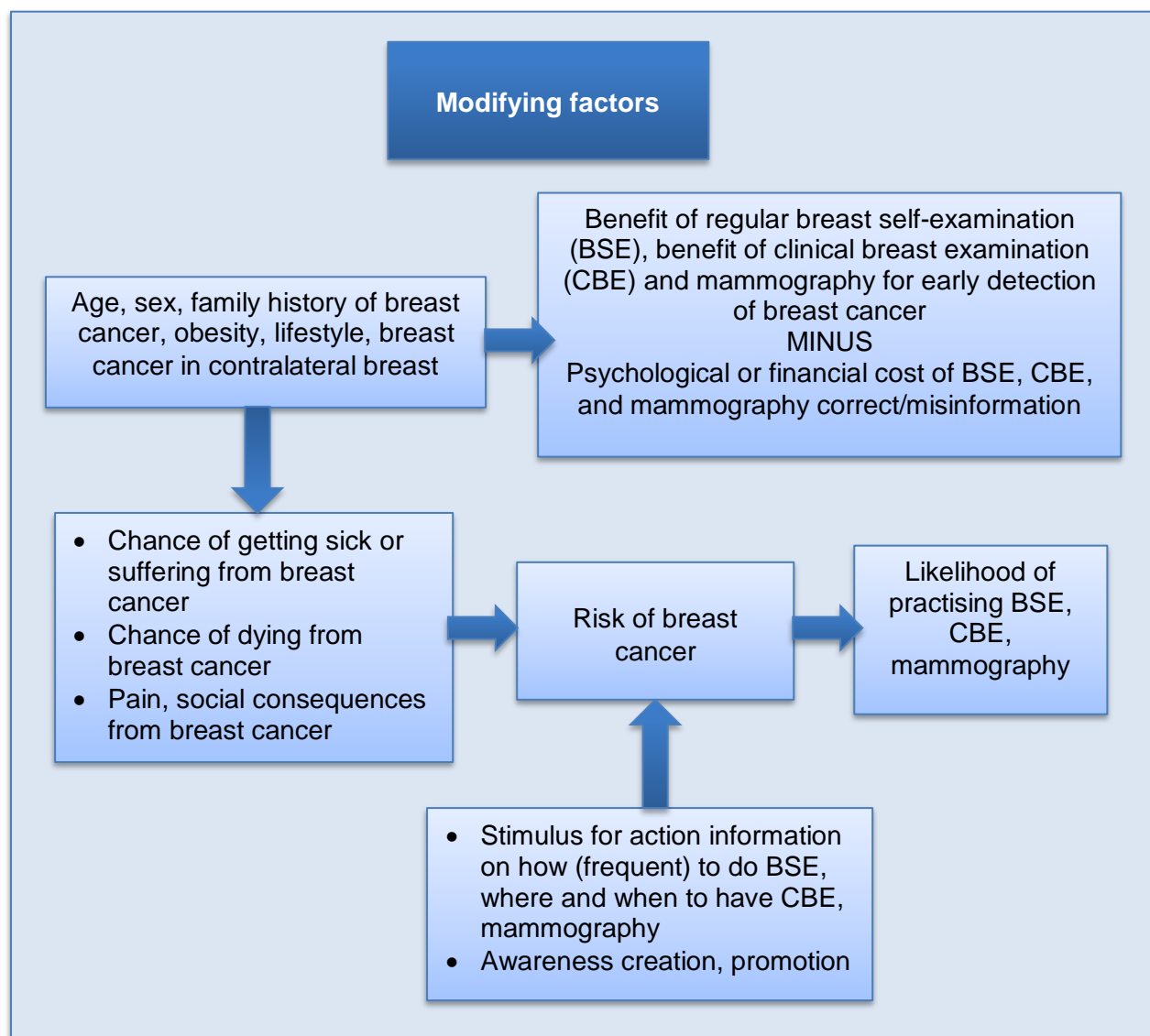
In this research, the conceptual model by Hochbaum, Rosenstock and Kegels, cited from Glanz et al. (2015:47), as depicted in Figure 2.1 was the guide. As the researcher attempts to investigate female breast cancer and its early detection, he reached the conclusion that the bottom line for establishing an effective healthcare programme, focusing on breast cancer, requires understanding the health behaviour of the individual and the community at large towards breast cancer. To achieve the goal of any health programme, the participation of targeted people is crucial, because for people to participate in a programme to prevent and detect diseases, the health belief model (HBM) is one important model or approach to practice (Glanz et al., 2015:49). The core concept in the HBM lies with the individual's acknowledgement of susceptibility and perceived severity of an illness, and of the likelihood of being able to reduce that threat through personal action. Individuals regarding themselves as susceptible to a condition, with the belief that the condition would have potentially serious consequences, and the belief that a course of action available to them would be beneficial in reducing either their susceptibility to or the severity of the condition. If an individual believes that the anticipated benefits of acting outweigh the barriers to or the cost of action, they are likely to take action that they believe will reduce their risks. In preventive health practices, the HBM is the most favoured conceptual framework. The HBM is a psychological model that seeks to explain and predict the health behaviours, through focusing on attitude and beliefs of individuals. It is a framework for explaining people's health-related behaviour, such as compliance with a medical regimen. According to the model, a person's understanding of a danger posed by a health issue, as well as the importance associated with actions aimed at mitigating the threat, affect health-related behaviour (Polit & Beck, 2018:197). The conceptual model of this study stemmed from that used by Petro-Nustas (2002:221), as illustrated in Figure 2.1. The conceptual model was also influenced by the discussion of Champion

(1993:139) on the constructs of the HBM for assessment of behaviours toward breast self-examination and mammography (Figure 2.2).



**Figure 2.1 Conceptual model of the Health Belief Model**

(Petro-Nustas, 2002:221)



**Figure 2.2 Conceptual framework for knowledge, attitude and practice on breast cancer** (Glanz et al., 2015:8)

### 2.3.2 Conceptual frameworks

Burns and Grove (2017:243) argue that conceptual frameworks are components of literature review to support a selected research problem and purpose. They assert that conceptual frameworks are also a good indicator of a well-developed quantitative study. Thus, it is an abstract explanation of why one variable is expected to have an effect on the other. A conceptual framework guides the development of the study and enables the researcher to link the findings of the study to an existing body of knowledge. Eventually a conceptual framework supports a selected research problem and purpose.

Brink et al. (2018:21) contend that a researcher can develop a conceptual framework by identifying and defining the concepts and proposing relationships between concepts. A conceptual framework interrelates concepts to create a specific way of looking at a particular phenomenon. By developing a framework within which ideas are organised, the researcher is able to show that the proposed study is an extension of current knowledge. It is a background information for a study, a less well-developed structure than a theoretical framework (Brink et al., 2018:21).

Polit and Beck (2018:193) assert that the conceptual framework is a conceptual underpinning of a study and has its basis in a defined conceptual model. It is usually implicit, i.e., not formally acknowledged or described. A conceptual framework can therefore be a testable theory that emerges either from an observation or through a research as a conceptual model or inductively built from research by researchers.

Kumar (2014:56) states that a conceptual framework is the basis of the research problem and grows out of the theoretical framework and usually focuses on the section that becomes the basis of a study. It describes the selected aspects from the theoretical framework to become the basis of an enquiry. As the conceptual framework focuses on indicators to measure the success or failure of strategies to enhance community responsiveness, it relates to the specific research problem.

In this study, the core research problem is early detection of female breast cancer; the study takes up concepts from the HBM and the study of Gochman (1997:75-76) to formulate assumptions about possible factors related to early detection of breast cancer.

### ***2.3.2.1 HBM as part of early detection of female breast cancer***

According to Glanz et al., (2015:45), the HBM has been one of the most widely used conceptual frameworks in health behavioural research, both to explain change and maintenance of health-related behaviours and as a guiding framework for health behaviour interventions. It gradually evolved and is used to serve as a foundation for interventions to change health behaviour. The subjective value of an outcome and the subjective probability, or expectation that a specific action will result in that outcome determines behaviour. In the context of health-related behaviours of the HBM, the

assumption is that when an individual values avoidance of getting an illness or getting well from an illness, there will be a parallel belief that a specific health action may prevent or ameliorate the illness. This is accurately represented in terms of the individual's estimate of personal susceptibility and perceived severity of an illness and the likelihood of being able to reduce that threat through personal action. The HBM contains several primary concepts that predict why people will take action to prevent, screen, or control illness conditions, which include susceptibility, seriousness, benefits and barriers to behaviour, cues to action and self-efficacy. In the current study, the concept of perceptions about whether individuals believed they are susceptible to breast cancer and their beliefs about the personal benefits of early detection, is the focus area. Thus, actual and perceived risks is taken up and adapted from the HBM as possible factors related to early detection of female breast cancer. The key construct behind the HBM is that if individuals regard themselves as susceptible to a condition, believe that a condition, would have potentially serious consequences, believe that a condition would have a course of action available to them that would be beneficial in reducing either their susceptibility to or severity of the condition, and believe the anticipated benefits of taking action outweigh the barriers to or costs of action, they are likely to take the action that they believe will reduce their risks (Glanz et al., 2015:47). Accordingly, the six constructs of the HBM include perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action and self-efficacy (Glanz et al 2015:47-48).

The researcher attempted to link these constructs in their application within the context of breast cancer presented as follows:

- Perceived susceptibility: Refers to beliefs about the likelihood of getting breast cancer without which a woman will not be interested in BSE, CBE or obtaining a mammogram.
- Perceived severity: Refers to the feelings about the seriousness of developing breast cancer or leaving it untreated, and includes evaluations of both medical and clinical consequences such as death, disability, pain and possible social consequences such as effects of breast cancer on work, family life and social relations. A perceived threat is described as a combination of perceived susceptibility and severity.



- Perceived benefits: If a woman perceives a personal susceptibility to breast cancer, the woman's beliefs regarding the perceived benefits of the various available actions for reducing the disease threat influences whether this perception leads to behavioural change. Other non-health related perceptions, such as financial savings or pleasing a family member by having a mammogram, may also influence behavioural decisions. As a result, women with optimum beliefs in vulnerability and severity will be unable to consider any prescribed health intervention unless they believe it would reduce breast cancer.
- Perceived barriers: The potential negative aspects of performing BSE, undergoing CBE, or obtaining mammography may act as obstacles to carry out the task of recommended behaviours. In due process, a kind of non-conscious, cost benefit analysis occurs where individuals weigh the action's expected benefits with perceived barriers – expensive, negative side effect, unpleasant, inconvenient and time consuming.
- Cues to action: Refer to a stimulus that can initiate an action, such as a media message focused on breast cancer, which can serve as an inciting cause for a woman to take action such as practising breast self-examination (BSE), or screening for breast cancer by a clinician (CBE), or undergoing mammography evaluation. This is because the readiness to take action is only effective if a stimulus provides information about what to do i.e., cues to action.
- Self-efficacy: This is the belief that one can effectively carry out the behaviour necessary to achieve the desired results (Bandura, 1997:2). The original development was in the context of bounded preventive health actions, such as accepting screening tests or immunisation.

Variables such as diverse geographic, socio-psychological, and structural variables may influence perceptions, and thus, indirectly influence health related behaviour. For instance, the belief is that sociodemographic factors, especially educational attainment, influence behaviour indirectly by influencing the perception of susceptibility, seriousness, benefits and barriers. Thus, the perception by the relatively literate section of a community may reflect a better understanding about the severity, benefits and barriers in taking actions regarding early detection of breast cancer compared to the segment of the community who is not literate. The researcher's interest in studying the knowledge, attitude, and practice of early breast cancer detection among female high school teachers stems from this.

In this study, as indicated in Figure 2.1, which depicts the conceptual model of HBM, the arrows indicate the direction of relationships between the constructs emphasising that one serves as the likely influencer of the other. For instance, a family history of breast cancer, can influence the perception about the chance of getting sick or suffering from breast cancer, which in turn influences the person's perceived risk for breast cancer and ultimately likelihood of the person's practising BSE, CBE and mammography. Socio- economic status has been linked with both health status and health behaviour, with less affluent persons consistently experiencing higher morbidity and mortality status. This stems from the fact that disparities remain in information seeking between those of higher and lower socioeconomic background with those in the better socioeconomic background expected to be more proactive in seeking information about breast cancer and its early detection, hence modifying factors such as knowledge, attitude and practices that may influence positive breast health perceptions.

### ***2.3.2.2 Three parameters in early detection of female breast cancer:***

This study assessed early detection of breast cancer by three parameters, namely knowledge, attitude, and practice of female teachers in high schools toward early detection of breast cancer.

There is therefore the embedding of knowledge, attitude and practice within the HBM construct relevant to breast cancer. Generally, knowledge about a certain health problem can act as a modifying factor influencing the perception about that specific health problem. If a person has the knowledge that obesity is a risk factor for development of breast cancer, they are likely to practice controlling their weight. Likewise, the knowledge about the use of mammography as a screening procedure for breast cancer will be a modifying factor in its utilisation by those who have the correct knowledge. The knowledge or perception of benefits from breast self-examination, CBE and mammography addressed the benefit the screening behaviour (CBE, BSE and mammography) would have in reducing the chance of developing and dying from breast cancer through its early detection.

The attitude toward certain health behaviour may also affect the likelihood that people will practice recommended behaviour. If a woman has a negative attitude toward mammography (fear of pain, getting cancer from the machine) they are unlikely to obtain information about and getting a mammographic evaluation. Therefore, the existing magnitude of barriers, such as fear of finding a lump, time required for the test, forgetting to make or keep an appointment, and pain and fear of radiation, associated with mammography procedure needs studying in a given population to ensure the health system responds accordingly to the level of existing knowledge and attitude gaps.

According to the HBM, women who feel vulnerable to breast cancer, believe breast cancer is a serious disease, view obstacles to screening as lower than perceived benefits, have higher self-efficacy for conducting BSE, undergoing CBE and obtaining mammograms, and receive a cue to action are more likely to follow screening recommendations. A study conducted by Glanz et al. (2015:54) has found these expected relationships between HBM constructs and interventional strategies for early detection of breast cancer.

## **2.4 BREAST CANCER**

This section gives a brief description of cancer, followed by a discussion of the epidemiology of breast cancer and its associated risk factors. Furthermore, the section presents the importance of primary, secondary, and tertiary prevention approaches. Finally, the section addresses the knowledge, attitude, and practices towards the early detection of breast cancer.

### **2.4.1 Cancer**

Cancer is a condition characterised by unregulated cell growth and tissue invasion or metastasis. It can arise from any body tissue through a series of somatic alterations in deoxyribonucleic acid (DNA) that result in unrestrained cellular proliferation. The alteration in DNA, i.e. mutation, may arise because of random replication errors or exposure to carcinogens (e.g. Radiation). While most cancer arises sporadically, familial clustering of cancers can occur in certain families that carry a germ-line mutation in a cancer gene (Jameson, Fauci, Kasper, Hauser, Longo et al., 2018: 484).

The occurrence of such cellular pathology in mammary tissues is termed as breast cancer.

#### ***2.4.1.1 Epidemiology of breast cancer***

The global burden of cancer continues to increase largely with cancer and other non-communicable diseases (NCDs) now widely recognised as a threat to global development. The result of a recent systematic analysis showed that in 2017, breast cancer was the third most common incident cancer overall (Fitzmaurice, Abate, Abbasi, Abbastabar, Abd-Allah et al., 2019:1749-1750).

Breast cancer is the most common cancer in women and the second most common malignant tumour in the world, after lung cancer (WHO 2018). In both developed and developing countries, breast cancer is the most frequently diagnosed cancer in women and the leading cause of cancer death (Bray et al., 2018:401).

In the United Kingdom, breast cancer accounts for 44% of all cancers in females aged 25 to 49 years and 34% of all cancers in females aged 50 to 74 years (WHO, 2015-2017). Among Saudi women, the leading cancer diagnosis that is far greater than that of other cancers is breast cancer (Asiri, Asiri, Ulahannan, Alanazi, Humran et al., 2020:2). In Pakistan, the Karachi cancer registry shows that breast cancer contributes to 34.6% of all cancer cases among females. Pakistan also has the highest incidence rate of age standardised breast cancer in Asia, which was 69.1 per 100,000 over the years 1998 to 2002 (Bhurgri, 1995 as cited in Asif, Sultana, Akhtar, Rehman & Rehman 2014:4411). An incidence and mortality estimate among counties in the Asian-Pacific region, such as South Korea, has also shown that breast cancer incidence in 2012 was 52 per 100,000 women, with epidemiological factors indicating that the incidence and mortality rate of breast cancer would also increase (Youlden, Cramb, Yip & Baade, 2014:102), while the age-standardised incidence rate among Indian women is 22.9 and the mortality rate 11.19; with this scenario, 1 in 26 women are expected to be diagnosed with breast cancer in their lifetime (Doshi, Reddy, Kulkarni & Karunakar, 2012:6-8).

In China, work by Chen, Zheng, Baade, Zhang and Zeng et al. (2016:125, 126) showed an annual percentage increase of 3.9% of breast cancer incidence rates and

an annual percentage increase of 1.1% in mortality due to breast cancer between 2000 and 2011.

A study in Jordan showed breast cancer as the most common cancer, constituting 39.4% of cancers among Jordanian women. Breast cancer has risen by 69% in women over the last decade, from 674 cases in 2005 to 1,138 cases in 2015, making it the third most common cause of cancer death among women. The age standardised incidence rate of breast cancer increased from 41.4 per 100,000 in 2005 to 61 per 100,000 in 2014 (Abdel-Razeq, Mansour & Jaddan, 2020:261-262).

In Iran, as cited by Enayatrad, Amoori and Salehiniya (2015:430), the prevalence of breast cancer is about one third of all cancers in women and constitutes the second most common cancer after lung cancer, and the most common cause of cancer death among women. Primary breast cancer is the most common cancer in Turkish women, accounting for 26.5% of all cancers in women (Karayurt, Ozmen & Cetinkaya, 2008:359), whereas in Malaysia it is the most frequently diagnosed cancer in women accounting for 33.9% of newly diagnosed cases between 2012 and 2016 (Manan, Basri, Kaur, Rahman, Amir et al., 2019:19).

The situation in North Africa is similar, for instance, to that in Egypt where 38.8% of all female cancer is of the breast (Ibrahim, Khaled, Mikhail, Baraka & Kamel 2014:1). Khalis, El Rhazi, Charaka, Chajès and Rinaldi et al. (2016:5212) from Morocco reported that breast cancer is the second most frequently occurring cancer in females accounting for 34.4% of all new cancer cases in females, and that the age-standardised incidence rate of breast cancer increased from 35.0 to 39.0 per 100,000 women between 2004 and 2008, showing an annual increase of 2.85 %. Elsewhere in Africa, a report from Zambia shows that between 1990 and 2009 breast cancer was the second most reported cancer in females accounting for 11.4% cases, and breast cancer in 2012 had over 20% incidence and 10% mortality (Mazaba & Banda, 2018:18).

Other evidence from Africa shows that breast cancer is the leading malignancy among females. Breast cancer is the most common cancer among Nigerian women (George, Allo, Amoo & Olonade, 2019: 1701). In Ugandan women, it is the second most common cancer (Hjelm et al., 2019:2). According to the non-communicable diseases

(NCD) national strategic action plan of Ethiopia, breast cancer is the leading cancer among women, contributing to 23% of all cancers (FMoH, Ethiopia, 2015:14). A 2011 global comparative survey of cancer survival rates in Africa, Asia and Central America, based on patients diagnosed in the 1990s, indicates substantially lower survival rates in parts of Africa and Asia (Bray et al., 2018:398).

The factors that contribute to the international variation in incidence rates largely stem from differences in reproductive and hormonal factors and the availability of early detection services (Torre, Islami, Siegel, Ward & Jemal, 2017: 447). In many African and Asian countries, mortality rates have been rising with changes in reproductive patterns, physical inactivity and obesity being the main contributing factors; increases in breast cancer awareness and screening activity may be partially responsible for the rising incidence in these populations.

#### **2.4.2 Factors associated with increased risk of breast cancer**

According to the American Cancer Society (2020), a risk factor is something that increases a person's likelihood of contracting a disease such as cancer. Different cancers have different risk factors, but having a risk factor does not mean one will necessarily get the disease. Most women who have one or more breast cancer risk factors never develop the disease, while many women with breast cancer have no apparent risk factors (other than being a woman and growing older). Table 2.1 summarises the risk factors associated with breast cancer according to the American Cancer Society (2020).

**Table 2.1 Risk factors associated with breast cancer according to the American Cancer Society (2020)**

<b>Risk factors not related to personal choice</b>	<b>Lifestyle related risk factors</b>	<b>Unclear factors</b>
<ul style="list-style-type: none"> <li>• Gender</li> <li>• Ageing</li> <li>• Genetic risk factors (mutation)</li> <li>• Family history of breast cancer</li> <li>• Personal history of breast cancer</li> <li>• Race and ethnicity</li> </ul>	<ul style="list-style-type: none"> <li>• Having no children</li> <li>• Having the first child after age 30</li> <li>• Use of oral contraceptive pills, depot-</li> </ul>	<ul style="list-style-type: none"> <li>• Diet and vitamin intake [more red meat, high fat]</li> <li>• Chemicals in the environment [substances in</li> </ul>

<ul style="list-style-type: none"> <li>• Benign breast conditions</li> <li>• Early onset of menstrual cycle before age 12 years</li> <li>• Exposure to chest radiation</li> <li>• Diethylstilbestrol (DES) exposure during pregnancy</li> <li>• Late menopause at age <math>\geq 55</math> years</li> </ul>	<ul style="list-style-type: none"> <li>• medroxyprogesterone acetate (DMPA)</li> <li>• Hormone therapy after menopause</li> <li>• Drinking alcohol</li> <li>• Being overweight or obese</li> </ul>	<ul style="list-style-type: none"> <li>• plastics, cosmetics, pesticides]</li> <li>• Cigarette/tobacco smoking</li> <li>• Night work</li> <li>• Diabetes Mellitus</li> <li>• Having more than five children</li> </ul>
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Additionally, evidence shows that major risk factors that have a huge impact on the global breast cancer burden include physical inactivity, dietary factors, obesity and being overweight; for instance, overweight and obesity are causally associated with breast cancer in postmenopausal women, and raised body mass index and physical inactivity account for an attributable fraction of 19% of breast cancer mortality. Overweight and obesity may lead to having more fat tissue after menopause and can increase the chance of getting breast cancer by raising oestrogen levels. Overweight women tend to have higher blood insulin levels, which has a link to some cancers, including breast cancer. Alcohol use is a risk factor for many cancer types, including cancer of the breast, and the risk increases with the amount of alcohol consumed (Bray et al., 2018:413). Evidence is also growing that physical activity in the form of exercise reduces breast cancer risk (Lynch, Neilson & Friedenreich, 2011: 132).

The WHO (2014) and other organisations, such as the American Cancer Society (2020), emphasise breast cancer prevention and control within the context of comprehensive national cancer control programmes that are integrated to non-communicable disease and other related problems. In order to prevent un-necessary and painful deaths due to breast cancer, and ultimately reduction of the burden of breast cancer, it is pivotal to gather the prevailing knowledge, attitude and practices towards breast cancer and its early detection within the community so as to inform and frame national cancer programmes, which in turn utilise the current evidence in developing evidence-based prevention and control strategies.

### 2.4.3 Strategies to prevent breast cancer

The WHO (2007:15) asserts that cancer prevention is an essential component of all cancer control plans, because about 40% of all cancer deaths are preventable. Likewise, breast cancer is also preventable to some extent as it shares common

lifestyle risk factors as other cancers. Thus, preventive interventions should focus on the modifiable lifestyle associated risk factors for development of breast cancer. The WHO (2007) also recommends that the reduction of lifestyle related risk factors is the most cost-effective strategy to tackle the incidence of breast cancer and the related high degree of mortality particularly in resource-limited settings.

#### **2.4.4 Levels of prevention of breast cancer**

The central or main target for breast cancer related survival is to adhere to a set of prevention strategies. Strategic frameworks for comprehensive cancer control involve prevention, early detection, diagnosis and treatment, rehabilitation and palliative care.

Raising general public awareness on breast cancer and the mechanisms to control, as well as advocating for policies and programmes, are key strategies of population-based breast cancer control. Thus, countries need to implement combined strategies that address both public health problems in an effective and efficient way (Joubert & Ehrlich, 2014:18). Thus, to effectively prevent the untoward effects of a disease on a community there are strategic levels of prevention ranging from the healthy or pre-disease state to the recovery or disability or death status. To reduce the occurrence and impact of country-level prevention and control of breast cancer, a comprehensive multi-level approach is required. The efforts for strategic framework range from primary prevention to tertiary prevention (Joubert & Ehrlich, 2014:19-20). The following levels for prevention of breast cancer are discussed:

##### ***2.4.4.1 Primary prevention***

Primary prevention entails prevention before occurrence of the disease (Joubert & Ehrlich, 2014:19). At this level, interventions are aimed at healthy individuals or groups in order to reduce the development of new cases (incidence) of the specific illness/disease. In the context of breast cancer, the focus is preventing unhealthy environmental or lifestyle patterns favourable for breast cancer development. The intervention may include health education, improved public awareness on nutrition and preventing obesity, hazards of alcohol intake and cigarette or tobacco smoking.



#### **2.4.4.2 Secondary prevention**

Secondary prevention measures are for people who have a disease. Here the focus is on early diagnosis and prompt treatment to prevent the progression of clinical disease and complications from the disease, thereby reducing disease prevalence and ensuring cure. Screening for breast cancer identifies the disease in its early phase, thereby improving prognosis and arresting disease process. Evidence has shown that breast cancer screening is shown to reduce breast cancer mortality. With proper screening, 60% of breast cancers are diagnosable at a localised stage, for which the five-year survival rate is 99% (American Cancer Society, 2019).

The following set of screening guidelines for the early detection of breast cancer in the average risk population are recommended by the American Cancer Society (2019). It is recommended that all women above the age of 20 years should undergo the following set of screening procedures:

- *Breast self-examination (BSE)*

This entails a woman's step-by-step approach and using a specific schedule to examine her breasts. It stresses the importance of women being mindful of how their breasts look and feel in the usual course of their lives, and reporting any new breast changes to a health professional as soon as discovered. Women should be informed about the benefits and BSE as early as their twenties. The importance of prompt reporting of any new breast symptoms to a health professional is important. Women who choose to do BSE should receive instruction from health professionals and their technique reviewed periodically during health examination.

- *Clinical breast examination (CBE)*

CBE should be included in a periodic health assessment by healthcare professionals, preferably every three years, for women in their 20s and 30s, according to the American Cancer Society (2019). A CBE should be performed on asymptomatic women over the age of 40 as part of a regular health professional review, preferably once a year.

- *Mammography*

Mammography consists of a standardised breast X-ray examination at predetermined intervals; at this examination, there is no patient/doctor contact. Screening mammography has contributed to increases in early-stage breast cancer incidence and declines in distant stage incidence. However, screening by mammography does not reduce the risk of developing cancer (Gangnon, Sprague, Stout, Alagoz, Weedon-Fekjaer et al., 2020: 910). Generally, a woman is recommended to undergo an annual mammography by the age 40 of years. In Addis Ababa, the availability of mammography is limited to a few private hospitals, where access to the wider community is a challenge due to the high cost associated with the service.

#### ***2.4.4.3 Tertiary prevention***

At this level, measures involve the treatment of the disease or condition in its later stages and rehabilitation to optimise function, thereby preventing or minimising impairment and disability. Hence, with respect to breast cancer, tertiary level care aims at improving the quality of life and survivorship through the control and alleviation of pain, preventing further disease dissemination and salvaging other organs of the body from the effects of cancer (Loomans-Kropp and Umar 2019:2). At this level, a combination of surgical, medical and radiotherapy services could be utilised to prevent further clinical deterioration of women with breast cancer.

Within the tertiary prevention is embedded palliative care of terminal patients (with disseminated form of cancer), which prevents an undignified or painful death through the provision of symptom-based treatment and care, such as pain management, oral care, prevention and treatment of bed sore and contractures. Hence, with the proper knowledge of early detection of breast cancer, these can be averted through early and effective treatment for breast cancers.

## **2.4.5 Knowledge, attitude and practice (KAP) toward breast cancer**

### ***2.4.5.1 The significance of knowledge, attitude, and practice on early detection of breast cancer***

Breast cancer prevention is an essential component of the fight against breast cancer. In the public health implementation breast cancer prevention aims at interventions to reduce the development of breast cancer in the population. Knowledge about breast cancer and the risk factors associated with it, is the main step, as this is the basis for action. The lack of access to such basic information leads to an advanced clinical presentation for treatment.

#### *2.4.5.1.1 Knowledge*

The fact that a woman is aware of the prevalence and cause of breast cancer motivates her to take steps to avoid it. According to the literature review, different communities have different levels of awareness and knowledge about breast cancer. In some countries, studies show a satisfactory level of knowledge and awareness about breast cancer, with the ultimate finding of presentation at a less advanced stage of breast cancer as improved knowledge, attitude and practice (KAP) strongly linked with improved utilisation of screening methods (Wu, Liu, Li, Song, Ni et al., 2019:6). Evidence also shows that in communities with low KAP on breast cancer, presentation for breast cancer treatment is usually late, at an advanced stage, where the chance of long-term survival is meagre (Jedy-Agba, McCormack, Adebamowo & Dos-Santos-Silva, 2016: e926). For example, studies from Western Europe and North America show a decrease in breast cancer mortality due to increased breast cancer knowledge and attitude, as well as the use of screening methods for early disease detection (Black & Richmond, 2019:2). As a community is better educated, the KAP toward early breast cancer detection and survival is better, which is a finding in developed countries (Walters, Maringe, Butler, Rachet, Barrett-Lee et al., 2013:1197). In contrast, KAP toward breast cancer, conversely, has been shown to be low in many developing countries, necessitating the implementation of proper awareness programmes (Da Costa Vieira, Biller, Uemura, Ruiz & Curado, 2017: 246).

#### 2.4.5.1.2 *Attitude*

Attitude entails a mental state involving beliefs and feelings and values and dispositions to act in certain ways. Thus, if a woman's knowledge on breast cancer could be adequate but not enough to influence her attitude, for instance of not performing a BSE due to fear of identifying a breast lump or not undergoing a mammography evaluation for perceived fear of getting cancer from a mammogram. She may fail to act upon the knowledge that she has a lump, which would have enabled the early detection of breast cancer. As a result, it is important to look at the attitudinal components of health-related behaviour. If it were possible to detect health-related attitude, there would be an increase in health-protection strategies for attitudinal change and beneficial health behaviour as a result. Studies have also reported that positive attitude toward perceived susceptibility, seriousness, self-efficacy, benefits and health motivation have strong associations with screening behaviours (Selçuk, Avci, Yılma, Dündar & Mercan, 2020: 7).

#### 2.4.5.1.3 *Practice*

Transfer of knowledge into practice needs to happen if potential benefits of having a certain knowledge are meant to be realised. When women have the knowledge that early detection of breast cancer can be possible, they will need encouragement to be pro-active and practice breast cancer early detection methods. Evidence shows that women with information regarding breast cancer are likely to practice at least one breast cancer early detection method (Mihret, Gudayu, Abebe, Tarekegn, Abebe, Abdusalam, Shiferaw & Kebede, 2021:1).

### **2.4.5.3 *Factors related to knowledge, attitude and practice on breast cancer***

#### 2.4.5.3.1 *Sociodemographic*

Sociodemographic factors influence the KAP of a community toward early detection of breast cancer. In one hospital-based Ugandan study that assessed KAP of women on breast cancer and mammography, more than 70% of the respondents did not know about risk factors for breast cancer and only 2.4% had undergone mammography. Moreover, the attitude toward mammography was generally negative (Atuhairwe, Amongin, Agaba, Mugarura & Taremwa, 2018:3). In Ghana, sociodemographic

factors, such as primary level of education and being unemployed, were significantly associated with low level of knowledge on risk factors and mammography (Dadzi & Adam, 2019:6).

A study in Qatar aimed at determining beliefs and attitudes regarding breast cancer and screening practices among Arab women. Participants 40-49 years old were substantially more likely to practice BSE or CBE compared to younger or older participants (Donnelly et al., 2013:50). Furthermore, a higher level of education was linked to the belief that cancer can be prevented, or the desire to know if cancer was present, as well as the belief that cancer can be hereditary or due to an unhealthy lifestyle, while less educated participants were more likely to believe that cancer was God's punishment, bad luck, or contagious.

Similarly, Abeje, Seme and Tibelt (2019:5, 6) from Ethiopia reported that higher income, family history of breast illnesses, higher level of education and being employed in professional capacity were significantly associated with being knowledgeable about breast cancer and its screening programmes. As a result, a woman's sociodemographic status may have a significant impact on her understanding of breast cancer and its screening programmes, indicating the need for a tailored approach to target those with low level of awareness in mass education and awareness campaigns.

#### *2.4.5.3.2 Knowledge and awareness on breast cancer*

Knowledge and awareness toward breast cancer can affect the practice of utilising available screening services. In Ethiopia data concerning women's awareness on breast cancer and its screening is lacking. However, knowledge of breast cancer and its screening methods was not adequate among nurses working in Addis Ababa's university hospitals (Lemlem et al., 2013:12). Another study in Nigeria, by Ayoola and Oyedunni (2016:75), also showed a low level of awareness on breast cancer among school teachers. Early diagnosis is a key factor for improved survival among women with breast cancer, for which BSE, CBE and mammography are designated ways to screen and diagnose breast cancer in women. However, in order to make the best use of available screening techniques, women must have a high level of education and

understanding about breast cancer, as women with more knowledge can use it correctly and more consistently, resulting in increased breast cancer detection.

#### *2.4.5.3.3 Socio-cultural norms*

Cultural beliefs, values and attitude influence perception of cancer and screening practice. Cultural conservatism has been one of the barriers for breast cancer screening programmes in the Arab world (Alatrash, 2020:12). In the Middle East, for example, there is a link between cancer diagnosis and social stigma and reduced physician disclosure, which coincides with social and cultural norms (Donnelly et al., 2013:20). Thus, to design socially and culturally acceptable intervention strategies addressing the threat of breast cancer, the socio-cultural factors have to be investigated. In culturally conservative communities, women are hesitant to seek medical help from men for issues such as breast cancer (Tetteh & Faulkner, 2016:150-151). The situation is similar in Ethiopia, as one study among women with breast cancer disease who presented to a tertiary hospital, 71% had an advanced stage (stages III & IV) (Kantelhardt et al., 2014:707). Hence, there is a need to describe factors that contribute to the delay in seeking medical care and treatment after identification of a breast lump in particular communities.

#### *2.4.5.3.4 Perceived and actual risk to breast cancer:*

Perceived risk is a crucial subjective psychological phenomenon relevant to hazard assessment and linked to judgments about disease vulnerability and the likelihood of benefit from interventions (Ferrer & Klein, 2015:85). It is also an inherent part of various health-behaviour theories, including the HBM. Risk perception is an essential component of health as some cancers have hereditary nature. Compared to how the public perceives cancer risk, having a close family member go through cancer treatment has life-altering consequences, including how people interpret risk information. As a result, family members who are at risk can be forced to make critical decisions based on their risk perceptions (Wöhlke, Schaper & Schicktanz, 2019: 2). Therefore, risk misperception can increase or decrease the use of preventive health services, which can have serious consequences for those at a higher-than-average risk of developing breast cancer.

## 2.5 SUMMARY

A literature review should conclude with a concise summary of the evidence on the topic (Polit & Beck, 2018:155). The studies emphasised the significance of awareness on breast cancer for its early detection amongst a wide range of communities in both the developed and developing world. They assessed the level of awareness toward breast cancer, screening for its early detection, and some assessed the barriers and opportunities for early breast cancer screening and detection programmes. According to this literature, variables related to socio-demography, knowledge and awareness on breast cancer, socio-cultural belief and practice of BSE and CBE, and factors not related to personal choice, such as aging, family and personal history of breast cancer, early onset of menstrual cycle before age 12 years and late menopause after 55 years. Lifestyle risk factors, such as drinking alcohol, being obese, having no children, having a first child after 30 years, are among the risk factors for breast cancer development. Actual and perceived breast cancer risk are potential factors that determine the attitude and practice of screening activities such as BSE, CBE and mammography. In addition, some of the studies cited have indicated that integrating the subject of breast cancer into existing educational curricula for high school students is an acceptable and feasible strategy to improve awareness on KAP of breast cancer. The literature review has also indicated that KAP toward breast cancer and its early detection among high school teachers has not adequately been studied in the Ethiopian context.

From the above discussion, it follows that there is a need for quantitative study focusing on the level of awareness of breast cancer, and attitude and practices toward its early detection methods among high school teachers in the Ethiopian setting, thus strengthening the motivation for this study. In general, the sources cited in this section have helped to guide the methodology and theoretical framework, and to place this study in the context of empirical sources.

## CHAPTER 3

### RESEARCH DESIGN AND METHODS

#### 3.1 INTRODUCTION

Chapter 2 presented the literature in terms of types, sources of the conceptual framework, theme and content with regard to breast cancer. This chapter explains methods employed to carry out this research in relation to breast cancer. It includes a detailed account of design of the research, description of the population under study, the process for selection of sample population, data collecting tools and procedures and data analysis. It also includes the eligibility criteria and looks at subjects related to ethics addressed in the study, as well as issues of reliability and validity.

#### 3.2 RESEARCH DESIGN

As discussed by Burns and Grove (2017:124), a research design is generally a plan for carrying out a study that is suitable to answer a defined research question. Bowling (2014:166) also refers to a study design as the overall structure of a study because its choice determines the sampling of the population, as well as how measurements are collected and data analysed. The aim of a research design is to ensure that factors that intervene with the validity of the study findings are in control (Burns & Grove, 2017:124). The design should be specific to the study so that the result will correctly reflect reality. Therefore, it is the type of research design that guides careful choice of the study population, the sampling process, techniques for measurement and intentions for collection and measurement of data. If one uses the right design for a certain type of study, then it will be possible to persuade other researchers that the conclusions have some validity, and that the new knowledge generated is soundly based (Walliman, 2018:22).

The research design is a strategy, system and research scheme that answers the research questions or problems (Kumar, 2014:214). According to Brink et al. (2018:81), it is simply a set of logical steps taken by the researcher to solve the research inquiry. Designs may be quantitative or qualitative. A formal, objective,



comprehensive, systematic method for producing numerical knowledge about the world is quantitative analysis (Burns & Grove, 2017:74). It is conducted to describe new situations, events or concepts, to research relationships between variables and to assess the effectiveness of interventions.

Qualitative study is a systematic, collaborative, subjective and naturalistic approach used to represent and give meaning to life experiences (Burns & Grove, 2017:74). This study followed a quantitative cross-sectional descriptive design.

A quantitative cross-sectional descriptive design was used for this study to evaluate the knowledge, attitude and practice among female high school teachers in Addis Ababa regarding the early detection of breast cancer. It is a public health epidemiologic study in quantitative paradigm and follows a descriptive correlational design with cross-sectional timeframe.

### **3.2.1 Epidemiologic studies**

Epidemiological studies require the collection of disease/health data in groups of people and on agents that cause disease alteration or prevention or environmental recovery (Brink et al., 2018:98-99). As this study collected information from female high school teachers (groups of people) to assess their knowledge, attitude and practice toward early detection of breast cancer (disease), it falls under the category of an epidemiologic study (Polit & Beck, 2018:94).

### **3.2.2 Cross-sectional studies**

Research designs require decisions about when and how much data is gathered in a sample. Studies can, therefore, be categorised in terms of how they deal with time. Research designs could be grouped into cross-sectional and longitudinal designs, depending on the time and duration of data collection in a study. Data is obtainable at one point in time while using cross-sectional designs, and is suitable for defining conditions at a fixed point. In cross-sectional designs, the data is only obtained at one time, from different subjects (Polit & Beck 2018:225). Longitudinal designs include the compilation of data, over a long period and at several times. Longitudinal studies are useful to study changes over time and to create a clear order of situation, which is a

benchmark for establishing causality (Polit & Beck, 2018:225-226). In this study, female high school teachers responded to a self-administered questionnaire once to collect information on their knowledge, attitude and practice toward early detection of breast cancer. Hence, collecting all the required information at a single contact with study respondents makes this research a cross-sectional study.

### **3.2.3 Descriptive correlational study**

Descriptive research/study is the systematic search and illustration of real-life phenomena without interference with circumstances (Burns & Grove, 2017:79). Descriptive studies aim to explain a scenario, problem, phenomenon or programme, or provide information about, or describe attitude towards a problem methodically. The main aim of these studies was to establish what prevails with regard to the topic under study (Kumar, 2014:64). The outcomes of descriptive research include possible relationship between concepts.

This research focuses on assessing the knowledge, attitude and practice of early breast cancer detection in the natural setting among female high school teachers, it meets the description for descriptive studies.

Descriptive research aims at analysing, explaining and documenting aspects of a situation. Descriptive correlational studies attempt to describe relationships among variables, without seeking to deduce causal associations (Polit & Beck, 2018:221). Descriptive research describes associations that exist between variables, and determines relationships between independent and dependent variables. A change in one variable leads to a change in others when a correlation occurs. In descriptive correlational design, the researcher tries to find out and show the existing relationship between variables.

A study is said to be correlational when it involves systematic inquiry into the relationship between or among variables. By employing correlational analysis, the researcher can establish the level or strength and type (positive or negative) relationship between two variables (Burns & Grove, 2017:79). Correlational studies have an advantage in that they have increased flexibility for investigating complex relationships among variables that cannot inherently be manipulated. Correlational studies are also efficient and effective in gathering large amounts of data with a

potential for evidence-based application in a clinical setting; they also help in setting a foundation for future experimental or other types of studies (LoBiondo-Wood & Haber, 2014:204).

The lack of manipulation, control, and randomisation in correlational studies is a major limitation as there exists an inability to establish causal relationships between variables (LoBiondo-Wood & Haber, 2014:204-205).

As this study investigates the knowledge, attitude and practice toward early detection of breast cancer to show the correlation among the different variables, it can be concluded that it is the suitable design for the subject of interest.

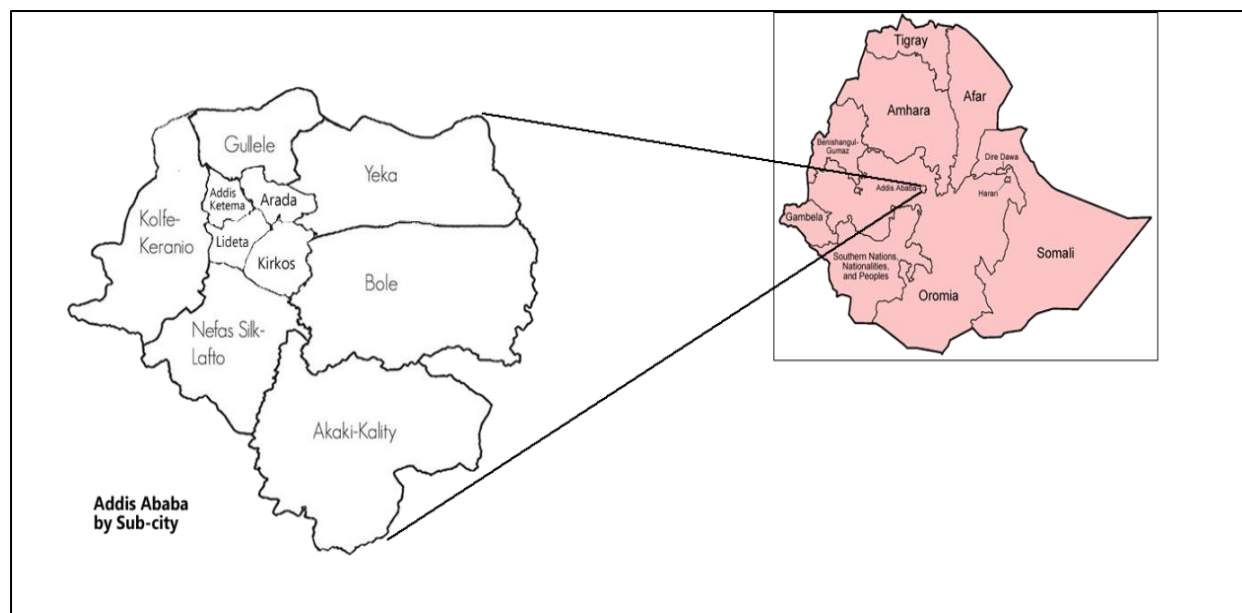
### **3.3 RESEARCH METHODS**

Acquiring knowledge through traditions, personal experience, role modelling, instinct and logical argument is important; however, these ways of acquiring knowledge are inadequate to provide evidence-based practice. Relevant and holistic, as well as process-oriented and results-focused is the knowledge necessary for practice, and to bring about this knowledge, research methods are needed. Research methods are also a way of evaluating and generating justification for or refuting a hypothesis so that there can be valid assumptions used as a foundation for argument in a profession and generate research evidence and empirical knowledge for specific goals (Burns & Grove, 2017:45). Research methods are the methods used by the researcher to structure a study, and obtain and analyse relevant information on the research issue (Polit & Beck, 2018:41). Through the link with paradigms, research methods can suggest criteria with which the researcher can assess the appropriateness of research tools (Brink et al., 2018:19). The validity of research results therefore depends entirely on the soundness of the research methodology and procedures followed in the research.

#### **3.3.1 Study setting**

According to Kumar (2014:413), the study setting is the organisation, agency or community in which a study is conducted; it is the type of place where information is gathered (Brink et al., 2018:47; Polit & Beck, 2018:87). It is generally agreed that the setting for data collection must be carefully determined. This study was conducted at

high schools in Addis Ababa, the seat of the federal government and Ethiopia's largest city. It is situated at an altitude of around 2,355 meters (about 7,800 feet) above sea level in the centre of the country, on a plateau crossed by several streams and surrounded by hills (*Wikipedia*, 2018).



**Figure 3.1 District map of Addis Ababa**

(*Wikipedia*, 2018)

Addis Ababa consists of 10 sub-cities and, according to a report by the central statistics agency of Ethiopia, the population in July 2014 was 3,194,000. Males made up 47.4% ( $n=1,515,000$ ) while females constituted 52.6% ( $n=1,679,000$ ) of the total population. According to the Ministry of Education, Ethiopia (2017), in 2016/17 school enrolment for high school (Grade 9-12) in Addis Ababa was 150,372; boys constituted 44.5% ( $n=66,977$ ) and girls 55.5% (83,395) of the total (150,372). There were 6,759 high school teachers, of which 81.9% ( $n=5,535$ ) were males and 18.1% ( $n=1,224$ ) females. Reportedly, there are 211 high schools (Ministry of Education, Ethiopia, 2017:65-92), all of which are administered by the City Administration of Addis Ababa Education Bureau. The meeting halls in the respective schools were the sites of choice for data collection as they can accommodate the desired number of respondents. As these were the very compound in which the respondents worked, there was no need for them to travel and one could collect the intended information at a convenient time for each respondent.

By describing the standardised questionnaire to respondents and retaining their right to choose the time and general circumstances in which they would respond to it, resolved the privacy aspect. The respondents were informed and consented to participate in the study and shared their private information willingly. In due process, each respondent's private information was withheld from others.

### **3.3.2 Target population**

The population for a research is a group of individuals from which the researcher draws a conclusion (Babbie, 2016:116); it is the total population about which a researcher is concerned (Polit & Beck, 2018:99). The population is a particular category of individuals or elements on which the analysis focuses, according to Burns and Grove (2017:617), but the target population is the entire group of individuals that meet the criteria for sampling. Female teachers teaching at high schools in Addis were the population for this study.

### **3.3.3 Study population**

Often referred to as the accessible population, the study population is the portion of the target population that the researcher approaches (Burns & Grove, 2017:125; Polit & Beck, 2018:243). In selecting the sample population in general, there should be fairness. It is the set of components from which the sample is chosen (Brink et al., 2018:116). Female high school teachers in Addis Ababa employed in full time teaching at high schools during the study period were the study population for this research.

### **3.3.4 Inclusion (eligibility)/exclusion criteria**

Criteria for inclusion or exclusion are criteria for deciding whether an individual fits into the population (inclusion) or excluded (exclusion criteria) (Polit & Beck, 2018:243). Both are useful to define population characteristics.

Inclusion criteria are the distinct behaviour to be part of the target population that the subject or feature must possess. Exclusion sampling criteria are those features that can cause the exclusion of an object or element from the target population (Burns & Grove, 2017:620).

The inclusion criteria were as follows:

- being a female teacher
- Full time employee at the respective schools
- present at one high school in Addis Ababa on the day of data collection
- willing to take part in the study

The exclusion criteria were:

Female high school teachers;

- Who were not on duty (due to vacation, illness etc.) during data collection
- Who were part time employees of the respective schools
- Not willing to participate in the study.

### **3.3.5 Sampling**

The method of selecting participants or respondents is sampling. The key goal of sampling is to select a representative sample of the target population. The goal is to select a collection of elements from a population in such a way that the definition of those elements accurately represents the total population from which the elements are chosen (Babbie, 2016:188). Brink et al. (2018:115) assert that sampling refers to the method of the researcher choosing a sample from a population to collect knowledge about a phenomenon in a way that reflects the population of interest. It is the method of selecting subjects who are representative of the population under review, according to Burns and Grove (2017:617-618). Instead of populations, researchers work with samples because it is feasible to do so, so a researcher is required to preserve the representativeness of a sample, which is a crucial criterion for evaluating a sample (Polit & Beck 2018:243). The sampling procedure, rationale and sample size calculation are described as follows:

#### ***3.3.5.1 Method of selecting sample***

In order to make generalisations of a population, it is necessary to study a sub-group selected from that same population; hence, this is the purpose of sampling (Joubert & Ehrlich, 2014:98). The representativeness of the sample is therefore important for making a generalisation. Babbie (2016:192) describes representativeness as the consistency of a population sample from which it is chosen, if certain aggregate characteristics in the population are approximated by the combination of

characteristics of the sample. Hence, random selection is key in the process of sampling. Each variable has an equal selection possibility in a random selection, regardless of any other effect of the selection process. One method of sample collection to ensure that a sample is representative of the population under analysis is random sampling (Joubert & Ehrlich, 2014:99). This sampling method falls under a probability sampling, an approach that selects sampling elements by random means (Polit & Beck, 2018:246) where in every sampling element has a known chance (or probability greater than zero) of being included in the study (Burns & Grove, 2017:629).

### ***3.3.5.2 Size of sample***

Sample size is the number of participants in a study required to obtain a statistically valid deduction (Polit & Beck, 2018:568). For any research, it is a necessity to select an appropriate sample size and acquire the required sample size. The sample size needs calculating afresh for every research problem, and is not transferrable from one study to the other (Brink et al., 2018:128).

Even though a larger sample is better than a smaller one in quantitative studies, a large sample is not a guarantee of accuracy as a large sample with a poor design and non-probability sampling can inflate errors and bias (Brink et al., 2018:128). Thus, the conducting of a study should be on a sample that is neither too large nor too small, as these would lead to wastage and non-conclusive data respectively (Joubert & Ehrlich, 2014:102).

The sample size was determined using a single proportion formula:

$$N = \frac{Z^2 P (1-P)}{W^2}$$

Where,

N=sample size

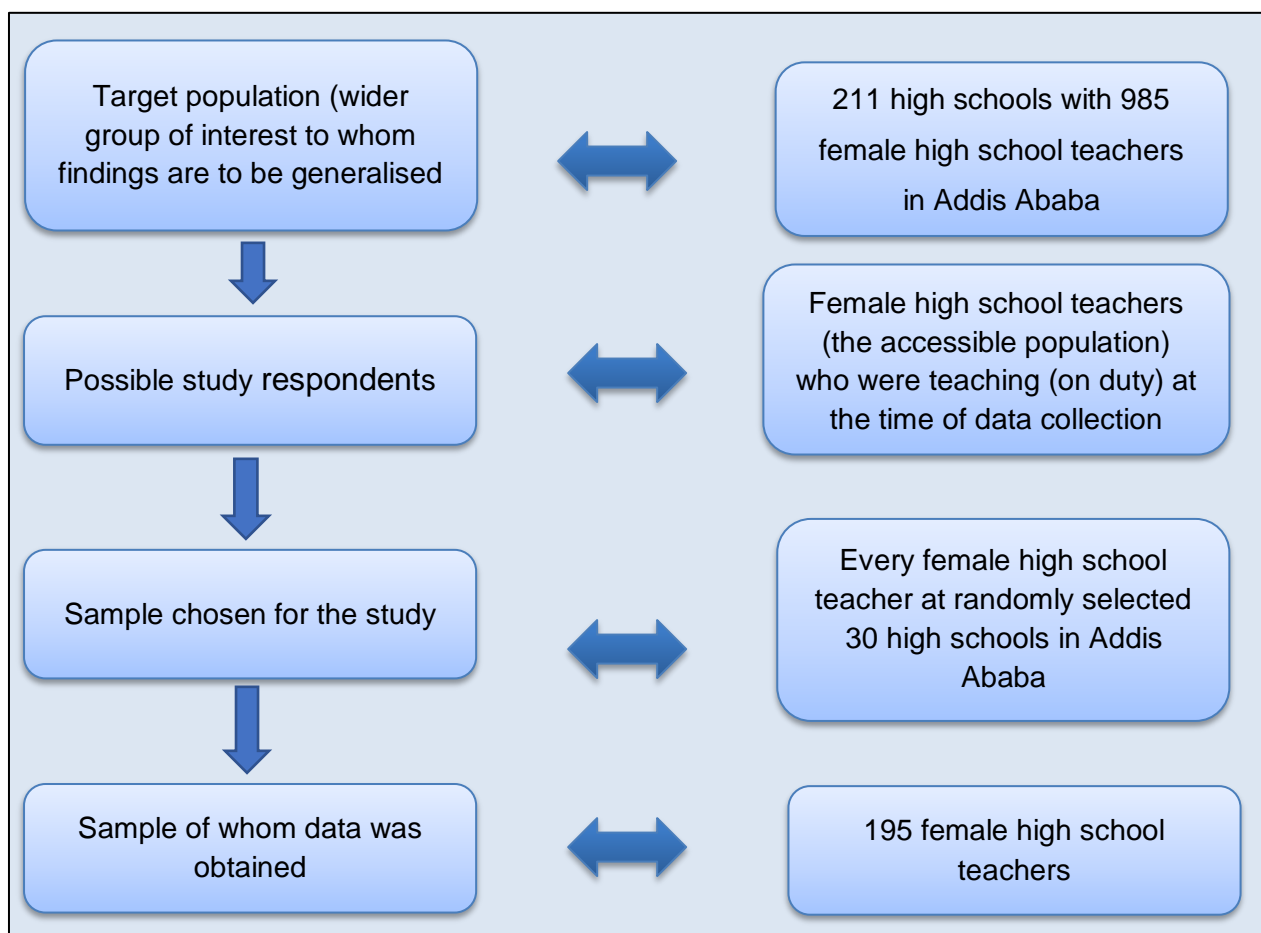
Z=Standard normal distribution value at the 95% confidence Interval (C.I.), which is 1.96

P=The proportion of female high school teachers with correct knowledge, attitude and practice toward breast cancer and screening methods, from previous comparable studies (in Lagos Nigeria among female high school teachers was 47%) (Odusanya, 2001:171-175)

W=the margin of error between the sample and the population taken as 7% computation of N gives **195**.

### 3.3.5.3 Sampling procedure

The sampling procedure is schematically represented below:



**Figure 3.2 Schema of target, accessible and sample population of the study**

### 3.3.5.4 Ethical Issues in sampling

During all stages of data collection, research participants should be treated with fairness and equity by the researcher; in addition, research criteria should be the basis



for the selection of participants. A researcher should treat research participants equally and equitably during all stages of data collection, and the selection of participants should not be on peoples' vulnerabilities but on research requirements (Polit & Beck, 2018:137). In this study, as there was a fair selection of eligible respondents, there was respect for ethical issues. This was realised in that there was randomisation of the sample performed and no biases in the sampling in relation to personal identifiers, such as age, place of residence, workplace, educational status, religion or ethnicity.

In this study, the use of appropriate sample size and due emphasis given to sampling plan by the researcher were employed to prevent wastage of resources. There was a consultation of several books on research methodology and statistics, including a review of comparable studies with similar design to address ethical issues related to sampling. A professional with statistical background was consulted and feedback incorporated. Furthermore, reasonable detail of sampling procedure was presented and a description was given of the target population, accessible population and sample.

### **3.3.6 Data collection**

This section presents a description of the approach used in data collection, and how the data collection instrument was developed, as well as the measurement of variables, data collection process and the ethical considerations taken.

Burns and Grove (2017:1281) describe data collection as the identification of subjects and the accurate, systematic collection of research-related information that is capable of answering a study's particular goals, questions, or hypotheses.

#### ***3.3.6.1 Data collection approach and method***

The researcher applied a self-administered standardised questionnaire as a quantitative method for data collection in this study. The self-administered questionnaire required responses to close-ended questions. As respondents were literate and able to read and respond in English and provide analysable data, the self-administered questionnaire approach was preferred.

Brink et al. (2018:138-139) contend that questionnaires should be returned without any identifying details; accordingly, the researcher ascertained that the subjects' responses remained confidential. This allows respondents to respond freely, confidently and confidentially. The researcher opted for a self-administered questionnaire, believing that as the respondents were female teachers, they may be embarrassed to respond to issues around the breast face-to-face with a male researcher. Therefore, given that the high school teachers are enlightened and educated group and the data collection would only require self-completed form with no intervention conducted there was no possibility for shyness or embarrassment by the respondents to complete the form. In addition, rapport was established during data gathering and the researcher informed the teachers on the rights and benefits of the study.

Data collection methods using a structured questionnaire is less costly and ascertains anonymity (Polit & Beck, 2018:258). It may be necessary at times to provide the questionnaire to a group of respondents gathered at the same location and time. Since the respondents were teachers, the information gathering occurred at the school premises of the respective schools (Babbie, 2016:277-278). The researcher, in explanatory debriefing sessions at each schools during the different days of data collection, established a rapport to ensure the respondents understood the purpose and relevance of the study. As it was self-completed data collection tool and school teachers are able to read and write; the researcher explained the details of how to complete the data collection form; and was available onsite in case they encounter problems but there was no problem or concerns raised by respondents.

As there is no interviewing of respondents, there is a saving of time and human and financial resources. Since interviews need a degree of interaction between the interviewer and the respondent, the quality of the data may depend on the interaction quality and the interviewer's interviewing skills. Hence, in an interview the researcher or interviewer may be responsible for introducing bias (Kumar, 2014:298). As the response took 35-45 minutes, there was no chance or possibility to consult others, thus it was the study population's opinions that the researcher gathered. Bruce, Pope and Stanistreet (2018:158) also argue that such a form of data collection is exempted from the interviewer's bias, responses are all the views of the respondent, and respondents had enough time to provide well thought out answers. The demerits of

such a method of data collection may include a low response rate, but to counter this effect, the structured questionnaire is simple to understand and precise in the form of a table where a simple tick (✓) is required to respond to a question. Most of the questions require the respondent to respond in a Likert scale form, which is easier than a questionnaire and a precise means of measuring phenomena such as knowledge, attitude and practice (Babbie, 2016:174-175). There is also a possibility of receiving replies that are ambivalent, or skipping replies completely.

It can be difficult to ensure validity and consistency by using self-administered questionnaires and ensure that respondents feel or behave the way they claim they do, since they may provide socially appropriate responses. Thus, the researcher has to believe that most respondents have been candid and trust the information provided (Brink et al., 2018:139; Polit & Beck, 2018:465).

### ***3.3.6.2 Development and testing of the data collection instrument***

The basis for the development of the self-administered questionnaire was the objectives of the study and literature findings of comparable studies. The developed questions were in English and to simplify the response, all questions except the section on monthly income were in a form of a closed-ended Likert scale. In order to ensure it addressed all the objectives of the study, the questionnaire was reviewed by colleagues experienced in research methodology (one research advisor and one a statistician).

A pilot study is a small-scale revision or trial run performed to test feasibility or in preparation for a major study (Polit & Beck, 2018:561). It can hint if a data collection tool achieves what it is supposed to, and provide methodologic guidance to strengthen or modify issues with data collection tools, sample and subject recruitment methods and other aspects of a study in the readiness for a broader study. Joubert and Ehrlich (2014:116) also contend that a pilot study be conducted on groups that are similar to the target population. The pilot phase assists the researcher to measure if the individual questionnaire items are suitable to create a composite index by assessing their face validity and uni-dimensionality (Babbie, 2016:267).

Pre-testing is important to check the tool's capacity to measure what it is expected to construct and if it is able to check for understandability and appropriateness, both in

language and culture. Thus, the questionnaire underwent field-testing among 20 conveniently selected female high school teachers after soliciting informed consent prior to the actual fieldwork. On average, it took 35-45 minutes to fill the self-administered questionnaire (SAQ). The pre-test findings confirmed that the SAQ was well developed. Accordingly, there were some corrections made to ease understanding of the respondents; for instance, the rephrasing of 'menarche' to 'menstruation' and 'irradiation' to 'X-ray'. The pre-test data was removed from the final review of sample data, and those who participated in the pre-testing were left out of the actual research.

### ***3.3.6.3 Variables measured by the instrument***

An alternate description of concepts is as variables in quantitative studies. A variable is something that is liable to change and it is often inherent in human characteristics (Polit & Beck, 2018:88). It can also refer to quality, property or characteristic of study subjects that change or vary, and thus can assume more than one possible value (Brink et al., 2018:75). Usually, the operation of concepts in quantitative studies through their expression in measurable forms to yield variables (Brink et al., 2018:22). They are utilised to show the tendency of influence instead of cause and effect. Thus, variables are neither independent nor intrinsically dependent; what is a dependent variable in one study could be an independent variable in another (Polit & Beck, 2018:90).

- *Data collecting tool for dependent variables*

Polit and Beck (2018:250) assert that the use of self-structured reporting approaches is when researchers are aware of exactly what they need to know in advance and can ask suitable questions to obtain the relevant data. A standardised, written document called an instrument collects the structured self-report data. Thus, the instrument in this study has 92 main items categorised into nine sections. The arrangement of the sections and items was in such a way that less difficult questions appeared first. All sections were closed-ended except for one question in section one that was open-ended to quantify the respondent's monthly income. Additionally, four of the sections were in the form of a Likert scale. The general guide for the structure of the research instrument was as follows:

- Section 1: This section covered nine items focusing on demographic information
- Section 2: Included eight rated items to assess the respondent's knowledge on breast cancer curability
- Section 3: This section consisted of 13-rated items to assess knowledge of the respondent on risk factors for breast cancer
- Section 4: Comprised seven rated items on early warning signs of breast cancer
- Section 5: This section consisted of nine rated questions on respondents' attitude toward breast cancer
- Section 6: This section presented six closed-ended questions on respondent's practice on early detection methods of breast cancer particularly breast self-examination
- Section 7: This section contained 13-close-ended questions that revealed respondent's practice of breast cancer early detection method, particularly clinical breast examination
- Section 8: Comprised four closed-ended items focusing on respondent's practice toward early breast cancer detection method, namely mammography
- Section 9: This section presented 10 items in the form of closed-ended questions regarding respondent's source of information about breast cancer

Therefore, all the questions in respective sections helped to answer the research objectives.

#### ***3.3.6.4 Data collection process***

This research employed a self-administered structured questionnaire, being less costly, ascertained anonymity and free from interviewer bias (Kumar, 2014:295; Polit & Beck, 2018:267). Thus, female high school teachers filled structured self-administered questionnaires prepared in advance. The researcher, in debriefing sessions, explained and made sure respondents understood the purpose and relevance of the study. All the completed data remained confidential and there was no clear personal identity of the respondents in order to keep the answers anonymous. The data collection activity took place in the premises of respective schools in November 2018. To avoid interference with the school teaching programme of the respondents, the convenient time for each respondent was sought and data collection occurred in morning and afternoons, between 8am and 5pm, when appropriate and

feasible. During the specified time, the respondents gathered in the respective schools' halls with the help of the principals. Thus, respondents addressed the questionnaire on the same day and took 35-45 minutes to complete. On completion, the researcher collected the questionnaires, which were in sealed envelopes in the box provided.

### **3.4 ETHICAL CONSIDERATION**

#### **3.4.1 Review by Institutional Ethics Review Board**

In order to analyse the ethical implications of research before it takes place, institutional review boards (IRB) are organised. Therefore, researchers must send research proposals to an ethical clearance committee that has the authority to authorise, alter or reject the proposed plans before conducting a study (Burns & Grove, 2017:361; Polit & Beck, 2018:143).

The Higher Degrees Committee at the College of Human Sciences of University of South Africa reviewed the proposal the researcher designed to protect the ethical rights of the study respondents and accepted it. The proposal was submitted to and approved by the Health Studies Research and Ethics Committee of UNISA on 25<sup>th</sup> November 2015 (Annexure 1), referenced by ethical clearance certificate number: HSHDC/473/2015. The researcher also sought and obtained clearance from the Addis Ababa City Administration Health Bureau Ethical Clearance Committee (Annexure 2, Annexure 3).

The researcher obtained an ethical clearance from the local government, i.e., the Addis Ababa City Administration Health Bureau, after receiving an ethical clearance certificate from the Department of Health Studies Higher Degrees Committee in the College of Human Sciences at UNISA. The Education Bureau wrote a support letter to all sub-cities under its administration for their cooperation to permit the conducting of the study at the high schools under their catchment.

Ethical considerations in this study:

A researcher is responsible for performing a study in an ethical way (Brink et al., 2018:27). Ethics is a set of moral principles concerned with the degree to which research procedures conform to the study participants' educational, legal and social responsibilities (Polit & Beck, 2018:548). Accordingly, these obligations include

obtaining true informed consent that relates to individual autonomy, privacy and confidentiality, balancing the right of the individual and the welfare of society and communicating the results regarding risks to subjects to prevent diseases or minimising harm and maximising benefits (beneficence) whilst balancing the benefits and costs of communicating findings (principle of utility) (Polit & Beck, 2018:134-148). Based on this understanding, the researcher followed the following ethical standards:

### **3.4.2 Voluntary participation**

A major tenet of research, according to Babbie (2016:62-63), is that participation must be voluntary. Nobody needs forcing to participate. Therefore, before responding to the questionnaire, the respondents obtained information in simple form from the researcher concerning the intent of the study, in particular their right to freely decide whether to participate, to refuse to answer any questions they did not wish to answer, and to withdraw from the study at any time without giving due reasons. Furthermore, respondents were provided with clarification about the outcome of withdrawal from the study as they were informed of withdrawing without giving due reason and without any consequences. For those individuals who declined to participate in the study, there was no form of coercion (Polit & Beck, 2018:136).

### **3.4.3 Informed consent**

Polit and Beck (2018:139) contend that informed consent means that the participants have sufficient information about the study details, understand the information, and have the power of free choice, allowing them to voluntarily consent or decline participation. Thus, following provision of adequate and relevant information about the study, and informing respondents that the results will be published in a dissertation and that it might also be published in a journal article, written consent was obtained from each respondent prior to distribution of the self-administered questionnaires. The signed consent letters (Annexure 4) remained in a lockable drawer accessed only by the researcher. The rights of those respondents who chose not to participate were respected.

After receiving the information listed below, respondents gave written informed consent prior to the data collection.

- The purpose and objectives of the study
- The time/duration required to fill the self-administered questionnaire
- The type of participation required or expected in the study
- How the findings of the study will be published
- How confidentiality, anonymity and privacy would be ensured
- The identity, contact details and qualification of the researcher

Thus, by doing so, the researcher ensured respect for the rights to self-determination in this process.

#### **3.4.4 Confidentiality and privacy**

Confidentiality and privacy are among the human rights that need protecting in research (Brink et al., 2018:30-32). Confidentiality dictates that only the study researcher knows the identity of the research subjects (Brink et al 2018:31). Thus, the researcher is responsible to prevent the divulgence of all data gathered during the study, or being available to any other person. Privacy includes the fact that the respondent has the right to decide the degree to which his/her private information will be shared or withheld from others, including the respondent's attitude, beliefs, behaviour or opinion (Brink et al., 2018:30). Respondents have also the right to presume that any data they provide will remain strictly confidential (Polit & Beck, 2018:140). In this study, confidentiality was observed in that the collection of data was via SAQ and no name or address was requested as a personal identifier, and anonymity, which is the most reliable means of protecting confidentiality, was ensured as the researcher could not connect respondents to their data.

In this study, the completion of the SAQ occurred in a multipurpose hall serving as a private room, this ensured both its auditory and visual forms, with no personally identifiable data elements documented on the questionnaire. This precaution was to ensure there was no link of the responses to these identifiers. The information acquired from respondents remained confidential, and publication of the findings would be without relating the findings to the respondents.



### **3.4.5 Minimum risk to participants**

Minimum risk means that the level of damage or discomfort in the research is no greater than that normally experienced in everyday life (Kumar, 2014:439). This is because researchers have a duty to avoid or mitigate harm in studies with humans. Thus, to be an ethical researcher, one must use techniques to mitigate any type of harm or discomfort: physical (e.g., injury), emotional (e.g., stress), social (e.g., lack of social support) or financial (e.g., loss of wages), and even ones that are temporary. Since respondents may be harmed psychologically in the course of a research study, the researcher must look for the subtle dangers and guards against them (Babbie, 2016:63-64; Polit & Beck, 2018:134-135).

In this study, respondents were not subjected to any physical activity that could hurt them; they were informed of the advantage gained from the study and that there were no predictable risks related to participation. However, there could be potential for emotional harm if respondents had been diagnosed with breast cancer or experienced loss of family because of the illness; thus, the researcher availed himself during data collection to facilitate referral for counselling when indicated. In case of a need for additional information, the researcher also availed his telephone and e-mail contact address for possible linkage to therapy services for any respondent who encountered emotional or psychological disturbance due to the giving of information. Respondents did not experience harm in the form of any financial expenses by engaging in this study and there were no motivational incentives offered for participation.

A consent form was prepared to ensure the protection of respondents from any possible physical or psychological damage. The consent form (Annexure 4) outlines the purpose and objectives of the study and stresses the fact that privacy and anonymity would be preserved with regard to the information given. To avoid the feeling of respondents that they were wasting their time, there was a full explanation in the consent form (Annexure 4) that responding to the questionnaire would take a maximum of 35-45 minutes. Consequently, the study achieved the right to safety from pain and damage.

### **3.4.6 Benefit to respondents (beneficence)**

Beneficence is among three basic ethical principles guiding researchers to ensure the well-being of the subject, who has a right to safety from pain and injury. Thus, the researcher is expected to “do good” and “above all, do no harm” (Brink et al., 2018:29; Burns & Grove, 2017:321).

This research intended to minimise harm and maximise benefit, thus respondents or the society as a whole could benefit from the outcome of the study as the study reflects the level of knowledge that exists among female high school teachers on methods for early breast cancer detection. It is for this purpose that the AACAEB will receive a copy of the research’s report for its own information and action.

There was clarification of the advantages of engaging in the research with regard to the importance of conducting the study. The study respondents were told their taking part in the study would make available the necessary data to assess the knowledge, attitude and practice breast cancer and its early detection among female high school teachers, which would help to establish strategies to address the topic of interest to the broader community.

### **3.4.7 Scientific honesty**

As the aim of research was to produce sound scientific information, which is only attainable through the honest conduct, reporting and publication of quality research, a researcher must exercise respect for the scientific community by preserving the integrity of scientific knowledge (Burns & Grove, 2017:367). Thus, in accordance with these principles and academic propriety and convention, all resources referred to in this dissertation received correct acknowledgment, both in the text and in the listing of references.

### **3.4.8 Competency**

The researcher, during his public health education offered at UNISA, has acquired extensive knowledge from the course modules on research methods and analytic health measurement and assignments, and has successfully passed the mentioned courses; he also has gained experience on research during the undergraduate

community health practice engagement through conducting a study on prevalence of trachoma in a village north-west of Ethiopia and in his post-graduate course on the pattern of childhood malignancies in a tertiary hospital in Addis Ababa. In his current career, he has experience in research as co-author of an operational research article on the outcome of HIV exposed infants enrolled into care in two regions of Ethiopia, and the author of another article on uptake of isoniazid preventive therapy among the under-fives, using TB contact investigation as the entry point in two regions of Ethiopia.

### **3.5 DATA HANDLING AND ANALYSIS**

Data analysis refers to the systematic arrangement and synthesis of research data, according to Polit and Beck (2018:545), and the testing of hypotheses using such data in quantitative studies.

In this study data handling was through daily manual checking of questionnaires for completeness by the researcher after each data collection session. The researcher kept the completed questionnaires in a locked cabinet to ensure safety. On the questionnaire, there was no identification of the respondents using personal details. The questionnaire included coding which used numbers in place of respondent's names, which made it easier for data entry. The questionnaires were coded using consecutive numbers, e.g., 001-A for the first school and respondent number one in that school. A statistician was involved in the data entry and analysis process (Annexure 6). Thus, there was precaution taken to reduce errors during the data entry phase. To ensure data accuracy further, data points were tested for accuracy at random and all detected errors were corrected (Burns & Grove, 2017:717). Such preparation before data entry made the entry process simpler and automatic, thereby reducing data entry errors and time required for data entry.

The encoded questionnaires, or collected data, were entered into the CSPro version 7.3 as this programme was found to be user friendly. A secret password known only to the researcher protected the data files. Following this, the data was exported to the software known as SPSS (2019), Version 22, which is the most commonly used statistical software package (Burns & Grove, 2017:696). The presentation of the results was in the form of graphs, tables and diagrams such as pie charts. Linear

logistic regression analysis determined the relationship between dependent and independent variables.

Therefore, for inferential statistics, bivariate and multivariate logistic regression was calculated and tables, charts, graphs and percentages used for descriptive statistics and comparisons, for which p-values below 0.05 were statistically significant.

The completed questionnaires were kept under lock and key. Five years after publishing the research report and article, the researcher will destroy the filled questionnaires.

### **3.6 VALIDITY AND RELIABILITY**

Validity and reliability are concerned with quality of the data and its accuracy and suitability of the methods used in conducting the study (Kumar, 2014:57). The discussion of the two main quantitative measures applied to evaluate the quality of this study follows.

#### **3.6.1 Validity**

Validity refers, according to Babbie (2016:148), to the extent to which an empirical measure adequately reflects the real meaning of the concept under consideration. Therefore, it is an important criterion to evaluate methods for measuring variables. The question of validity is whether the methods are really the concepts they intend to measure (Polit & Beck, 2018:121). Validity is important because it reflects the degree to which the study tests its underlying hypothesis, supporting the study's conceptual level and its theoretical context (Burns & Grove, 2017:433). Similarly, validity is concerned with the soundness of the facts of the analysis, that is, if the results are consistent, persuasive, and well founded (Polit & Beck, 2018:121). Thus, to assess a study's validity, one needs to see the following aspects of validity that are described below, including the measures taken to enhance each aspect, namely internal and external validity.

##### ***3.6.1.1 Internal validity***

Internal validity refers to the degree to which the results found in a study are attributable or not to external or confounding factors, but to the independent variable(s) (Brink et al., 2018:93). Thus, other than the independent variable, any factor that influences the dependent variable constitutes a threat to internal validity. A researcher therefore needs to be careful in managing extraneous variables to rule out other factors or threats as he/she could face challenges on the conclusion that the relationship between the variables or the subject's performance on the dependent measure was due to the independent variable. Internal validity threats include temporal uncertainty (whether the cause followed the effect), and selection threat that represents biases resulting from pre-existing discrepancies between groups, i.e., selection bias that arises when individuals are not randomly assigned to groups describes the selection threat well (Polit & Beck, 2018:230). This study employed a simple random sampling method to select female high school teachers, therefore free from selection bias, and ensured representativeness. The criteria for inclusion and exclusion classified the population from which the random sample was chosen. The history threat is the occurrence of events that can influence the result happening concurrently with the independent variable. During the data collection process, there was no concurrent recognised event or campaign related to breast cancer. Thus, the effect of the history threat remained minimal. The maturation threat emerges from processes that take place because of time (e.g., development, fatigue) rather than the independent variable; it typically applies to all changes in development and any shift that occurs as a function of time (Polit & Beck, 2018:231). Unlike pre-test post-test designs, as this design was cross-sectional, it was not vulnerable to maturation threat. Moreover, in this study the consistent implementation of measurements, such as using the same structured self-administered questionnaire for data collection, keeping the study or data collection environment relatively consistent through collecting data in multipurpose halls at respective schools, helped to avoid information bias. The data collection occurred during the extracurricular time of each respondent, between 8 am-5 pm for all respondents, therefore helped in not affecting the measurements of variables of interest. In this study, respondents took 35-45 minutes to respond to the self-administered questionnaire and it was possible to collect data from 2-3 high schools in a day. All respondents completed items in the questionnaire. The respondents were also not exposed to a previous similar study, as there was no such study conducted in Addis Ababa schools to the knowledge of the researcher.

The threat that emerges from attrition in groups being compared is mortality or attrition threat. As this study's data collection process took a considerably short period of time there was no potential for systematic variation results in the study sample, which ensures its representativeness of the target population. The fact that the number of respondents included in the final analysis was similar to the original sample ensured this. Thus, the absence of subjects dropping out of the study before its completion ensures no attrition threat.

### **3.6.1.2 External validity**

External validity concerns whether relationships observed for research participants could be accurate for different persons, situations and environments (Polit & Beck, 2018:197).

Threats to external validity include:

- *The reactive effect (Hawthorne effect)*

These are a group of associated effects that emerge from the fact that the subjects realise they are being watched and therefore behave in an unnatural way. The Hawthorne Effect means that awareness of being in a study will cause individuals to alter their actions, obscuring the influence of the variables of the study. Thus, as the respondents become aware of their participation in the study during the informed consent and data collection process, this may influence their response to the self-administered questionnaires (Brink et al., 2018:95). In this study, even if the subjects knew about the conducting of a study, they had the freedom to respond as they wished, as a self-administered questionnaire was the mode of data collection. This study maintained heterogeneity of the sample by enrolling 30 different schools for sample collection and using simple random sampling as the sampling procedure, therefore it was expected to enhance external validity of the data. Moreover, the respondents received information initially of the value placed on getting their responses on what they actually believe, know or do, and not of what it should be. This study relied on solicited responses through an anonymous questionnaire and assurance of confidentiality to minimise the Hawthorne Effect, which would ensure generalisability of the study. Additionally, the collection of the data was in the

respondents' daily environment, at their own time, using a self-administered questionnaire technique that did not require special skills or unusual apparatus.

- *Researcher effects (Rosenthal Effect)*

These threaten external validity when the researcher's characteristics or behaviour influences the subject's behaviour (Burns & Grove, 2017:435). As this study used a cross-sectional design, and did not employ blinding techniques as in experimental designs, there was no effect on external validity. Additionally, as no data collectors were employed, the effect on external validity was minimised. The researcher, during data collection through the self-administered questionnaire, refrained from influential researcher characteristics either verbally or non-verbally, such as facial expressions, clothing, age or gender, thus ensuring external validity.

### **3.6.1.3 Instrument's validity**

Instrument validity attempts to assess whether, given the context in which it is applied, an instrument correctly measures what it is intended to measure (Brink et al., 2018:151). In this study, two of the concepts related to instrument validity were considered to improve the quality of the self-administered questionnaire.

Content-related validity was achieved through two phases in this analysis. A comprehensive search and review of literature took place in the related field to ensure the instrument accounted comprehensively for the essential elements of the variables or concepts measured, i.e., all appropriate questions in knowledge, attitude and practice on methods of early breast cancer detection. To address content and face validity, a consultation with a statistician, experienced in data analysis and interpretation in clinical research, and one researcher, a medical doctor with public health specialty and research experience in the field of public health, was made to ensure that the key elements were addressed by the instrument; their respective comments were included. Conducting a small-scale pre-test of the instrument among female high school teachers also helped to check the content and face validity.

However, in the development or evaluation of the questionnaire, inconsistent validity, criterion-related validity, predictive validity, concurrent validity and construct validity were not taken into consideration.

### **3.6.2 Reliability**

An instrument's reliability is a matter of whether each time a particular technique, repeatedly applied to the same thing, yields the same result. However, it does not actually guarantee accuracy any more than what precision does. It is that the quality of the method of measurement, which indicates the obtaining of the same information each time in repeated observations of the same phenomenon (Babbie, 2016:146-147). It refers to the consistency and accuracy of data collected in a study, and is therefore a main criterion for evaluating its adequacy and quality (Babbie, 2016:150). It is the consistency with which an instrument measures the attribute. It also concerns accuracy as it refers to the extent that it captures true scores (Burns & Grove, 2017:692; Polit & Beck, 2018:259-260).

Therefore, in repeated measures, the less variation an instrument creates, the greater its reliability, which equates with a measure's stability, consistency, dependability and accuracy (Bhattacharjee, 2014:57). According to Joubert and Ehrlich (2014:107), the degree of similarity of the results obtained when the measurement is repeated on the same subject or category refers to reliability or accuracy. Poor reliability (variation between measures) for a study can stem from differences among interviewers (inter-observer variation), as well as in the same interviewer on different occasions (intra-observer variation). To assess reliability of an instrument, researchers use parameters (tests), such as test-retest reliability, which can assert stability (ascertained by testing the same subjects on two separate occasions using the same instrument and comparing the scores); inter-rater reliability (making two or more observers or coders do independent observations and look for congruency) and internal consistency (measuring the scale to the degree that items measure the same attribute) (Polit & Beck, 2018:260).

Brink et al. (2018:155-157) also state that stability, internal consistency or homogeneity and equivalence are the three main aspects of reliability that are of



interest to the researcher collecting quantitative data. The following steps were taken by the researcher to improve the reliability of the instrument used for this study:

- Use of a structured questionnaire
- Presence of the researcher to respond to possible unclear statements during the data collection process by the self-administered questionnaire
- Absence of data collectors
- Periodic check was conducted while the respondents were completing the questionnaire
- The study was conducted on an adequate number of subjects and in a short period of time, data was collected to ensure stability (and respondents were requested not to alert others about the study)
- The researcher used some items adapted from previous research that examined different sections of women's knowledge, attitude and practices toward early detection of breast cancer to ensure internal consistency, and different literature on the subject has also been consulted and the instrument was pre-tested
- To gain their collaboration and participation in the research, the purpose of the study was clarified to the respondents. The researcher was available to react and explain any aspects of the items that were vague during the data collection process. Questions were made clear and no medical terminology were used to enable respondents understand what the researcher wanted as much as possible. The instrument's ability to achieve the same result when used repeatedly was addressed in plain and simple terms through the use of a self-administered questionnaire to avoid confusion or misconceptions and misunderstandings by respondents. The reliability of the research was also strengthened by cleaning data using initial frequencies. The physical setting being the school normal environment for all teachers ensures reliability.
- Due to the use of self-administered questionnaires, there was no chance for interviewer-interviewee interaction that can affect responses significantly

### **3.7 SUMMARY**

This chapter discussed the research methodology that guided the study. For this study, a quantitative approach using descriptive cross-sectional design was used. It utilised a simple random sampling technique and collected data, using a self-

administered structured questionnaire, from 195 female high school teachers in 30 high schools in Addis Ababa.

It identified the target population, the sample, the sample size, the process used by the researcher to assemble the sample, the data collection tool developed by the researcher, the data analysis method to be used, and the method in which the data was analysed. The chapter also discussed the ethical and legal considerations taken in this study. The possible risks and steps taken to ensure the study's validity and reliability have been described.

Data analysis, results and description of the research findings will be discussed in the next chapter.

## **CHAPTER 4**

### **ANALYSIS, PRESENTATION AND INTERPRETATION OF THE RESEARCH RESULTS**

#### **4.1 INTRODUCTION**

Chapter 3 presented and discussed the research design and methods used in this study. The purpose of the study was to describe the knowledge, attitude and practices of female high school teachers towards early detection of breast cancer.

The objectives of the study were to:

- determine female high school teachers' knowledge and attitude towards early detection of breast cancer
- describe female high school teachers' practices towards early detection of breast cancer

This chapter presents the results that emerged from the data analysis and will integrate discussions and interpretations of the research findings, and include reference to literature.

#### **4.2 DATA COLLECTION AND MANAGEMENT**

Data was collected by a self-administered structured questionnaire consisting of the following sections:

- Demographic characteristics
- Knowledge about breast cancer
- Knowledge on risk factors for breast cancer
- Knowledge on early warning signs of breast cancer
- Attitude towards breast cancer
- Practices toward early detection methods of breast cancer – breast self-examination

- Practices toward early detection methods of breast cancer – clinical breast examination
- Practices toward early detection methods of breast cancer – Mammography
- Sources of information regarding breast cancer

In total, there were 195 self-administered questionnaires distributed to respondents who completed and returned them. The analysed data from the 195 questionnaires completed by female high school teachers will be presented. As the respondents received the questionnaire in their workplace, the response rate at each school was 100%. The calculation of the responses, as described by Polit and Beck (2018:249), was by dividing the number of persons participating in the study by the number sampled. The high rate of response in this study was the result of the presence of the researcher during the data collection; he was there to clarify any items the respondents may have found difficult to interpret in the questionnaire. It may also reflect the fact that the questions were interesting to the respondents as they may be directly related to each respondent's health status. The researcher began data cleaning while collecting the questionnaires, by ensuring the correct completion of all the information on each questionnaire. This helped early rectification of problems with completeness of data collected. The questionnaires were coded using consecutive numbers, e.g., 001-A for the first school and respondent number one in that school, and kept in a lockable cupboard by the researcher until data analysis commenced; hence serving as a backup data. The questionnaires or collected data were entered into an electronic data entry field of CSPro, which was protected by a secret password.

### **4.3 DATA ANALYSIS**

According to Polit and Beck (2018:249), data analysis is a critical step in research that helps reduce, organise and give meaning to the data. It involves the use of descriptive analysis techniques to describe demographic variables and study variables. Inferential statistical techniques were used to test proposed relationship among variables and to make predictions to examine group differences. Prior to analysis, data cleaning commenced by checking for out-of-range numerical values, such as age, inconsistencies and missing values (Bowling, 2014:377-378).

Data was further analysed by a statistician using SPSS (2019), Version 22. The statistician used both descriptive and inferential statistics. The descriptive statistics, which is the count of how many respondents selected a particular response, was conducted in percentages and frequencies and presented using tables, pie charts and bar charts in the display of the results. For inferential statistics, a p-value of less than 0.05 ( $P < 0.05$ ) was set as the level of statistical significance for the tests performed (Grove, Burns & Gray, 2013:998).

The N value indicates the total sample for the study, while the n value indicates the responses on a question within the sample. The responses were as percentages, rounded off to the first decimal point.

## **4.4 RESEARCH RESULTS**

### **4.4.1 Descriptive statistics**

To reveal characteristics of the sample and to describe study variables, descriptive statistics are computed (Burns & Grove, 2017:986). Descriptive statistics provide simple summaries about the samples and the measures of central tendency. It helps to quantify the characteristics of parametric numerical data by employing measures such as frequency distributions, measures of central tendency such as mean, median and mode, and measure of dispersion or variability such as range and standard deviation (LoBiondo-Wood & Haber, 2014:298; Walliman, 2018:117). Descriptive statistics help to simplify a large quantity of data in a meaningful way, hence are used to describe and summarise data. Descriptive statistics also condense and convert a collection of data into an organised visual representation, or picture in a variety of ways, so that the data have some meaning to the readers of the research report (Brink et al., 2018:166).

The following sections describe the demographic information of the respondents, variables such as age, religion, marital status, education level, monthly income and tenure of service.

#### 4.4.1.1 Section A: Socio-demographic data

This section presents information about the age, religion, marital status, educational status, number of children alive, husband's education, duration of practice as high school teacher and monthly income of respondents.

##### 4.4.1.1.1 Age distribution of respondents

Table 4.1 presents the age distribution of the respondents in 10 years categories. The majority respondents were younger than 40 years (87.7%; n=171). The age group 50 years and older accounted for a small proportion (4.1%; n=8) of the study respondents. The result from the study shows that majority of the respondents belong to the age group 20-29 years.

**Table 4.1 Age distribution of respondents (N=195)**

Years	n	Percent
20-29	112	57.4
30-39	59	30.3
40-49	16	8.2
50 years or older	8	4.1
<b>Total</b>	<b>195</b>	<b>100.0</b>

##### 4.4.1.1.2 Religious affiliation of respondents

Table 4.2 presents the religious affiliation of respondents. It shows that Christians of all types account for the majority, i.e., 95.9% (n=187) of respondents, from which the majority were Orthodox Christians (76.4%; n=149), i.e., three out four respondents were Orthodox Christians.

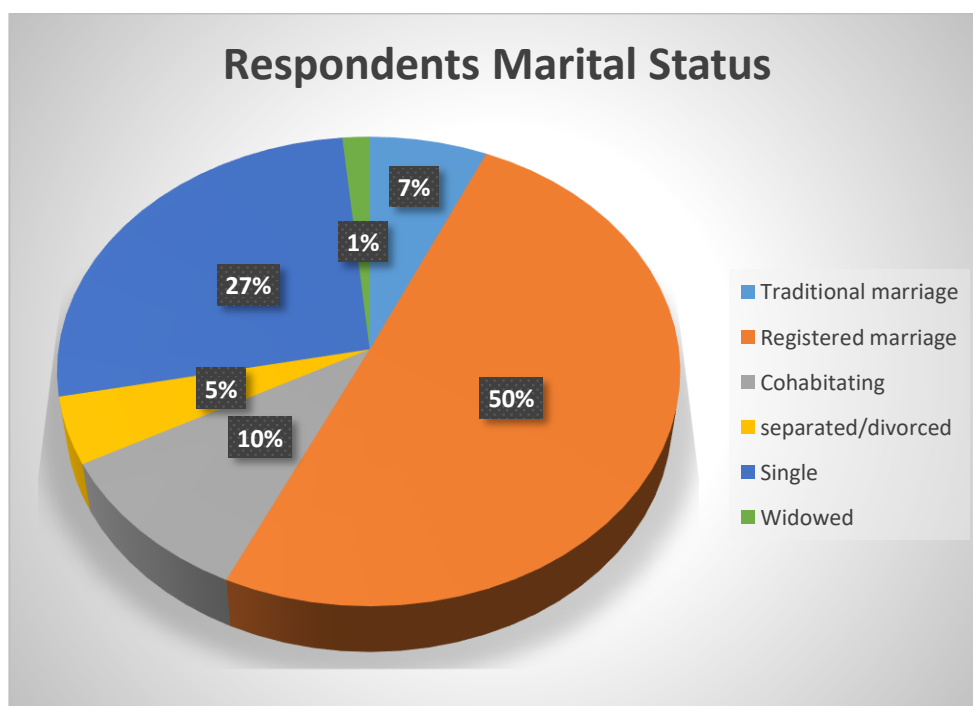
**Table 4.2 Religious affiliation of respondents (N=195)**

Religion	n	Percent
Catholic	5	2.6
Orthodox	149	76.4
Protestant	33	16.9
Islam	7	3.6
Other	1	0.5
<b>Total</b>	<b>195</b>	<b>100.0</b>

This shows that the majority of respondents in this study claimed to be Orthodox Christians.

#### 4.4.1.1.3 Marital status of respondents

Figure 4.1 shows the distribution of the respondents by marital status. Accordingly, married respondents accounted for the highest (50.3%; n=98) proportion compared to others. The married respondents were twice as many as those single. The least common status was that of widows, accounting for 1% (n=2) of the respondents. This is in line with the age distribution of the respondents, where the majority of the respondents (87.7%; n=171) were between 20 to 39 years of age.



**Figure 4.1 Marital status of respondents (N=195)**

#### 4.4.1.1.4 Respondents educational status

Table 4.3 depicts the educational status of the respondents. As expected, a high percentage, 88.2% (n=172), had a qualification of degree and above, while only 4.1% (n=8) had a diploma qualification. This is in line with qualification requirements for teachers in Ethiopia. Until 2010, it was required that a teacher at a high school would be in possession of an integrated four-year Bachelor's degree; this has changed to a three-year degree in a major field, plus an additional post-graduate diploma in

professional education (Joshi & Verspoor, 2013:92). The fact that 1.5% (n=3) reported to have a primary education could be explained by staff assigned in subject matters such as Sports and Arts.

**Table 4.3 Education status of respondents (N=195)**

<b>Educational status</b>	<b>n</b>	<b>Percent</b>
Primary education	3	1.5
High school	12	6.2
Diploma	8	4.1
Degree and above	172	88.2
<b>Total</b>	<b>195</b>	<b>100.0</b>

#### 4.4.1.1.5 Number of children alive at present

Among the respondents, 34.9% (n=68) confirmed they had 1-2 children, as seen in Table 4.4. The lowest proportion of respondents had more than six children (1.0%; n=2), and nearly half (47.7%; n=93) had none.

**Table 4.4 Distribution of respondents by the number of children alive (N=195)**

<b>Number of children alive</b>	<b>n</b>	<b>Percent</b>
None	93	47.7
1-2	68	34.9
3-4	27	13.8
<b>5-6</b>	<b>5</b>	<b>2.6</b>
More than 6	2	1.0
<b>Total</b>	<b>195</b>	<b>100.0</b>

#### 4.4.1.1.6 Husband's education

Of the married respondents (50%; n=98), the majority (87.8%; n=86) were married to a husband with an educational status of degree and higher. Thus, the majority of the respondents had an equivalent qualification to that of their husbands.

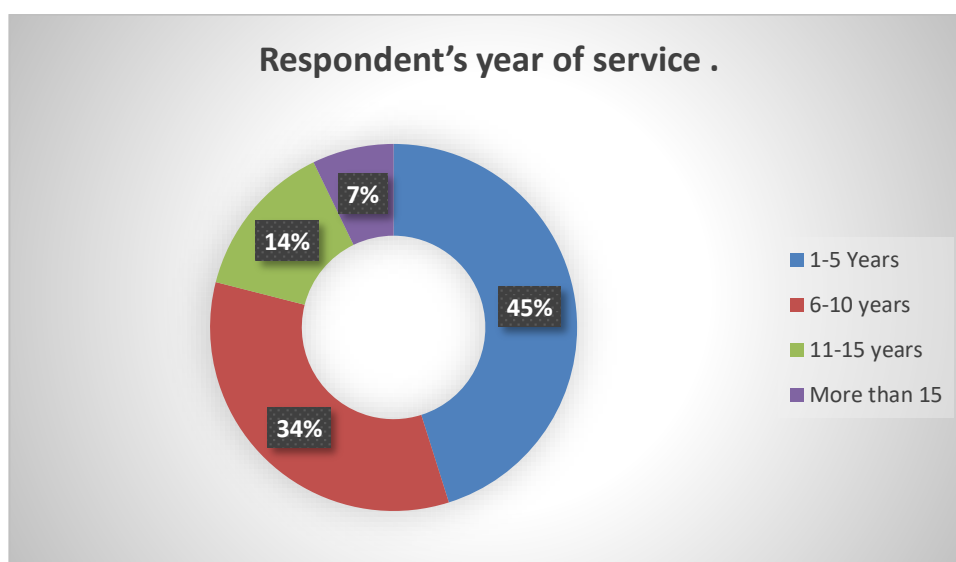
**Table 4.5 Education level of respondents' husbands (N=98)**

<b>Educational level</b>	<b>n</b>	<b>Percent</b>
Illiterate	1	1.0
Read and write	2	2.0
High School	9	9.2
Degree & above	86	87.8
<b>Total</b>	<b>98</b>	<b>100.0</b>



#### 4.4.1.1.7 Duration of practice

The tenure of service of respondents as high school teachers was between the range of 1-5 years and more than 15 years. Figure 4.2 shows that the highest proportion of respondents' duration of tenure as a high school teacher was 1 to 5 years (45%; n=88). This was possible as slightly more than half of the respondents were younger than 30 years of age.



**Figure 4.2 Respondents' tenure as high school teachers (N=195)**

#### 4.4.1.1.8 Age of respondents at first child

Table 4.6 shows 62.1% (n=121) of respondents had a child. The most frequent age range at the birth of the first child was between 20 and 24 years (45.5%; n=55), the least age at first child was between 30 and 34 (5.8%; n=7), while 38.0% (n=74) reported that they never had a child.

**Table 4.6 Distribution of respondents by age of 1<sup>st</sup> pregnancy including childbirth (N=121)**

Age of 1 <sup>st</sup> pregnancy including childbirth	n	Percent
15-19 years	17	14.0
20-24 years	55	45.5
25-29 years	42	34.7
30-34 years	7	5.8
<b>Total</b>	<b>121</b>	<b>100.0</b>

#### 4.4.1.1.9 Monthly income of respondents

Information on monthly income of respondents is reflected in Table 4.7.

**Table 4.7 Monthly income of respondents in Ethiopian Birr (ETB) (N=195)**

Amount of monthly income (ETB)	n	Percent
<=2000	14	7.2
2001-3000	95	48.7
3001-5000	79	40.5
>10,000	7	3.6
<b>Total</b>	<b>195</b>	<b>100.0</b>

Of the total number of respondents, 48.7% (n=95) earned a monthly income of between 2,001 and 3,000 ETB, while respondents earning more than 10,000 ETB accounted for only 3.6% (n=7). The monthly income compares well with the national minimum wage of Ethiopians, where the living wage for a single adult is calculated to be 1960-3510 ETB and a typical family earns a monthly income of 2670-4580 ETB (Living Wage Series, Ethiopia 2018).

#### 4.4.1.2 Section B: Knowledge on breast cancer

Section B of this questionnaire used a five-point Likert scale, ranging from “Strongly agree” to “Strongly disagree.” To simplify the discussion, the two alternatives “Strongly agree” and “Agree” were grouped together as ‘Agree,’ while the responses “Disagree” and “Strongly disagree” were grouped together as “Disagree.” Tables 4.8 to 4.11 present the statements that indicated if the respondents were or were not knowledgeable about breast cancer. The researcher highlighted the responses accepted as correct by shading the specific rows in the tables.

##### 4.4.1.2.1 Knowledge of respondents on breast cancer

The respondents seem to be knowledgeable about the curability of cancer, as 63.6% (n=124) agreed that cancer could be cured and 80.0% (n=156) agreed breast cancer could be cured when detected early. The respondents incorrectly assumed that breast cancer could not be cured (17.4%; n=34), or that breast cancer can be cured at any time (19.0%; n=37). The WHO (2016b:4) states that early detection to improve breast cancer outcome and survival remains the cornerstone of breast cancer control. The

earlier cancerous cells and tumours are found, the more likely a patient can be cured after treatment.

**Table 4.8 Knowledge about the curability of breast cancer (N=195)**

Curability of breast cancer	Agree		Do not know		Disagree		Total	
	n	%	n	%	n	%	N	%
Breast cancer can be cured	124	63.6	38	19.5	33	16.9	195	100
Breast cancer can be cured if detected early	156	80.0	22	11.3	17	8.7	195	100
Breast cancer cannot be cured at any time	38	19.5	45	23.1	112	57.4	195	100
Breast cancer cannot be cured	34	17.4	63	32.3	98	50.3	195	100
Breast cancer can be cured at any time	37	19.0	48	24.6	110	56.4	195	100

Of the respondents, 57.9% (n=113) correctly disagreed that it is a communicable disease and that breast cancer could be the result of an evil eye, i.e., a gaze or stare superstitiously believed to cause harm (*Oxford Dictionary of English*, 2016:1638) or a curse (65.6%; n=128) (Table 4.9).

While only 20.5% (n=40) of respondents correctly disagreed that a tight bra can, over time, cause breast cancer, a further low percentage, 18.5% (n=36), correctly disagreed that a hard blow to the breast may cause breast cancer in later life. There is no sufficient evidence to establish a positive association between the duration and type of brassiere wearing and breast cancer (So, Chan, Lou, Choi, Chan et al., 2015:193). Evidence also shows that injury to the breast and curse are also common beliefs associated with breast cancer (Morse, Maegga, Joseph & Miesfeldt, 2014: 76). Hence, respondents seem to have inadequate knowledge regarding breast cancer being a result of wearing a tight bra or a hard blow to the breasts.

**Table 4.9 Knowledge about possible cause of breast cancer (N=195)**

Possible cause of breast cancer	Agree		Do not know		Disagree		Total	
	n	%	n	%	n	%	N	%
Breast cancer is a communicable disease	44	22.6	38	19.5	113	57.9	195	100
The irritation of a tight bra can, over time, cause breast cancer	83	42.6	72	36.9	40	20.5	195	100
A hard blow to the breast may cause breast cancer later in life	67	34.4	92	47.1	36	18.5	195	100
Breast cancer can be a result of a curse/evil eye	22	11.3	45	23.1	128	65.6	195	100

#### 4.4.1.2.2 Respondents knowledge on risk factors for breast cancer

There was an enquiry into the respondents' knowledge regarding risk factors for breast cancer. Respondents received a list of possible factors associated with breast cancer and requested to indicate their level of agreement or disagreement if each listed factor posed a risk to develop breast cancer. Table 4.10 presents the response for each possible risk factor.

**Table 4.10 Knowledge on risk factors for breast cancer (N=195)**

Risk factors for breast cancer	Agree		Do not know		Disagree		Total	
	n	%	n	%	n	%	N	%
Late menopause (> 55 years)	72	36.9	57	29.2	66	33.9	195	100
Having no children	58	29.7	66	33.9	71	36.4	195	100
Having more than five children	25	12.8	58	29.8	112	57.4	195	100
Late age at the birth of the first child	51	26.2	72	36.9	72	36.9	195	100
Oral contraceptive use	56	28.7	68	34.9	71	36.4	195	100
Breast Feeding	53	27.2	41	21.0	101	51.8	195	100
Smoking	131	67.2	40	20.5	24	12.3	195	100
Alcohol	133	68.2	37	19.0	25	12.8	195	100
Diabetes	73	37.4	75	38.5	47	24.1	195	100
History of breast lumps	99	50.8	65	33.3	31	15.9	195	100
Family history of breast cancer	100	51.3	49	25.1	46	23.6	195	100
Exposure to radiation	139	71.3	41	21.0	15	7.7	195	100
Obesity	69	35.4	81	41.5	45	23.1	195	100

Regarding knowledge on factors that may affect the probability of having breast cancer, more than half of the respondents (57.4%; n=112) responded correctly about the effect of having more than five children, 51.8% (n=101) about breast feeding, 50.8% (n=99) about history of breast lumps and 51.3% (n=100) with a family history

of breast cancer. Other risk factors such as diabetes (37.4%; n=73), late menopause (36.9%; n=72), obesity (35.4%; n=69) and having no children (29.7%; n=58) were less recognised among the risk factors. However, only 28.7% (n=56) and 26.2% (n=51) responded correctly about the effect of oral contraceptive use and late age at the birth of the first child respectively. Most recognised risk factors were exposure to radiation (71.3%; n=139), alcohol use (68.2%; n=133) and smoking (67.2%; n=131). This shows that even though knowledge existed about some risk factors, there is still a gap in exhaustively identifying risk factors for breast cancer by respondents.

According to the WHO (2016b:55) and the International Agency for Research on Cancer (IARC), late menopause, having no children, late age at the birth of the first child, not breast feeding and oral contraceptive use are among the reproductive and hormonal risk factors, while smoking, alcohol consumption and obesity are lifestyle risk factors associated with breast cancer. A history of breast lumps, family history of breast cancer and exposure to radiation are among the non-modifiable risk factors for breast cancer.

#### *4.4.1.2.3 Respondents knowledge of early warning signs of breast cancer*

Respondents were asked to identify early warning signs of breast cancer. The majority, (72.3%: n=141) agreed that pain in one breast is an early sign, which was a correct statement, followed by 61.5% (n=120) correctly identifying skin changes of breast, and 49.2% (n=96) identified lump or swelling in the neck or armpit as an early sign. The least identified signs were recent onset nipple discharge in a woman who is not pregnant and recent onset of nipple retraction/inversion, to which 43.6% (n=85) and 38.5% (n=75) respectively were identified as signs of breast cancer.

**Table 4.11 Knowledge on early warning signs of breast cancer (N=195)**

Early warning signs of breast cancer	Agree		Do not know		Disagree		Total	
	n	%	n	%	n	%	N	%
Pain in one breast	141	72.3	42	21.5	12	6.2	195	100
Cyclical monthly pain on both breasts	95	48.7	49	25.1	51	26.2	195	100
Recent onset nipple discharge in a woman who is not pregnant	85	43.6	79	40.5	31	15.9	195	100
Recent onset of nipple retraction/inversion	75	38.5	99	50.8	21	10.7	195	100
Lump/swelling in neck or armpit	96	49.2	75	38.5	24	12.3	195	100
Skin changes of breast	120	61.5	48	24.6	27	13.9	195	100
Asymmetry of the breasts in childhood	73	37.4	84	43.1	38	19.5	195	100

Cyclical monthly pain in both breasts and asymmetry of the breasts in childhood were incorrectly identified by 48.7% (n= 95) and 37.4% (n=73) respectively as early warning signs of breast cancer.

The common symptoms and clinical signs of breast cancer include lump in the armpit or neck, feeling of lumpiness in the breast, unilateral nipple retraction or inversion, unilateral bloody or serous nipple discharge, localised breast skin changes, such as tethering, oedema, puckering, or skin thickening, and eczematous changes in or around the nipple or areola (WHO, 2016b:86). Although it appears as if most respondents were knowledgeable about most of the warning signs of breast cancer, a large percentage appeared to be uncertain.

#### ***4.4.1.3 Section C: Respondents' attitude toward early detection and prevention of breast cancer***

This section presents information on female high school teachers' attitude towards early detection of breast cancer. In this section, respondents also had to indicate to what extent they agreed or disagreed to statements on early detection of breast cancer. The results are presented in Table 4.12. Of the respondents, 27.2% (n=53) agreed there was nothing one can do to prevent breast cancer. In line with this, 40.5% (n=79) respondents agreed to the statement: '*If I mean to get breast cancer, I will get it.*'

**Table 4.12 Respondents' attitude towards prevention and detection of breast cancer (N=195)**

Attitude towards preventions and detection of breast cancer	Agree		Do not know		Disagree		Total	
	n	%	n	%	n	%	N	%
There is nothing you can do to prevent breast cancer	53	27.2	23	11.8	119	61.0	195	100
If I mean to get breast cancer, I will get it	79	40.5	54	27.7	62	31.8	195	100
All women should do breast self-examination	153	78.4	21	10.8	21	10.8	195	100
I feel uncomfortable, I cannot do breast self-examination once a month	95	48.7	43	22.1	57	29.2	195	100
It is embarrassing to have breast examination by a health worker	93	47.7	30	15.4	72	36.9	195	100
It is embarrassing to get mammography examination (x-ray of the breast)	93	47.7	41	21.0	61	31.3	195	100
A woman should not have her breast examined unless she has problems	49	25.1	22	11.3	124	63.6	195	100
If I discover a lump, I prefer to get treatment from a traditional healer	33	16.9	45	23.1	117	60.0	195	100
Early diagnosis and treatment of breast cancer can save a woman's life	141	72.3	31	15.9	23	11.8	195	100

Regarding respondents' attitude towards breast self-examination (BSE), 78.4% (n=153) agreed that all women should do BSE, while 48.7% (n=95) agreed they feel uncomfortable doing BSE at least once a month.

Breast examination by a health worker is one early method to detect breast cancer to reduce morbidity and mortality. In this regard, 47.7% (n=93) agreed that it was embarrassing to have a clinical breast examination (CBE) by a health worker.

Another technique to detect breast cancer early is mammography. In this study, 47.7% (n=93) of respondents agreed that undergoing mammography was embarrassing.

Of the respondents, 25.1% (n=49) agreed that a woman should not have her breast examined unless she was having problems.

Their perception on seeking treatment from a traditional healer when discovering a lump on breast was enquired, for which 16.9% (n=33) of respondents agreed.

Respondents agreed (72.3%; n=141) with the statement that early diagnosis and treatment of breast cancer can save a woman's life.

Common factors associated with unfavourable attitude towards early detection and prevention of breast cancer included lack of knowledge and awareness about breast

cancer, psychological factors such as fear and anxiety in detecting breast abnormality, lack of knowledge on how to perform breast self-examination (BSE) and perception of not being at risk, fear of cancer treatments and fear of painful mammography (Jones, Maben, Jack, Davies, Forbes et al., 2014:6; Islam, Billah, Hossain & Oldroyd, 2017:1755).

#### **4.4.1.4 Section D: Respondents' practice of early breast cancer detection methods**

This section presents findings on practice of early breast cancer methods by female high school teachers, including breast self-examination (BSE), breast examination by health worker (clinical breast examination, CBE) and mammography.

##### **4.4.1.4.1 Respondents' practice of BSE**

According to the response, it would appear the respondents were inclined not to use the three available methods of early detection of breast cancer, as only slightly more than one third made use of breast self-examination (33.8%; n=66), while very few used clinical breast examination (9.2%; n=18) and mammography (6.2%; n=12).

Lack of knowledge on how to perform breast self-examination (BSE) is one of the most frequent barriers for practice of early breast cancer detection methods and fear of painful mammography (Islam et al., 2017:1758). It was odd that 78.4% (n=153) of respondents agreed, in Table 4.12, that all women should do breast self-examination, but only 33.8% (n=66) agreed they did so at least once a month. The practices of these respondents do not display the perception of 72.3% (n=141), that early diagnosis and treatment of breast cancer can save a woman's life, as exhibited in Table 4.12.

**Table 4.13 Respondents' practice of early breast cancer detection methods (N=195)**

Items	Yes		No		Do not know		Total	
	n	%	n	%	n	%	N	%
I perform breast examination at least once a month	66	33.8	121	62.1	8	4.1	195	100
I have performed clinical breast examination within the last year	18	9.2	165	84.6	12	6.2	195	100



I had undergone mammography in the past	12	6.2	160	82.0	23	11.8	195	100
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Table 4.14 shows that about half (50.8%; n=99) were unaware of the correct technique of breast self-examination (BSE) as 39.5% (n=77) gave the reason 'do not know how to do,' as for not practicing BSE, 26.2% (n=51) said 'never felt necessary,' 19.5% (n=38) gave the reason that cancer risk is high only after 45 years, 19% (n=37) felt shy to do BSE, 16.4% (n=32) have not heard of it before, while 14.9% (n=29) thought young people could not get breast cancer. Hence, the most common barriers for performing BSE are lack of awareness as to the correct technique and not knowing how to do BSE.

**Table 4.14 Reasons for not performing breast self-examination (N=195)**

Items	n	%
Unaware of proper/complete technique	99	50.8
Do not know how to do	77	39.5
Never felt necessary	51	26.2
Cancer risk is high only after 45 years	38	19.5
I feel shy to do it	37	19.0
Have not heard of it before	32	16.4
I did not think young people could get cancer	29	14.9

Regarding what measures they would take if they found a breast lump by BSE, the most frequent responses were definitely consulting a doctor (81.5%; n=159), consult a doctor if features were positive for breast cancer (80.5%;n=157), and 70.3% (n=137) inform a family member. The least likely actions were wait and see (24.1%; n=47) and seeking traditional treatment (9.7%; n=19) (Table 4.15).

**Table 4.15 Respondents' next action when finding a breast lump on self-examination of breast (N=195)**

Items	n	%
Wait and see	47	24.1
Inform a family member	137	70.3
Consult a doctor if features are positive for breast cancer	157	80.5
Definitely consult a doctor	159	81.5
Seek traditional treatment	19	9.7
Seek holy water	65	33.3

#### 4.4.1.4.2 Respondents' practice of CBE

Respondents were asked if they had had a breast examination by a health worker in the past year; the majority (89.7%; n=175) responded 'No,' while only 7.2% (n=14) responded 'Yes' and 3.1% (n=6) responded they did not know.

**Table 4.16 Respondents' practice of undergoing CBE (N=195)**

Have you had breast examination by a health worker in the past year	n	%
Yes	14	7.2
No	175	89.7
I do not know	6	3.1
<b>Total</b>	<b>195</b>	<b>100.0</b>

As presented in the Table 4.17, the most common reasons for not undergoing CBE include: having to work 43.1% (n=84), not knowing where to go 38.5% (n=75) and performing BSE 32.8% (n=64). Less common reasons include fear that it might be painful (27.7%; n=54), the doctor did not recommend it (26.7%; n=52) and being afraid of knowing to have a cancer (26.7%; n=52). The least common reasons for not having CBE include belief that a male would examine their breasts (10.8%; n=21), undergone a mammogram (7.7%; n=15) and that husband or male partner was not supportive (6.7%; n=13).

Hence, the most common perceived barriers for CBE are work commitments and not knowing where to go for CBE.

**Table 4.17 Reasons for not having clinical breast examination in the past year (N=175)**

Reason for not having clinical breast examination in the past year	n	%
Doctor did not recommend it	52	26.7
Embarrassment	36	18.5
Do not know where to go	75	38.5
Have to work	84	43.1
Might be painful	54	27.7
Fear of knowing you may have cancer	52	26.7
I do breast self-examination	64	32.8

It will not do me any good	35	17.9
Because a male will examine my breast	21	10.8
I had a mammogram	15	7.7
Husband/male relative not supportive	13	6.7

#### 4.4.1.4.3 Respondents practice of mammography

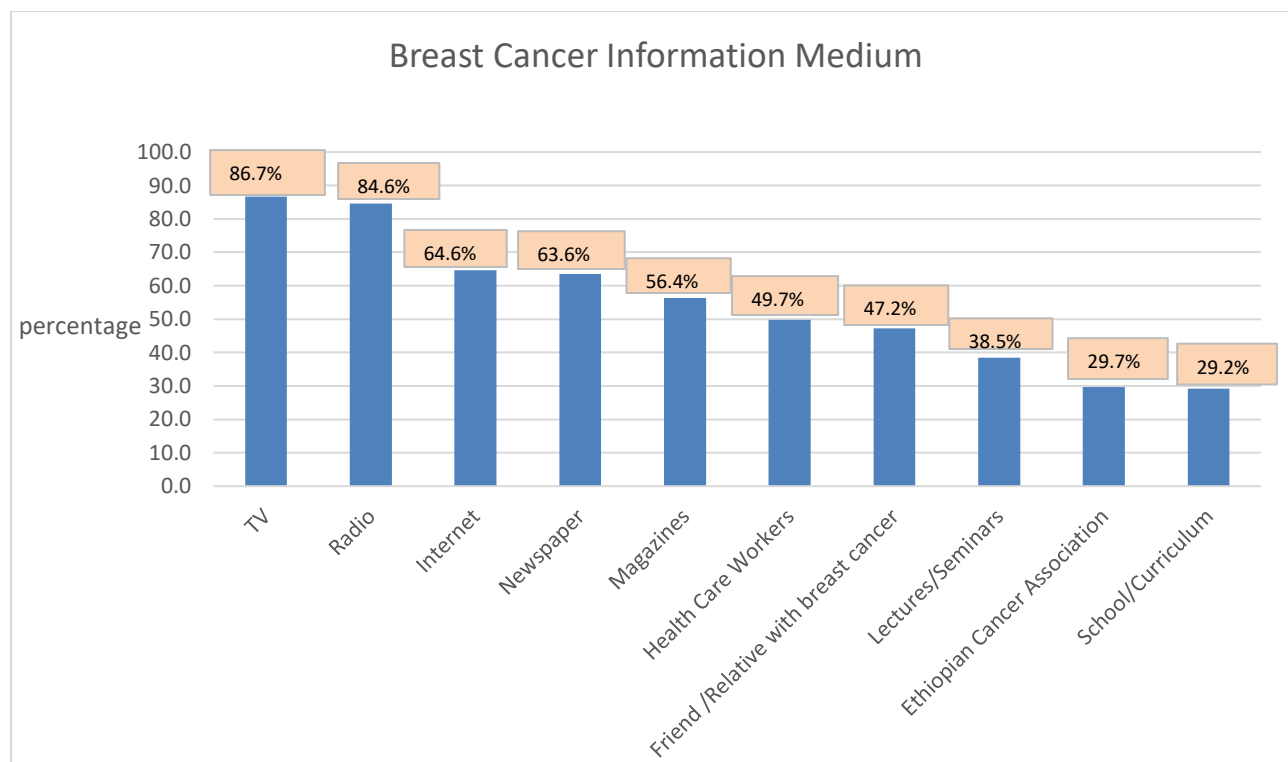
Table 4.13 shows that 6.2% (n=12) confirmed they had undergone mammography in the past. The reason for the low percentage that had a mammography, could be due to the fact that it is only available in a few referral hospitals and the cost associated with the procedure, as it is not provided free of charge. When inquired about their perception of mammography, 58.5% (n=114) claimed that they did not know if it was painful, while 59.5% (n=116) reported they did not know whether mammography was safe, and 46.2% (n=90) responded they did not know if mammography was more beneficial for women older than or those younger than 50 years. The high percentage of respondents who opted for the “Do not know” response could be an indication of a lack of information or interest in matters concerning their own health.

**Table 4.18 Respondents’ opinions on the use of mammography (N=195)**

Use of mammography	Yes		No		Don’t know		Total	
	n	%	n	%	n	%	N	%
Mammography is painful	18	9.2	63	32.3	114	58.5	195	100
Mammography is safe	44	22.6	35	17.9	116	59.5	195	100
It can detect early-stage breast cancer before it is palpable or felt by hand	70	35.9	47	24.1	78	40.0	195	100
Mammography is more beneficial in women older than 50 years than those younger than 50 years	50	25.6	55	28.2	90	46.2	195	100

#### 4.4.1.5 Respondents’ source of information regarding breast cancer

The respondents received their information regarding breast cancer from various sources. Television appeared to be the highest source of information for 86.7% (n=169), while the radio was regarded by 84.6% (n=165) as a source of information. Other common sources of information were 64.6% (n=126) for the internet and 63.6% (n=124) for the newspapers.



**Figure 4.3 Respondents' source of breast cancer information (N=195)**

The least common sources of information were lectures or seminars (38.5%; n=75), the Ethiopian Cancer Association (29.7%; n=58) and the school/curriculum (29.2%; n=57).

The Ethiopian Cancer Association, being among the least sources of information on breast cancer, needs to show efforts on improving awareness about breast cancer within the school community.

#### **4.4.2 Inferential statistics**

According to Burns and Grove (2017:542), the computing of inferential statistics is to draw conclusions and make inferences about the greater population based on the sample data set.

In this part of the data analysis section, the researcher, with the assistance of the statistician, performed a statistical analysis to determine the association between demographic variables and knowledge, and attitude and practice toward early detection of breast cancer among female high school teachers. The performing of bivariate and multivariate logistic regression was to identify demographic factors that can influence knowledge, attitude and practice of early detection of breast cancer.

The questionnaire consisted of three items that assessed respondents' knowledge related to breast cancer (nine questions on cause and curability of breast cancer, 13 questions related to BC risk factors and seven questions related to BC warning signs), nine items that assessed respondents' attitude regarding breast cancer screening methods and 31 questions regarding practice of breast cancer screening methods. Each correct response scored one (1) point and each wrong or "do not know" scored zero (0). A correct response was based on literature and current practice. The knowledge index was calculated for each respondent by summing the number of correct answers. The total score of the respondents' knowledge regarding breast cancer was 29 (100%). The knowledge level was categorised as "low" for scores within 0-49% and "high" for scores within 50-100%. These scores were then used to assess the relationship between socio-demographic factors and level of breast cancer knowledge and warning signs. In the section devoted to breast cancer attitude, the respondents scored each statement using a five-point Likert scale (one to five for strongly disagree, disagree, do not know, agree, and strongly agree, respectively). The calculation of the overall score of attitude was according to the total points acquired by the respondents regarding the nine items. The assumptions were that respondents with scores nine to 27 had negative beliefs, and those with scores 28 to 45 had positive beliefs. Evaluation of the practice part involved calculating the percentage of correct and incorrect responses to questions about practice of early methods of breast cancer detection, i.e., breast self-examination, undergoing clinical breast examination and mammography.

#### **4.4.2.1 Demographic factors**

##### *4.4.2.1.1 Age*

The researcher computed a cross tabulation to determine if there existed significant differences between female teachers in different age groups and level of knowledge, attitude and practice on early detection of breast cancer. Table 4.19 depicts that out of the total number of respondents, those in the age group 20-29 had better knowledge about curability of breast cancer, but when it came to knowledge on risk factors and early warning signs of breast cancer, respondents in the age group 50 years and older had better knowledge. The latter seems against the speculation that young women may be more likely to focus on self-care and be active learners and access available

information. In this study, this association of age with level of knowledge on breast cancer was not statistically significant. Similarly, Ayoola and Oyedunni (2016:75), in a study conducted to assess breast cancer knowledge and screening practices in Nigeria, found no significant association between breast cancer knowledge and age. Furthermore, the finding from the study contrasts with what was found in a study in India by Ahuja and Chakrabarti (2009:13), among a group of women in a tertiary hospital, and another study by Gamalat and Azhar (2011:254), in Egypt among female schoolteachers, where age had a statistically significant correlation with awareness, with younger women being more aware than older ones. Age, particularly older age (greater or equal to 40 years) was also among the predictors of satisfactory knowledge level with strong significance (Alharbi et al., 2012:69) in studies done in Kuwait and Saudi Arabia respectively.

**Table 4.19 Relationship between correct knowledge on curability, risk factor and early warning signs of breast cancer and age (N=195)**

Age in completed years	Knowledge on breast cancer (BC) curability				P-value	Knowledge on risk factors for BC				P-value	Knowledge on early warning signs of BC				P-value
	No		Yes			No		Yes			No		Yes		
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	
20-29	75	67.0	37	33.0	.165	77	68.8	35	31.3	.999	63	56.3	49	43.8	.301
30-39	52	88.1	7	11.9	.999	36	61.0	23	39.0	.999	29	49.2	30	50.8	.283
40-49	16	100.	0	0.0	.999	9	56.3	7	43.8	.999	6	37.5	10	62.5	.246
50 and older	8	100.	0	0.0	1.000	3	37.5	5	62.5	.999	2	25.0	6	75.0	.301
Average	151	77.4	44	22.6	0.791	125	64.1	70	35.9	.999	100	51.3	95	48.7	.283

Generally, respondents had a lower knowledge (< 50%) regarding breast cancer though comparatively, they had better knowledge on early warning signs compared to risk factors and curability of breast cancer. In a study by Vodouhe, Lokossou, Salifou, Ogoudjobi, Sidi et al. (2018:5) and by Li-Yuan, Yong-Jiu, Fei, Li-Xiang, Yu-Juan, et al. (2018:5), only one third and one fifth of respondents knew at least half of the warning signs of breast cancer respectively. Studies conducted in India, Turkey and Malaysia present similarly low depth in knowledge about breast cancer (Gupta, Shridhar &



20-29	.098				.138				.098			
30-39	.200	.125	.005	3.001	.997	.000	0.000		.350	.408	.062	2.669
40-49	.023	.018	.001	.575	.997	.000	0.000		.475	.511	.081	3.222
50 years and older	.131	.083	.003	2.099	.997	.000	0.000		.465	.459	.057	3.710

Similarly, Gamalat and Azhar (2011:254) reported that age did not influence the practices of BC detection among female teachers in Egypt.

Bivariate and multiple regression analysis was conducted to find if age of respondents has significant association with attitude toward prevention and detection of breast cancer. Out of 195 respondents, 71(36.4%) had a positive attitude towards breast cancer and its early detection methods. The younger the respondent, the more likely that they have a positive attitude towards breast cancer prevention and detection; this finding was not statistically significant ( $p=0.084$ ) (Table 4.21). The majority of respondents (63.6%;  $n=124$ ) felt embarrassed to perform or undergo breast cancer early detection methods. A study in Malaysia also reported no significance in the relation between age and attitude toward breast cancer (Parsa, Kandiah, Zulkefli & Rahman, 2008: 224).

In contrast, the majority of women in rural India (80.6%) reportedly have a positive attitude towards BSE (Ishaaque & Gopalamenon, 2019:2071-2072).

**Table 4.21 Attitude towards breast cancer by age (N=195)**

Attitude towards breast cancer by age	Sig.	Exp(B)	95% C.I. for EXP(B)	
			Lower	Upper
<b>Age in completed years</b>	0.084			
20-29	.780	1.490	.090	24.579
30-39	.673	.541	.031	9.383
40-49	.387	.239	.009	6.131
50 years and older	.587	0.398	.024	8.423

#### 4.4.2.1.2 Marital status

Among the respondents, 50% had a registered marriage. Of the respondents with overall correct knowledge about breast cancer, those in a cohabiting relationship scored better on knowledge of curability (40%), while those divorced or separated had a better knowledge score in identifying risk factors (55.6%) and respondents divorced and those widowed scored better in identifying early warning signs of breast cancer (66.7%) (Table 4.22). The practice of early detection methods of BC was also low across all forms of marital status. Overall, practice of undergoing mammography was



high (28.2%), followed by BSE (10.3%) and the least was that of CBE (2.6%) (Table 4.23). Respondents with a registered marriage contributed the highest, i.e., practice of about half of each early detection methods compared to other marital statuses. This could be explained by the fact that married women might have obtained information about breast cancer during their contact with the health system while seeking care for reproductive and maternal health services. It could also be due to the fact that their perceptions towards BC may be shaped and influenced by their partners.

**Table 4.22 Relationship with correct knowledge on curability, risk factor and early warning signs of breast cancer and marital status (N=195)**

Marital status	Knowledge on breast cancer (BC) curability				P-value	Knowledge on risk factors for BC				P-value	Knowledge on early warning signs of BC				P-value
	No		Yes			No		Yes			No		Yes		
	n	%	n.	%		n	%	n	%		n	%	n	%	
Traditional marriage	11	84.6	2	15.4	.719	11	84.6	2	15.4	.086	9	69.2	4	30.8	.369
Registered marriage	81	82.7	17	17.3	.999	50	51.0	48	49.0	.999	43	43.9	55	56.1	.188
Co-habiting	12	60.0	8	40.0	.999	14	70.0	6	30.0	.999	14	70.0	6	30.0	.480
Separated/divorce	7	77.8	2	22.2	.999	4	44.4	5	55.6	.999	3	33.3	6	66.7	.909
Single	37	71.2	15	28.8	.999	43	82.7	9	17.3	.999	30	57.7	22	42.3	.628
Widowed	3	100.	0	0.0	.999	3	100	0	0.0	.999	1	33.3	2	66.7	.787
<b>Average</b>	151	77.4	44	22.6	.952	125	64.1	70	35.9	.847	100	51.3	95	48.7	.560

As indicated in Table 4.23, this difference in knowledge on BC and practice of early detection methods with marital status was not statistically significant ( $p>0.05$ ). This was also the finding from India (Shambhavi et al., 2014:298), Gaza City (Abu-Shammala & Abed, 2015:7709) and Malaysia (Parsa et al., 2008:224) among female schoolteachers.

**Table 4.23 Practice of early breast cancer detection methods relating to marital status (N=195)**

Marital status	BSE			CBE			Mammography		
	Yes		P-value	Yes		P-value	Yes		P-value
	n	%		n	%		n	%	
Traditional marriage	10	15.2	0.872	4	22.2	0.851	0	0	1
Registered marriage	30	45.5	0.989	7	38.9	0.552	5	41.7	0.185
Cohabiting	13	19.7	0.539	0	0	0.999	0	0	1
Separated/divorced	3	4.5	0.472	0	0	0.999	4	33.3	0.539
Single	10	15.2	0.621	7	38.9	0.999	2	16.7	0.349
Widowed	0	0	1	0	0	1	1	8.3	0.487
Other	0	0	1	0	0	1	0	0	0.487
<b>Total</b>	<b>66</b>	<b>33.8</b>		<b>18</b>	<b>2.6</b>		<b>12</b>	<b>28.2</b>	

In contrast, a study on nurses at university hospitals in Addis Ababa, Ethiopia (Lemlem et al., 2013:5), reported that marital status had a significant association with knowledge of breast cancer, in that unmarried respondents were more knowledgeable than their married counterparts. Alharbi et al. (2012:78) reported that married women showed significant better knowledge levels than single, divorced or widowed women. In a survey among Iranian women (Nafissi et al., 2012:48), practice of clinical breast examination (CBE) had a significant relation with marital status. Olaogun, Emmanuel, Dada, Odesanmi and Adesua (2017:3215), from Nigeria, and Tazhibi and Feizi (2014:3), from Iran, reported that marital status was significantly associated with awareness about breast cancer screening methods and risk factors, and practice of BSE, and those who were married had more awareness and practice of BSE. In a study among female health professionals in Addis Ababa, marital status was significantly associated with practice of CBE, and married female health professionals were 3.39 times more likely to practice CBE than their single counterparts (Wurjine, Bogale & Menji 2019:205). According to a study in southern Ethiopia, women's marital status was found to be a predictor of BSE, which revealed that those married were four times more likely to practice BSE than their unmarried counterparts (Mekuria, Nigusse & Tadele, 2020: 8).

Regarding attitude of respondents towards breast cancer, only 36.4% reflected a positive attitude towards performing BSE, or undergoing CBE or mammography (Table 4.24). Respondents who were widowed (100%; n=3) or separated/divorced (66.7%; n=6) were more likely to have a positive attitude compared to other marital statuses. Nevertheless, the finding was not statistically significant ( $p > 0.005$ ). The

above finding contrasts with that of Wurjine et al. (2019:208), who reported a statistically significant relationship between marital status and attitude towards BC among female health professionals, where female health professionals who were married were 0.43 times less likely to have a positive attitude than those who were single.

Although marriage could be a predictor of satisfactory knowledge level and practice in early breast cancer detection methods in some studies, this current study could not establish this relationship. However, there was a positive attitude observed more amongst respondents in marital relationships, though not statistically significant.

**Table 4.24 Relationship between marital status of respondents and attitude towards breast cancer detection practices (N=195)**

Marital status	No		Yes		Total		P-value
	n	%	n	%	n	%	
Traditional marriage	7	53.8	6	46.2	13	100	0.998
Registered marriage	73	74.5	25	25.5	98	100	0.998
Cohabiting	11	55.0	9	45.0	20	100	0.999
Separated/divorced	3	33.3	6	66.7	9	100	0.999
Single	30	57.7	22	42.3	52	100	0.999
Widowed	0	0.0	3	100	3	100	0.999
<b>Total</b>	<b>124</b>	<b>63.6</b>	<b>71</b>	<b>36.4</b>	<b>195</b>	<b>100</b>	<b>0.635</b>

#### 4.4.2.1.3 Educational status

The analysis looked into the association between educational status and knowledge, attitude and practice of breast cancer. As presented in Table 4.25, it seems respondents with primary education (33.3%; n=1) and (66.7%; n=2) showed better knowledge on BC curability and early warning signs of BC than respondents with other educational status. Respondents with a diploma (50%; n=4) showed better knowledge on risks factors for BC than respondents from other educational status (Table 4.25). Hence, in this study, there was a statistically significant association between level of education of respondents and their knowledge on BC; there was no establishing of the practice of early detection methods of breast cancer and attitude towards BC.

**Table 4.25 Relationship between correct knowledge on curability, risk factors and early warning signs of breast cancer and educational status (N=195)**

Educational status (highest qualification)	Knowledge on breast cancer (BC) curability				P-value	Knowledge on risk factors for BC				P-value	Knowledge on early warning signs of BC				P-value
	No		Yes			No		Yes			No		Yes		
	n	%	n	%		n	%	n	%		n	%	n	%	
Primary education	2	66.7	1	33.3	.957	2	66.7	1	33.3	.493	1	33.3	2	66.7	.402
High School	9	75.0	3	25.0	.718	7	58.3	5	41.7	.677	7	58.3	5	41.7	.699
Diploma	6	75.0	2	25.0	.861	4	50.0	4	50.0	.936	3	37.5	5	62.5	.386
Degree and above	134	77.9	38	22.1	.688	112	65.1	60	34.9	.142	89	51.7	83	48.3	.159
<b>Average</b>	151	77.4	44	22.6	.806	125	64.1	70	35.9	.562	100	51.3	95	48.7	.412

This finding corresponds with the studies of Al-Dayel, Arafa, Nooh, Alamri and Fareed (2019:43-45) and Alshareef, Yaseen, Jawa, Barnawi, Alqtham et al. (2018:3-4), which were done among women and female schoolteachers respectively in Saudi Arabia. Similarly, in a study among women in Pakistan, there was no significant association between knowledge on BC and level of education (Masood, Saleem, Hassan, Sadeeqa & Akbar, 2016: 6). Parsa et al. (2008:225) also reported that education level was not a significant factor in the BSE, CBE and mammography practices among female teachers in Selangor, Malaysia. Shambhavi et al. (2014:298), in their assessment of knowledge on breast cancer among the teachers in selected schools of Mangalore, India, have reported there was no significant association of knowledge on BC with educational level among teachers. However, another study among female high school teachers in Ibadan, Nigeria, (Ayoola & Ovedunni, 2016: 79) found that a higher level of education was not a significant determinant of knowledge of BC and BSE practice.

This finding is in contrast to that of Wurjine et al. (2019:205), who reported the level of education to be among the factors with significant relationship to practice of CBE among female health professionals in Addis Ababa, Ethiopia. In another study from Nigeria, Alabi, Abubakar, Olowokere, Okeyode, Mustapha et al. (2018:11) demonstrated positive association between educational level and BSE frequency and practice among female teachers from selected high schools. Arif, Baloch, Zaheer,

Agheem and Ariff et al. (2018:169), in a study conducted in Pakistan, and Kumarasamy, Veerakumar, Subhathra, Suga and Murugaraj (2017:86-88), in India, found that demographic characteristic such as higher level of education was a significant determinant of knowledge of breast cancer risk factors and adherence to BSE practice among non-medical women. In a 10-year review of literature on awareness and practice of breast self-examination among women in different African countries, tertiary education was among the factors associated with higher knowledge and practice of BSE (Johnson, 2019:221).

**Table 4.26 Relationship between education status of respondents and practice toward breast cancer detection (P-value) (N=195)**

Educational status	BSE	CBE	Mammography
Primary education	.954	1.000	.989
High school	.565	.999	.999
Diploma	.999	.999	.727
Degree and above	.998	.999	.947

The current study could not demonstrate the expected significant increment in knowledge, practice of early detection methods and positive attitude towards breast cancer with increase in education (Tables 4.25, 4.26 and 4.27).

**Table 4.27 Relationship between education status of respondents and attitude toward breast cancer (N=195)**

Educational status	No		Yes		Total		P-value
	n	%	n	%	n	%	
Primary education	0	0	3	100.0	3	100	.965
High school	6	50.0	6	50.0	12	100	.999
Diploma	5	62.5	3	37.5	8	100	.617
Degree and above	113	65.7	59	34.3	172	100	.893
<b>Total</b>	<b>124</b>	<b>63.6</b>	<b>71</b>	<b>36.4</b>	<b>195</b>	<b>100</b>	

#### 4.4.2.1.4 Duration of practice (experience/year of service)

This study showed that irrespective of their year of service, respondents had low knowledge as to curability of breast cancer (22.6%; n=44), knowledge about risk factors (35.9%; n=70) and early warning signs of BC (48.7%; n=95) (Table 4.28). Practice of BSE (33.9%; n=66) appeared better compared to mammography (6.2%; n=12) and CBE (9.2%; n=18). Of the 195 respondents with different tenure, only 36.2%

(n=71) had positive attitude towards breast cancer. Respondents with 1-5 years duration of practice as a high school teacher had better knowledge on curability of BC (36.4%; n=32), while respondents with 10-15 years of teaching had better knowledge on risk factors (40.7%; n=11), and 55.6% (n=15) on early warning signs of breast cancer compared to respondents with other years of experience as high school teachers respectively (Table 4.28).

**Table 4.28 Relationship between correct knowledge on curability, risk factor and early warning signs of breast cancer and tenure (N=195)**

Tenure as high teachers	Knowledge on breast cancer (BC) curability				P-value	Knowledge on risk factors for BC				P-value	Knowledge on early warning signs of BC				P-value
	No		Yes			No		Yes			No		Yes		
	n	%	n.	%		n	%	n	%		n	%	n	%	
1-5 years	56	63.6	32	36.4	.957	58	65.9	30	34.1	.493	42	47.7	46	52.3	.402
6-10 years	57	86.4	9	13.6	.718	41	62.1	25	37.9	.677	39	59.1	27	40.9	.699
10-15 years	24	88.9	3	11.1	.861	16	59.3	11	40.7	.936	12	44.4	15	55.6	.386
More than 15 years	14	100.	0	0.0	.688	10	71.4	4	28.6	.142	7	50.0	7	50.0	.159
Average	151	77.4	44	22.6	.806	125	64.1	70	35.9	.562	100	51.3	95	48.7	.402

Practice of BSE (10.3%; n=20) and CBE (2.6%; n=5) appears to be worse compared to mammography (28.2%; n=55) (Table 4.29).

Similarly, respondents with 1-5 years of experience as a high school teacher exhibited better practice of early BC methods and positive attitude towards BC (Table 4.29). Both bivariate and multivariate regression analyses did not show any significant relationship between year of service and knowledge and practice towards early detection of BC ( $p>0.05$ ).

**Table 4.29 Relationship between teaching tenure of respondents and practice toward breast cancer (N=195)**

Teaching tenure	Practice of BSE				P-value	Practice of CBE				P-value	Practice of Mammography				P-value
	No		Yes			No		Yes			No		Yes		
	n	%	n	%		n	%	n	%		n	%	n	%	
1-5 years	75	85.2	13	14.8	1.000	87	98.9	1	1.1	1.000	67	76.1	21	23.9	1.000
6-10 years	60	90.9	6	9.1	1.000	63	95.5	3	4.5	.999	46	69.7	20	30.3	1.000
10-15 years	27	100.	0	0.0	.998	27	100.	0	0.0	1.000	17	63.0	10	37.0	.724
More than 15	13	92.9	1	7.1	.998	13	92.9	1	7.1	.999	10	71.4	4	28.6	.819
Average	175	89.7	20	10.3	.999	190	97.4	5	2.6	1.00	140	71.8	55	28.2	.886

This is consistent with the findings of Mekuria et al. (2020:4) from Southern Ethiopia, Parsa et al. (2008:224) in Malaysia and Shambhavi et al. (2014:298) from India, where teaching experience did not show significant association with knowledge on BC and practice of its early detection methods.

In Addis Ababa, Ethiopia, Wurjine et al. (2019:205) found a significant association between work experience among female health professionals with that of knowledge about and positive attitude towards breast cancer early detection methods. Wurjine et al. (2019:205) reported that female health professionals with more than five years work experience had better knowledge and positive attitude compared to those with less than five years. However, a different finding was reported by Lemlem et al. (2013:5), as knowledge of breast cancer was found to be significantly associated with work experience, with nurses working for 6–10 years reportedly less likely to be knowledgeable than the nurses with nursing experience  $\leq 5$  years. Years of service was also significantly associated with practice of BSE among female high school teachers in Ibadan, Nigeria (Ayoola & Oyedunni 2016:77), with teachers having service of 10-19 years practicing BSE more compared to those having 1-9 years of practice.

In a study among female workers at public health facilities in Debre Tabor Town in Northwest Ethiopia, years of experience was associated with breast self-examination practice (Dagne, Ayele & Assefa, 2019: 5).

#### 4.4.2.1.5 Monthly income

This study showed there was no statistically significant ( $p>0.05$ ) association between respondents' monthly income and knowledge, attitude and practice towards breast cancer.

**Table 4.30 Relationship between correct knowledge on curability, risk factor and early warning signs of breast cancer and monthly income (N=195)**

Monthly income in Ethiopian Birr	Knowledge on Breast Cancer (BC) curability				P-value	Knowledge on risk factors for BC				P-value	Knowledge on early warning signs of BC				P-value
	No		Yes			No		Yes			No		Yes		
	n	%	n	%		n	%	n	%		n	%	n	%	
Less than 2000	10	71.4	4	28.6	.784	8	57.1	6	42.9	.620	8	57.1	6	42.9	.309
2001-3000	7	100.	0	0.0	.503	4	57.1	3	42.9	.482	3	42.9	4	57.1	.350
3001-5000	64	67.4	31	32.6	.528	67	70.5	28	29.5	.191	48	50.5	47	49.5	.644
5001-10,000	70	88.6	9	11.4	.999	46	58.2	33	41.8	.148	41	51.9	38	48.1	.955
Average	151	77.4	44	22.6	.704	125	64.1	70	35.9	.360	100	51.3	95	48.7	.565

It was expected that as income increases, so does knowledge, practice and attitude towards breast cancer (Tables 4.30, 4.31 and 4.32).

**Table 4.31 Relationship between practice toward breast cancer and monthly income (N=195)**

Monthly Income	Practice of BSE				P-value	Practice of CBE				P-value	Practice of Mammography				P-value
	No		Yes			No		Yes			No		Yes		
	n	%	n	%		n	%	n	%		n	%	n	%	
Less than 2000	75	85.2	13	14.8	.243	87	98.9	1	1.1	.237	67	76.1	21	23.9	.501
2001-3000	60	90.9	6	9.1	.486	63	95.5	3	4.5	.537	46	69.7	20	30.3	.914
3001-5000	27	100.	0	0.0	.976	27	100.0	0	0.0	.997	17	63.0	10	37.0	.310
5001-10,000	13	92.9	1	7.1	.999	13	92.9	1	7.1	.999	10	71.4	4	28.6	.893
Average	175	89.7	20	10.3	.676	190	97.4	5	2.6	.693	140	71.8	55	28.2	.655



This finding from the current study corresponds to that of Mekuria et al. (2020:5) from Southern Ethiopia and Abu-Shammala and Abed (2015:7709) from Gaza City, where monthly income was not a significant predictor of BSE practice among schoolteachers. In the study conducted in Malaysia by Parsa et al. (2008:225), income level of female schoolteachers did not have a significant association with BSE, CBE and mammography practices.

In contrast to this finding, Dagne et al. (2019:5) from Northwest Ethiopia and Hussien, Kumbi, Lette and Nuriye (2019:5) from Southeast Ethiopia reported that knowledge of breast cancer significantly increased/improved with monthly income.

Dandash and Al-Mohaimeed (2007:69) reported that female schoolteachers who earn a higher income reportedly had better knowledge levels of breast cancer.

**Table 4.32 Relationship between attitude toward breast cancer and monthly income (N=195)**

Monthly income	Attitude towards BC				P-value
	No		Yes		
	N	%	N	%	
<=2000	6	50	6	50	0.09
>10,000	5	75	2	25	0.411
2001-3000	58	55.2	47	44.8	0.062
3001-5000	59	82.6	12	17.4	0.173
<b>Total</b>	<b>128</b>	<b>65.6</b>	<b>67</b>	<b>34.4</b>	<b>.184</b>

## 4.5 SUMMARY

This chapter presented the research findings and analysis, with their interpretation for the descriptive and inferential statistics applied in the study. The findings of the study were presented in the order stated on the questionnaire. The results were presented in the form of tables and figures. The application of inferential statistics, using the SPSS (2019), Version 22 programme, was to draw cause and effect relationships from association of dependent variables against various independent variables.

The next chapter will present the summary of the findings, limitations of the research and the conclusion and recommendations.

## **CHAPTER 5**

### **CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS**

#### **5.1 INTRODUCTION**

Chapter 4 analysed and graphically presented the data obtained from the structured self-administered questionnaires. The analysis and presentation covered each section, namely the demographic characteristics of the respondents, their knowledge on breast cancer curability, risk factors and early warning signs, attitude towards breast cancer (BC) and practice of early BC detection methods such as breast self-examination (BSE), clinical breast examination (CBE) and mammography.

This chapter deliberates on the summary and interpretation of the study findings with reference to the research objectives and questions. In addition, the research findings, limitations of the research and conclusions generated from the research findings are presented.

#### **5.2 RESEARCH OBJECTIVES AND QUESTIONS**

The aim of this research was to determine the level of knowledge of female high school teachers in Addis Ababa on BC, describe their level of practice of early BC detection methods, and their attitude towards breast cancer.

The objectives of the research, as presented in the previous chapter, were to:

- determine female high school teachers' knowledge and attitude towards early detection of BC
- describe female high school teachers' practices towards early detection of breast cancer

### 5.3 SUMMARY AND INTERPRETATION OF RESEARCH FINDINGS

The findings obtained from this study are summarised in the following sections. They are presented in the same sequence in which the objectives of the study were listed.

#### 5.3.1 Socio-demographic information

Of the total number of respondents (N=195), 57.4% (n=112) were in the age group 20-29 years, the second largest age group was 30-39 years with 30.3% (n=59); in total, 87.7% (n=171) of respondents were below the age of 40 years.

Orthodox Christians constitute the largest affiliation, i.e., 76.4% (n=149). The majority, (50.3%; n=98) of respondents had a registered marital relationship and 88.2% (n=172) were university degree holders or above. While 47.7% (n=93) of respondents had no children, the rest (52.3%; n=102) had one or more children. The most frequent age range at the birth of the first child was between 20 and 24 years (45.5%; n=55). Of the 98 respondents who reported to be in a married relationship, 87.8% (n=86) had a husband with an educational level of degree and above. Most of the respondents, 45% (n=88) had a tenure of between 1-5 years as high school teachers. Concerning monthly income, most (48.7%; n=95) earned between 2,001-3,000 Ethiopian Birr per month.

#### 5.3.2 Objective 1: To determine female high school teachers' knowledge and attitude towards early detection of breast cancer

##### 5.3.2.1 *Knowledge on cause and curability of breast cancer*

Knowledge regarding curability of BC is crucial as it may affect the choice in relation to attitude and practice that people will take.

In this study, the majority (63.6%; n=124) of respondents agreed that BC was a curable disease, with 80% (n=156) confirming that curability was possible especially if detected early. It was good respondents identified the importance of curability of early-stage BC, however 19.5% (n=38) agreed it was not curable at all. Eighty-three (42.6%) of the respondents believed that BC could be caused by the irritation of a tight bra,

which is one of the identified misconceptions in this study and indicates the low knowledge in this regard. Additionally, misconceptions do exist in that, more than a fifth (22.6%; n=44) believe that BC is a communicable disease, more than a third (34.4%; n=36) believed that a hard blow to the breast may cause BC in later life and one third (34.4%; n=67) believed or were not sure that BC could be the result of a curse/evil eye. Hence, despite the high educational status of respondents, there exist considerable misconceptions regarding cause and curability of BC.

### ***5.3.2.2 Knowledge on risk factors of breast cancer***

The findings of the study show that exposure to radiation (71.3%; n=139), alcohol (68.2%; n=133), smoking (67.2%; n=131), family history of breast cancer (51.3%; n=100), and past history of lumps (50.8%; n=99) were the well-known risk factors identified by respondents. However, having no children (29.7%; n=58), oral contraceptive use (28.7%; n=56) and late age at first childbirth (26.2%; n=51) were the least recognised risk factors for breast cancer. Breast feeding (27.2%; n=53) and having more than five children (12.8%; n=25) were incorrectly believed to be risk factors for breast cancer.

### ***5.3.2.3 Knowledge on early warning signs of breast cancer***

The study finding indicates that 72.3% (n=141) of respondents knew that pain in one breast could be a warning sign of breast cancer. In addition, 61.5% (n=120) answered correctly about skin changes of the breast, 49.2% (n=96) about lump/swelling in neck or armpit and 43.6% (n=85) about recent onset of nipple discharge in a woman who is not pregnant could be warning signs of breast cancer. Recent onset of nipple retraction/inversion was identified by only a third (38.5%; n=75) of respondents, making it the least correctly identified warning sign of breast cancer. Nearly half (48.7%; n=95) and a third (37.4%; n=73) of respondents had incorrect knowledge about cyclical monthly pain on both breasts and asymmetry of the breasts in childhood respectively, as early warning signs of breast cancer.

Correct information or knowledge about BC can be a factor to present early to seek care for illness related to breast cancer.

Young age (20-29) was more associated with knowledge on curability of breast cancer, while older age was associated with knowledge on risk factors and early warning signs of BC, cohabitating, widowed and separated or divorced relationship (on knowledge about curability, risk factors and early warning signs of BC respectively), education level of diploma, and year of tenure between 1 and 5 years were predictors of satisfactory knowledge level, despite the lack of statistical significance in the current study.

#### ***5.3.2.4 Female high school teachers' attitude towards the early detection and prevention of breast cancer***

Of the total respondents, 78.4% (n=153) had the perception that all women should do BSE, and 72.3% (n=141) had the perception that early diagnosis and treatment of breast cancer can save a woman's life. Negative attitudes of fatalism and that BC was an unavoidable disease were reflected by 27.2% (n=53) who believed there was nothing one could do to prevent BC and 40.5% (n=79) believed that if one was meant to get BC, they would. Such negative attitude can act as barriers to the prevention and practice of BSE and participation in BC screening programmes.

The study findings show that nearly half of the respondents felt embarrassed to do BSE once a month (48.7%; n=95), to undergo breast examination by a health worker (47.7%; n=93) or to get a mammography examination (47.7%; n=93). The feeling of embarrassment associated with BC early detection methods could be the reason behind the low practice of BSE, CBE and mammography among respondents.

There was no statistically significant association between socio-demographic factors and attitude towards BC. There was a non-significant association observed between young age (20-29), being in registered marriage, educational status of degree and above, having no children, and above tenure of 1-5 years and monthly income of 2,001-3,000 ETB with a positive attitude towards breast cancer.

#### **5.3.3 Objective 2: To describe female high school teachers' practices towards early detection of breast cancer**

The second research objective for this study sought to determine the extent to which female high school teachers were practicing BC early detection methods. In this

section, the practice of the respondents in breast self-examination (BSE), clinical breast examination (CBE) and mammography, which are early BC detection methods, are summarised.

### **5.3.3.1 Practice of breast self-examination**

Of the total respondents, one third (33.8%; n=66) practiced BSE monthly, making it the most common BC detection method practiced by respondents, followed by CBE (9.2%; n=18) and mammography (6.2%; n=12). The most common barriers to practice BSE include being unaware of the proper technique (50.8%; n=99); do not know how to do it (39.5%; n=77) and never felt necessary (26.2%; n=51). The least common reason for not performing BSE was not thinking that young people can get BC (14.9%; n=29).

Definitely consulting a doctor (81.5%; n=159) and consulting a doctor if features are positive for BC (80.5%; n=157) are reported to be the most common next actions to be taken by respondents when finding a breast lump during breast self-examination; this implies respondents had the information as to who to consult when identifying a breast lump. Informing a family member (70.3%; n=137) was the next most common action, followed by seeking holy water (33.3%; n=65) and wait and see (24.1%; n=47). Seeking traditional treatment (9.7%; n=19) was the least common next action by respondents when identifying breast lump during breast self-examination.

Older age ( $\geq 50$  years), teachers in cohabitating relationship, with primary level of education status, a service year of 1-5 years and monthly income of below 2000 or above 10,000 Ethiopian Birr had a non-significant association with the practice of BSE.

### **5.3.3.2 Practice of clinical breast examination (CBE)**

This study found that respondents had a low rate of practice of undergoing CBE as only 7.2% (n=14) had undergone CBE in the past year. Having to work (43.1%; n=84), not knowing where to go (38.5%; n=75) and performing BSE (32.8%; n=64) were among the most common barriers to undergo CBE. The least common reasons for not undergoing CBE were the impression by respondents that a male would examine the

breasts (10.8%; n=21), having had a mammogram (7.7%; n=15) and a husband or male relative not being supportive (6.7%; n=13).

The predictors of CBE practice include age 30-39 years, registered marital relationship, education status of degree and above, year of service more than 15 years and income of 5,001-10,000 Ethiopian Birr (ETB). However, a statistically significant association could not be established.

### ***5.3.3.3 The practice of mammography***

The study found that mammography was the least practiced method of BC identification by respondents. Only 6.2% (n=12) respondents confirmed having undergone mammography in the past year. This may be explained by the respondents' perceptions of mammography, as only 22.6% (n=44) believed it was safe, although more than a third (35.9%;n=70) correctly thought it could detect early-stage BC before it was palpable or felt by hand. Almost two-thirds (67.7%; n=132) of respondents incorrectly believed that undergoing mammography was painful or did not know if it was painful or not.

The findings imply that predictors of correct perceptions of practice about mammography include young age (20-29 years), being in a registered marital relationship, an education level of degree and above, year of service 1-5 years and high income of 3,001-5,000 ETB; this association was not statistically significant.

## **5.4 GENERAL CONCLUSIONS**

Considering the population in this study, the majority of female high school teachers fell in the age group of 20-29 years, Orthodox Christianity was the largest religious affiliation, the majority of teachers were in a registered marriage relationship, held a university degree or above and had one or more children. The majority of their husbands had a degree or above, while most had a service year of 1-5 years and a monthly income between 2,001 and 3,000 Ethiopian Birr.

The findings of this study revealed that respondents had insufficient knowledge or were not well informed about BC, and a high level of misconception existed in relation to its cause. Respondents' knowledge on risk factors and early warning signs were

also low. The study also identified a very low practice of BC early detection methods (BSE, CBE, and mammography) among female high school teachers. The majority of respondents had a negative attitude to breast cancer detection as there was a high rate of embarrassment to perform or undergo BSE, CBE, or mammography. The belief that breast cancer was avoidable was the only notable attitude that could be deduced as positive. However, there was no significant association between socio-demographic factors and knowledge, attitude, and practice of BC among female high school teachers.

Most of the respondents had adequate information about the curability of BC if detected early. However, most respondents were not well informed about the possible causes of BC, as most believed in misconceptions such as irritation of a tight bra or hard blow to the breasts can cause BC in later life, and about one tenth believed that BC could be a result of a curse or evil eye. Respondents had also insufficient knowledge about some of the risk factors of breast cancer.

## **5.5 RECOMMENDATIONS**

Based on the findings of the study, the researcher makes the following recommendations to improve knowledge, attitude, and practices of female high school teachers on breast cancer and its early detection:

### **5.5.1. Recommendations to improve knowledge:**

- High school teachers are an educated segment of a society. The low knowledge of this educated segment of society about breast cancer highlights the urgent need for educational programmes targeting female schoolteachers in the form of on-the-job orientations, testimonials and demonstrations. Teachers as members of the community can play an advocacy role in creating a pro-screening environment and awareness behaviours by offering positive role modelling within the community and the school environment through communication and motivation of young students to practice breast cancer screening in general, and in early detection in particular. Female high school teachers, can also be regarded as important role models, and schools may present a good opportunity in the communities where they live to influence early screening for breast cancer. Female high school teachers are in a strategic position to act as role models and can play an effective role in education, communication and motivation of young



students and peer teachers on breast cancer risk factors and types of screening practices, and can influence behaviours that will reduce the risk of future breast cancer morbidity and mortality. They may play an important role in providing health education and supporting good behaviour in relation to breast cancer screening practise for future generations. This is very crucial, as high school teachers have the opportunity to impact lives with knowledge in and outside the classroom including as peer educators for women in a community.

- The study findings yield several policy implications and could be used as a base for designing educational interventions to increase knowledge about breast cancer and the importance of its early detection. A combination of strategies is recommended of combining primary prevention to reduce the risk load and early detection to improve the outcome of those detected to have the disease, secondary prevention. There should be education programmes directed toward women, in particular female high school teachers who are in a unique position to influence high school students and the community at large. It should emphasise the value of early detection, enhance knowledge on screening methods, and provide knowledge about the curability of breast cancer and addressing the misconceptions.
- Health workers should intensify health education on the importance of BSE when they come in contact with women during antenatal and immunisation clinic sessions, or for other health problems. Some of these teachers could also be trained to act as peer educators for other women. Furthermore, health professionals should endeavour to educate women on “breast awareness” during their hospital visits and through a designated week for advocacy on breast cancer prevention and early detection.
- At one time in their lives, the female high school teachers have passed through higher education as students themselves, hence the Ministries of Education and Health can work to strengthen the health education programme of breast cancer at universities and teachers training colleges by conducting frequent health education sessions at the universities.
- Developing health education programmes to be built into school curricula regarding breast cancer and BSE practice, starting with their high school. Developing educational programmes for teachers. School health unit, mass media and Ministry of Health should plan to raise awareness about breast cancer in the community.

- In this study, the demographic factors of respondents showed no significant association with their knowledge, attitude, and practice towards early detection of BC. This tells us that when attempting to address knowledge, attitude, and practice barriers, it will be preferable to avoid any attempt to focus on demographic factors in interventions that address barriers to KAP of BC. Hence, interventions should generally target all female schoolteachers irrespective of their socio-demographic differences.

#### **5.5.2. Recommendations to improve practice:**

- In collaboration with the education sector, the health sector should develop an educational programme targeting all female high school teachers through developing a guide or booklet that addresses the causes, risk factors, early warning signs of BC and audio-visuals on how to perform breast self-examination that can be available at school libraries. This will enable female high school teachers to have knowledge about breast cancer and avoid the misconceptions associated with BC. To have a better understanding, DVD demonstration videos could be utilised in workplaces, such as high schools, which are equipped with office equipment, e.g., computers, to improve the knowledge about breast cancer and change misconceptions about risk factors, as these are the basis for sound attitude and behaviours and increase knowledge of respondents of the body and of BSE. However, the health education message should be presented and delivered in a culturally sensitive/appropriate, socially acceptable manner, and tailored to provide simple and clear information and avoid false beliefs and misconceptions about the disease, its screening methods and management options.
- School health programmes can also be used as an opportunity to increase the knowledge of female schoolteachers about BC through health education programmes to provide them with information about BC and to teach them the correct technique of BSE. This provides opportunity for constant reminders and of practical teaching.

#### **5.5.3. Recommendations to improve attitude:**

- Electronic media, such as television, radio and internet, were the most common sources of information of BC. This is expected as the study was conducted in an urban setting. Thus, this is a good opportunity to use television and radio broadcasts to disseminate required information and influence attitude pertaining to breast cancer. Although, television and radio appear to be better media to reach

a wider audience, their benefits may be limited only to people who have access to them. As the Ethiopian cancer society is among the least sources of information, it needs to utilize electronic media to encourage the public to take steps to lower their risk of developing breast cancer and find it early, when it might be easier to treat. The Ethiopian cancer society is also in unique position to influence attitude toward breast cancer as members who are survivors of breast cancer can share testimonials of their life experience with regard to breast cancer.

#### **5.5.4. Recommendation for further studies:**

- The researcher recommends conducting further research involving female high school teachers from other parts of the country and women from the general population to appreciate the existing gap in knowledge, attitude and practice of breast cancer detection. Further research is needed to identify the size of the problem nationwide, responses to future corrective plans, and barriers and promoters of screening in general and BSE knowledge and practices in particular.
- The researcher suggests that further studies be conducted on the knowledge, practice and opinions about breast cancer among women in the education sector, given the significance of knowledge about breast cancer and its important role in improving women's health.
- More perspectives could be revealed if further longitudinal, qualitative studies inclusive of the rural setting could be conducted.

## **5.6 CONTRIBUTIONS OF THE STUDY**

This study shed some light on understanding the degree of knowledge, extent of practice and attitude towards breast cancer and its early detection methods among female high school teachers in Addis Ababa. It described the relationship between socio-demographic factors of female high school teachers and their knowledge, attitude and practice of breast cancer. The findings of the study have provided evidence on the low knowledge on breast cancer among female school teachers and their low practice of its early detection methods. The health and education sectors may respond by developing a health education programme for school-teachers regarding breast cancer.

## 5.7 LIMITATIONS OF THE STUDY

This study had several limitations:

- The cross-sectional time dimension of the study design, which could examine only the phenomena that existed during the period of the study.
- The study population, which consisted of female high school teachers in Addis Ababa, was just a specific group of people in the same profession, of similar gender (gender-biased) and in a particular location of Ethiopia. Hence, the findings cannot be generalised beyond the study sample as the study was only in one city and the results cannot be generalised to other cities and rural parts of Ethiopia; neither can it be generalised to the general population.
- As the study was conducted on public high school teachers, the results may not be applied to teachers in private high schools. However, there is no reason to believe that the findings could not be generalised to other public high school teachers in Addis Ababa.
- All data were self-reported and relied on what respondents declared with no objective measures to validate obtained information, as there could be a difference between what the teachers declared they do and what they actually do. However, the results are similar to those obtained from other studies and also provide some understanding on BC knowledge, attitude and practice among female high school teachers in Ethiopia. Moreover, respondents were informed about the importance of giving accurate responses and assured of the confidentiality of responses.
- Social desirability and recall biases may not be eliminated. Hence, the study could be improved if triangulated with a qualitative part to obtain in-depth information.

Despite these limitations, the study findings could be a basis for interventions to improve knowledge, attitude, and practice of female high school teachers regarding breast cancer.

## **5.8 CONCLUDING REMARKS**

This chapter discussed the research findings, considered its objectives, general conclusions and recommendations from the study for future interventions, and its limitations.

In general, the findings of this study revealed that female high school teachers have a low level of knowledge on breast cancer, a low practice level of its early detection methods and a negative attitude towards breast cancer. There was no significant association between knowledge, attitude and practice of breast cancer with age, educational level, marital status and income of female high school teachers. The chapter also drew conclusions, made recommendations, possible contributions and presented its limitations.

It is therefore of utmost importance to provide the appropriate information and research findings on knowledge, attitude and practice on breast cancer to the attention of female teachers at high schools in Addis Ababa to improve the level of knowledge, extent of practice of breast cancer early detection methods and develop a positive attitude towards breast cancer, which ultimately contribute to reduction in morbidity and mortality related to breast cancer.

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**ANNEXURES**

**ANNEXURE 1: Ethical Clearance Certificate from the Department of Health Studies, Unisa**



**UNIVERSITY OF SOUTH AFRICA  
Health Studies Higher Degrees Committee  
College of Human Sciences  
ETHICAL CLEARANCE CERTIFICATE**

**REC-012714-039**

**HS HDC/473/2015**

Date: 25 November 2015

Student No: 5050-528-9

Project Title: Knowledge, attitude and practices among female high school teachers towards early detection of breast cancer in Addis Ababa, Ethiopia.

Researcher: Yared Tadesse Cherinet

Degree: Masters in Public Health

Code: DIS4986

Supervisor: Mrs A Mosalo

Qualification: M Tech

Joint Supervisor: Prof JH Roos

**DECISION OF COMMITTEE**

Approved

Conditionally Approved

**Prof L Roets**

**CHAIRPERSON: HEALTH STUDIES HIGHER DEGREES COMMITTEE**

**Prof MM Moleki**

**ACADEMIC CHAIRPERSON: DEPARTMENT OF HEALTH STUDIES**

PLEASE QUOTE THE PROJECT NUMBER IN ALL ENQUIRES



**ANNEXURE 2: Request for permission to conduct research to Addis Ababa City Administration Education Bureau**

Cell phone number: +251-0911-637857

E-mail address: [yaredtadd@yahoo.com](mailto:yaredtadd@yahoo.com)

To whom it may concern

Dear Sir/Madam,

I am writing to request permission to conduct research at selected high schools in Addis Ababa city administration. I am a Master's degree student at the University of South Africa. As part of the fulfilment of the degree, I am expected to conduct a research study. The title of my research is '**Knowledge, attitude and practices among female high school teachers towards early detection of breast cancer in Addis Ababa.**'

The study will employ a quantitative research design. For data gathering purpose, this research will use a structured self-administered questionnaire. The target population of this study is female teachers teaching in high schools in Addis Ababa.

This letter also seeks to inform you that all information gathered from the teachers will be used for the research purpose and that the anonymity and confidentiality of all is guaranteed.

Finally, I have enclosed a copy of the informed consent form for the research, as well as the University Of South Africa Department Of Health Studies Higher Degrees Committee's clearance certificate HSHDC/473/2015. For any queries regarding this matter or research, please contact me via my e-mail and mobile phone as listed above.

Yours faithfully,



**Yared Tadesse Cherinet, MD**

(Master's Degree Candidate)

Student number: 50505289



## **ANNEXURE 4: Consent form**

Invitation to participate in a research study:

### **Knowledge, attitude and practices among female high school teachers towards early detection of breast cancer in Addis Ababa, Ethiopia**

#### **Consent form to participate in the study**

My name is Dr Yared Tadesse Cherinet, a candidate for Master's degree at the University of South Africa. I am conducting a study on **Knowledge, attitude and practices among female high school teachers towards early detection of breast cancer in Addis Ababa**. The reason why I am conducting the study is to determine if using other sector professional towards early detection of breast cancer can help to improve women's knowledge and perception about breast health. The questionnaire consists of questions regarding your knowledge, attitude and practice toward early detection of breast cancer. If you are willing to participate in the study, I kindly request you complete the questionnaire at your convenience. I will collect the questionnaires when you have completed them.

The information in the questionnaire will remain confidential, as no identifier (including your name) will appear on the questionnaire; this will ensure your responses are not linked to these identifiers. Should you feel embarrassed or be worried about having breast cancer, counselling sessions and referral to a diagnostic centre will be arranged.

Your participation is voluntary, and you are under no obligation to answer any questions you do not wish to. If you are not comfortable taking part in the study, you have the full right to decline to complete the questionnaire with no penalty for your decision to withdraw.

There are no direct benefits for participation in this study, however the results of the study will help inform responsible parties to identify the level of knowledge about breast cancer among female high school teachers in Addis Ababa, and to improve knowledge gaps about the disease. There is no financial or in-kind item for you up on

participation in this study. There will no risk for you or others in providing information for this study. Some of the questions I ask may invoke unpleasant memories of you or persons whom you may know experienced with respect to having breast cancer. You will be referred for necessary counselling should a need arise during your involvement in the study.

In case you consent for the interview, I rely on your honest answers to the questions, as your responses will help us to formulate genuine conclusions and recommendations that would potentially assist the Ministry of Health of Ethiopia to develop public policies and strategies on improving early breast cancer screening and detection for women. I am available to answer any questions you may have pertaining to the study.

Completing the questionnaire will take about 30 minutes of your time.

For further questions about this research and related issues, you can contact me on +251-911-637857, or my supervisor, Dr A. Mosalo: +2712429-6447 between 07:45-17:00 or Chair of Departmental Ethics Committee, Professor L. Roets: +2712 429-2226

I have read the above consent form/the above consent form has been read and explained to me. I have fully understood its contents and I consent to participate in this research project.

**Name of respondent** \_\_\_\_\_

**Signature** \_\_\_\_\_ **Date** \_\_\_\_\_

**Name of data collector** \_\_\_\_\_

**Signature** \_\_\_\_\_ **Date** \_\_\_\_\_

**ANNEXURE 5: Adapted Breast Cancer Questionnaire**

QUESTIONNAIRE NUMBER:

0	0	1	A
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**KNOWLEDGE, ATTITUDE AND PRACTICES AMONG FEMALE HIGH SCHOOL TEACHERS TOWARD EARLY DETECTION OF BREAST CANCER IN ADDIS ABABA**

Dear Respondent

Thank you for agreeing to take part in this study. Please read the instructions below and answer every question truthfully. Please be reminded that this questionnaire is anonymous and that your identity will not be revealed at all.

Strict confidentiality will be maintained and only the results of the study will be published.

**INSTRUCTIONS FOR COMPLETING THE QUESTIONNARE**

Completing the questionnaire will **take about 30-40 minutes of your time.**

- 1 Answer each question by indicating the chosen option by writing the code you choose in the appropriate block OR fill in the information asked in the provided space.
- 2 You are kindly requested to complete **ALL** the questions.

## BREAST CANCER QUESTIONNAIRE

### SECTION 1

S. No.	Questions	Coding categories	Code	Skip
1	Age in completed years	1. 20-29 2. 30-39 3. 40-49 4. 50 years or older		
2	Religion	1. Christianity 1.1 Catholic 1.2 Orthodox 1.3 Protestant 2. Islam 3. Other		
3	Marital status	1. Traditional marriage 2. Registered marriage 2. Cohabiting 3. Separated/divorced 3. Single 4. Widowed 5. Other		
4	Educational status	1. Primary education 2. High school 3. Diploma 4. Degree and above		
5	Number of children alive	1. None 2. 1-2 3. 3-4 4. 5-6 5. More than six		
6	Husband's education	1. Illiterate 2. Read and write 3. Primary education 4. High school 5. Degree and above		
7	Duration of practice as high school teacher	1. 1-5 years 2. 6-10 years 3. 10-15 years 4. More than 15		

S. No.	Questions	Coding categories	Code	Skip
8	If you ever had a pregnancy, your age at 1 <sup>st</sup> pregnancy including childbirth	1. 15-19 years 2. 20-24 years 3. 25-29 years 4. 30-34 years 5. 35-39 years 6. More than 40 7. I never had a child		
9	What is your monthly Income? _____ Birr			

## SECTION 2: KNOWLEDGE OF BREAST CANCER

Please answer each of the following statements

Answer each statement by making a tick (✓) in the option of your choice as shown below, only one option for every question should be chosen.

Items	Strongly agree	Agree	Do not know	Disagree	Strongly disagree
	1	2	3	4	5
2.1 Breast cancer can be cured					
2.2 Breast cancer can be cured if detected early					
2.3 Breast cancer cannot be cured					
2.4 Breast cancer can be cured even if detected late					
2.5 Breast cancer can be cured at any time					
2.4 Breast cancer is a communicable disease					
2.5 The irritation of a tight bra can, overtime, cause breast cancer					
2.6 A hard blow to the breast may cause breast cancer later in life					
2.7 Breast cancer can be a result of a curse/evil eye					

### SECTION 3: KNOWLEDGE ON RISK FACTORS FOR BREAST CANCER

The following statements list possible factors associated with breast cancer. For each possible factor listed, you are kindly required to indicate your level of agreement/disagreement. Please indicate by ticking (√) your response.

Items	Strongly agree	Agree	Do not know	Disagree	Strongly disagree
	1	2	3	4	5
3.1 Late menopause (>55 years)					
3.2 Having no children					
3.3 Having more than five children					
3.4 Late age at first childbirth					
3.5 Oral contraceptive use					
3.6 Breast feeding					
3.7 Smoking					
3.8 Alcohol					
3.9 Diabetes					
3.10 Past history of breast lumps					
3.11 Family history of breast cancer					
3.12 Exposure to radiation					
3.13 Obesity					



## SECTION 4: KNOWLEDGE ON EARLY WARNING SIGNS OF BREAST CANCER

**Instruction:** The following statements list possible early signs of breast cancer. For each possible sign listed, you are kindly required to indicate your level of agreement/disagreement.

Please indicate by ticking (✓) your response:

Items	Strongly agree	Agree	Do not know	Disagree	Strongly disagree
	1	2	3	4	5
4.1 Pain in one breast					
4.2 Cyclical monthly pain on both breasts					
4.3 Recent onset nipple discharge in a non-pregnant woman					
4.4 Recent onset of nipple retraction/inversion					
4.5 Lump in neck or armpit					
4.6 Skin changes of breast					
4.7 Asymmetry of the breasts in childhood					

## SECTION 5: ATTITUDE TOWARD BREAST CANCER

**Instruction:** For the following statements related to your attitude towards breast cancer, please express your opinion by making a tick (✓) in the option of your choice as shown below:

Items	Strongly agree	Agree	Do not know	Disagree	Strongly disagree
	1	2	3	4	5
5.1 There is nothing you can do to prevent breast cancer					
5.2 If I mean to get breast cancer, I will get it					
5.3 All women should do breast-self examination					
5.4 I feel uncomfortable, cannot do BSE once in a month					
5.5 It is embarrassing to have breast examination by a health worker					

Items	Strongly agree	Agree	Do not know	Disagree	Strongly disagree
	1	2	3	4	5
5.6 It is embarrassing to get Mammography examination					
5.7 A woman should not have her breast examined unless she has problems					
5.8 If I discover a lump, I prefer to get treatment from a traditional healer					
5.9 Early diagnosis and treatment of breast cancer can save a woman's life					

## SECTION 6: PRACTICE TOWARD EARLY DETECTION METHODS OF BREAST CANCER: BREAST SELF-EXAMINATION

Please answer each of the following statements: Only one option per statement should be chosen.

Please express your opinion by making a tick (√) in the option of your choice as shown below:

Items	Strongly agree	Agree	Do not know
	1	2	3
6.1 Is there anything you can do to prevent breast cancer			
6.2 Perform breast examination at least one a month			
6.3 Performed clinical breast examination within last one year			
6.4 Had undergone mammography in the past			
6.5 If you are not performing breast self-examination, which of the following could you give for a reason?			
6.5.1 Never felt necessary			
6.5.2 Do not know how to do			
6.5.3 I feel shy to do it			
6.5.4 Unaware of proper/complete technique			
6.5.5 Cancer risk is high only after 45 years			
6.5.6 I did not think young people can get cancer			
6.5.7 Have not heard of it before			
6.6 If you find a breast lump on self-examination of breast what would you do next?			
6.6.1 Wait and see			
6.6.2 Inform a family member			

6.6.3 Consult a doctor if features are positive for breast cancer			
6.6.4 Definitely consult a doctor			
6.6.5 Seek traditional treatment			
6.6.6 Seek holy water			

### **SECTION 7: PRACTICE TOWARD EARLY DETECTION METHODS OF BREAST CANCER: CLINICAL BREAST EXAMINATION**

Please answer each statement; only one option per statement should be chosen. Please express your opinion by making a tick (✓) in the option of your choice as shown below:

Items	Strongly agree	Agree	Do not know
	1	2	3
7If you did not have clinical breast examination in the past one year, which of the following would likely be the reason?			
7.1 Doctor did not recommend it			
7.2 Embarrassment			
7.3 Do not know where to go			
7.4 Have to work			
7.5 Might be painful			
7.6 Fear of knowing you may have cancer			
7.7 I do breast self-examination			
7.8 It will not do me any good			
7.9 Because a male will examine my breast			
7.10 I had a mammogram			
7.11 Husband/male relative not supportive			

### **SECTION 8: PRACTICE TOWARD EARLY DETECTION METHODS OF BREAST CANCER: MAMMOGRAPHY**

Please answer each of the following statements. Only one option per statement should be chosen. Please express your opinion by making a tick (✓) in the option of your choice as shown below:

Items	Strongly agree	Agree	Do not know
	1	2	3
8.1 Mammography is painful			
8.2 Mammography is safe			
8.3 It can detect early-stage breast cancer before it is palpable			

8.4	A mammography is more beneficial in women older than 50 years than those younger than 50 years			
-----	--	--	--	--

### SECTION 9: SOURCE OF INFORMATION REGARDING BREAST CANCER

Please answer each of the following statements. Only one option per statement should be chosen. Please express your by opinion by making a tick (√) in the option of your choice as shown below:

Items	Strongly agree	Agree	Do not know
	1	2	3
9.1 TV			
9.2 Radio			
9.3 Newspaper			
9.4 Magazines			
9.5 Internet			
9.6 Lectures/Seminars			
9.7 School/Curriculum			
9.8 Friend/Relative with breast cancer			
9.9 Healthcare workers			
9.10 Ethiopian Cancer Association			

**Thank you very much for your time!!**


**ANNEXURE 6: Letter from the statistician**

**ANNEXURE 5**

**STATISTICIAN CERTIFICATE**

**This is to confirm that I, Endale Shibeshi assisted Dr Yared Cherinet with data analysis of the dissertation titled "KNOWLEDGE, ATTITUDES AND PRACTICES AMONG FEMALE HIGH SCHOOL TEACHERS TOWARD EARLY DETECTION OF BREAST CANCER IN ADDIS ABABA, ETHIOPIA."**

Contact number: +251-911--740-258  
E-mail: [zemeneshibeshi@gmail.com](mailto:zemeneshibeshi@gmail.com)

Signature  Date March 09/2021

07 March 2021

**Letter of Statistician**

RE Statistical analysis of the dissertation: **"KNOWLEDGE, ATTITUDES AND PRACTICES AMONG FEMALE HIGH SCHOOL TEACHERS TOWARD EARLY DETECTION OF BREAST CANCER IN ADDIS ABABA, ETHIOPIA"**

**TO WHOM IT MAY CONCERN**

This letter serves to confirm that EZ Shibeshi was involved in the empirical research efforts of Dr Cherinet YT for his MPH study at the University of south Africa.

EZ Shibeshi can vouch for the accuracy of the statistical evaluation undertaken for the empirical chapter of the student's dissertation.

Although every effort was made to ensure that the student presented the statistical results correctly, EZ Shibeshi cannot accept responsibility for the structure and presentation of the results of this study.

Kindly contact me should you need to verify the contents of this letter, should it be required.

Endale Shibeshi

Statistician

[zemeneshibeshi@gmail.com](mailto:zemeneshibeshi@gmail.com)

+251-911-740-258

**ANNEXURE 7: Letter from the language editor***Gill Smithies**Proofreading & Language Editing Services*

59, Lewis Drive, Amanzimtoti, 4126, KwaZulu Natal

Cell: 071 352 5410 E-mail: [moramist@vodamail.co.za](mailto:moramist@vodamail.co.za)*Work Certificate*

To	Dr Y. T. Cherinet
Address	Dept. of Health Studies, College of Human Sciences, UNISA
Date	25/07/2021
Subject	Thesis: KNOWLEDGE, ATTITUDE AND PRACTICES AMONG FEMALE HIGH SCHOOL TEACHERS TOWARD EARLY DETECTION OF BREAST CANCER IN ADDIS ABABA, ETHIOPIA
Ref	YTC/GS/01

I certify that I have edited the following for language, grammar and style

Thesis: KNOWLEDGE, ATTITUDE AND PRACTICES AMONG FEMALE HIGH SCHOOL TEACHERS TOWARD EARLY DETECTION OF BREAST CANCER IN ADDIS ABABA, ETHIOPIA,

to the standard as required by UNISA.

*Gill Smithies*

## ANNEXURE 8: Originality Turnitin report

## Revision 3\_Complete Dissertation/Thesis

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