Introduction

A study conducted in the year 2020 shows that breast cancer accounts for 27.6% of all the diagnosed cancer cases in women in India (Bray, Ferlay, Lortet-Tieulent, & others, 2021). In another study, it was reported that in the year 2018, out of 162,468 cases of breast cancer diagnosed in India, 87,090 patients succumbed to death (Cytecare, 2020). These studies also show that the incidence of death from breast cancer has increased to 56%, which is much higher than the percentages of death from breast cancer in developed countries.

Controlling cancer, especially breast cancer, would be easier if detected at an early stage. As per definition, early stage is the stage where cancer is in smaller proportions (less than 5 cm) and confined to the breast without the involvement of skin, nipple, or chest wall with no or very limited involvement of axilla or armpit (National Cancer Institute, 2018).

At present in India, less than 40% of cases of breast cancer present at an early stage (Bray et al., 2021), whereas in the West, more than 80% of female patients are diagnosed at an early stage (American Cancer Society, 2022). The cure rate or the survival rate in the cases detected at “early stages” is around 90% (American Cancer Society, 2022) which drops to less than 50% in the cases diagnosed at an advanced stage. Another important aspect is the younger age of presentation of breast cancer among Indian women. Incidences of breast cancer among Indian women are a decade earlier in comparison to Western countries, with peak incidence being between the ages of 45 to 49 years. This peak of occurrence of breast cancer has further gone down to 35 years among the women from the Northeast part of India (Srinivasan et al., 2011).

The solution to the breast cancer problem in India lies in early detection by evolving effective screening protocols at a younger age. The

two most important methodologies of screening are tactile examination and radiological assessment. Mammogram is the gold standard for radiological screening of breast cancer (National Cancer Institute, 2018). However, it has the following limitations:

1. Being resource-intensive, it requires large financial investment to set up a mammogram facility and hence, it is expensive (National Cancer Institute, 2018).
2. It requires highly trained manpower to perform mammography and analyse it (National Cancer Institute, 2018).
3. There is limited effectiveness of this methodology in screening of women belonging to a younger age group (National Cancer Institute, 2018).
4. It is more suitable for detecting slow-growing cancers rather than aggressive tumours (National Cancer Institute, 2018).

Moreover, breast cancer among Indian women presents at a comparatively younger age and Indian women have inherently higher breast density. Both the aforementioned facts suggest limited advantage of application of screening by mammography in an Indian setting.

The tactile methods are of two types: (i) Self Breast Examination (SBE) and (ii) Clinical Breast Examination (CBE). Self Breast Examination (SBE) is being aware of one's own breast. It involves regular inspection and tactile examination to identify a new lump, swelling, or change in the breast. According to Aggarwal et al. (2010), SBE is a desirable change in the behaviour of females in India which shall help in early detection and the controlling of breast cancer. SBE is a simple methodology, yet it has limited acceptability due to lack of proper knowledge and confidence. Whether practising Self Breast Examination actually reduces mortality from breast cancer is still unclear. The U.S. Preventive Services Task Force has concluded that “there is too little evidence to either recommend or discourage breast self-examination” (BMJ, 2021).

Clinical Breast Examination (CBE) involves scheduled tactile examination by a clinician or trained personnel to identify a new lump, swelling, or change in the breast. It has been proven by Dinshaw et al. (2006) that CBE is an effective methodology for breast cancer screening, especially in the younger age group. Substantial efforts are being put in to increase the trained manpower to perform CBE and increase the awareness among women to undergo scheduled CBE.

In an attempt to find a solution to the problem of a lack of early detection of breast cancer, this study explores the concept of enabling and training visually impaired women known as Medical Tactile Examiners (MTEs) to use their inherently enhanced tactile sense to perform breast examination described as Tactile Breast Examination (TBE) for the early detection of breast cancer. This concept was developed by the German doctor, Dr. Frank Hoffmann, and has been successful in Germany. According to reports, MTEs are as good in performing Clinical Breast Examination as the trained clinicians (Srinivasan et al., 2011).

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