

iBreastExam: Time for Formal Operation in Nepal

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Breast cancer is the leading cause of global cancer incidence and the fifth leading cause of cancer mortality in 2020. An estimated of 2.3 million new breast cancer cases were diagnosed accounting for 11.7% of all cancer cases.¹ In Nepal too, breast cancer is the leading cause of cancer with a high age-specific prevalence rate among females. In addition, it is also the most common cause of cancer mortality in Nepalese females.²

In their paper in *The Lancet Global Health*, Heer et al³ discussed global disparities in reference to breast cancer incidence, survival by menopausal status, and Human Development Index. In low and medium Human Development Index countries, case fatalities among premenopausal and postmenopausal breast cancer were highest (> 32% for premenopausal breast cancer and > 54% for postmenopausal breast cancer).³ Most breast cancer cases are detected early and treatment outcomes are salient in high-income countries because of the robustness of health care facilities and population screening programs. The opposite is the case in low-income and middle-income countries where most patients present at an advanced stage. This delay in the detection of breast cancer along with inadequate diagnostic tools and limited access to health care often leads to poor outcomes.^{4,5} Therefore, initiatives focused on early diagnosis of breast cancer can potentially improve breast cancer-related outcomes in low-income and middle-income countries.

According to WHO recommendation, population-based mammography screening should be conducted for women at average risk for breast cancer age 50-69 years every 2 years in a well-resourced setting.⁶ However, this recommendation is a bane for low-resource settings like Nepal where the lack of mammography equipment and trained radiologists coupled with the scarcity of facilities that can perform breast biopsies or surgeries make population-based mammography screening an impossible task. The majority of the equipment and skilled personnel necessary to effectively perform breast cancer screening are concentrated in Kathmandu, the capital of Nepal. Therefore, the majority of the women in Nepal do not have access to screening mammography. In this population, routine breast cancer examinations may offer some benefits in the early detection of breast cancer.⁷ In this context, the handheld screening

device iBreastExam may serve as an important tool for a routine breast examination.

In *The Lancet Global Health* article, Mango et al⁸ evaluated Nigerian women age 40 years or older who were symptomatic or at high risk with a family history of breast cancer with the portable handheld screening device iBreastExam and compared it with clinical breast examination (CBE) by experienced surgeons. They found iBreastExam had superior sensitivity over CBE for any breast lesion (63%, 95% CI, 57 to 69 v 31%, 25 to 37; $P < .0001$) and similar sensitivity to CBE for suspicious lesions (86%, 70 to 95 v 83%, 67 to 94; $P = .65$).⁸

Besides promising data from this Nigerian study, studies evaluating the efficacy and feasibility of this device were conducted in India. In a study by Rohan Khandewal, iBreastExam detected all clinically significant lumps and was socioculturally acceptable in the rural environment because it is portable, radiation-free, and painless making it a potential mass screening device in low-resource settings.⁹ The study by Somashekar et al showed significantly better sensitivity of iBreastExam by 19% than CBE in the detection of breast lesions and also reported high specificity (94%) and negative predictive value (98%). Most importantly, iBreastExam demonstrated high-performance characteristics in younger women younger than 40 years with high dense breast prevalence.¹⁰

Community health workers are affordable and accessible health care resources in low-income and middle-income countries where minimal training to use iBreastExam can be provided for evaluation of symptomatic women. Mango et al⁸ concluded that iBreastExam combined with clinical history and CBE in a community setting help to triage the patients to determine who needs further diagnostic evaluation.

In Nepal, Female Community Health Volunteers (FCHVs) are frontline pillars of community-based health programs and have been successful in making a significant contribution to various community-based maternal and child programs. In addition, their roles are instrumental in linking families and communities to community health workers and periphery-level health facilities.¹¹ Thus, FCHVs could be of great help to reach this device in rural parts. The government can provide equipment and training to FCHVs, nurses,

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and other health professionals. iBreastExam has the potential to bring access to breast cancer screening and diagnosis to Nepalese women who currently have little or no access to screening mammography. The iBreastExam can overcome the issue of a shortage of specialists for early detection of breast cancer in Nepalese communities, thus showing the potential to reduce the incidence of advanced-stage breast cancer and might lead to improvement in breast cancer survival.

Olaogun et al¹² in *The Lancet Global Health* article discussed some pitfalls. They emphasized iBreastExam as a prescreening device as it comes in lower rank in the decision-making algorithm because of its higher sensitivity and lower specificity than CBE. These necessities

require additional diagnostic investigation, thereby putting additional financial pressure on patients. CBE training should complement iBreastExam to alleviate this problem.¹² Thus, before its formal operation in Nepal as a screening tool, a well-validated cohort study with measurement of its specificity and sensitivity compared with CBE is warranted among both premenopausal and postmenopausal Nepalese women. Moreover, it would be a win-win situation for all parties involved if the government of Nepal would seriously consider introducing, implementing, and incorporating screening examinations such as iBreastExam and other similar tools to improve early detection and reduce the undesirable and unfortunate breast cancer-related mortalities.

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AUTHORS' DISCLOSURES OF POTENTIAL CONFLICTS OF INTEREST

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Open Payments is a public database containing information reported by companies about payments made to US-licensed physicians (Open Payments).

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