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Two-Stage Breast Cancer Screening in the Developing World

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Approximately two-thirds of women with a new diagnosis of breast cancer in the United States and northwestern Europe have an early-stage breast cancer, and most have a good prognosis with long-term disease-free survival. National mammographic screening programs have resulted in this improved early detection, saving the lives of millions of women in the industrialized world. However, the lack of such technology and screening programs in non-industrialized countries may be the cause of high breast cancer mortality in these countries.

Denewer and colleagues' [1] article in the *World Journal of Surgery* evaluated whether the surgeon's clinical breast examination could improve the rate of detecting early-stage breast cancer in Egypt. The authors reported that the mean tumor size in Egyptian women at the time of diagnosis was 4.5 cm, and the median age was approximately 46 years. From a total of 57,500 women aged 25–65 years in the targeted population, the voluntary participation rate for the surgeon's clinical examination was 10.2%. Abnormal clinical findings were found in 3.2% (191/5900). These 191 women then underwent a second stage of examination that included repeat clinical examination plus ultrasonography and/or mammography. A total of 18 breast cancers were detected using this two-stage approach, and the median tumor size was 1.5 cm. The cost of screening per cancer case detected was approximately $415 (US), and the overall cost of treating a screen-detected cancer was $1015–$1215 (US). The authors concluded that this two-stage screening approach is effective and reduces the cost of managing breast cancer in Egypt.

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The study has some limitations. Only 18 breast cancers were detected, and about 90% of the targeted population did not participate. Moreover, given the limitation of the clinical examination (as shown in Western large-scale studies compared to mammographic screening), a large number of Egyptian women with early-stage breast cancer may not be detected by this two-stage approach. However, given the limitations of performing mass screening programs in developing countries, the study by Denewer and colleagues provides an appropriate effort to reduce late diagnosis and death from breast cancer in the real world of developing countries.

Despite advances in screening and treatment in the developed world, many women are still diagnosed at more advanced stages, and a substantial proportion of women with early breast cancer develop a recurrence and die of the disease. The latest research in cancer genetics, genomics, molecular biology, DNA sequencing technology, and translational oncology is focused on personalized risk prediction and individualized primary prevention and treatment. Novel therapeutic strategies aimed at the development of valid biomarkers and highly effective targeted drugs may improve outcomes of patients with breast cancer or other major cancer types [2–15].

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