



Breast Cancer Screening and Treatment in Resource Limited Environments: Challenges and Solutions

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Abstract

Breast cancer is a common health problem for women worldwide and is the leading cause of cancer mortality globally. Screening measures can be instituted even if modern technology in the form of mammography or ultrasound does not exist. However, there are multiple challenges to screening for breast cancer in resource-limited environments, including underestimation of the risk of breast cancer in these populations, time constraints on physicians, and a cultural aversion to a mastectomy in many communities. Proposed solutions include culturally sensitive public health initiatives that serve to educate women and professional and government personnel about the role of screening for breast cancer as well as the treatment options for each specific target population. Other strategies to assist with screening include teaching nurses and community health workers to perform clinical breast examinations and focused epidemiologic research for pertinent population risk factors, incidence rate and prevalence rate.

Introduction

Breast cancer is a relatively common health problem for women worldwide. It has been estimated by the International Agency for Research on Cancer (IARC) and World Health Organization (WHO) that 1.7 million women worldwide had been diagnosed with breast cancer in 2012 (Figure 1) [1-3]. In addition, the risk of breast cancer increases with age, and as diseases that previously led to premature death are treated, including infections, malaria and childhood illnesses for example, more women are at risk for breast and other cancers [4].

Screening for cancer is performed to detect cancers that are not clinically evident and implies that a treatment option is available for those identified with a cancer [5]. Screening also implies that cancers will be found at an early stage with a better prognosis in comparison to cancers that present clinically at an advanced stage. Screening guidelines do change with time, and must reflect the benefit for screening of the population of interest versus any harm that may result [6].

One ethical dilemma exists when screening to detect early stage breast cancer in resource-limited environments (RLE). While breast conservation management is the standard of care for women in developed countries diagnosed with early stage of disease, it is largely an unavailable treatment option for women in isolated and resource limited countries that may lack surgical expertise and access to radiation therapy and systemic therapy. While the standard of care once was a mastectomy for every woman diagnosed with breast cancer, it is not a culturally acceptable option for some women living in some of the less developed areas of the world.

Challenges and Proposed Solutions

There are many challenges to screening for breast cancer in RLE. There are also challenges and limitations to treating women with breast cancer once detected.

The following challenges and solutions are offered for thought, reflection and discussion based upon the author's experience in working in several resource-limited countries.

A. Challenge: Perception of risk by professionals and general public

It had been a previous misperception that women who lived in rural RLE were not at a substantial risk of breast cancer. The risk factors for breast cancer as we know them seem not to fit the risks of women who reside in RLE, such as nulliparity, lack of breast feeding, and late age of first full-term pregnancy [7]. However, we have found that women are developing breast cancer at an age younger than anticipated in RLE (Figure 2), and who do not have the classic risk factors [4]. In addition, mortality from breast cancer is the highest of any cancer worldwide [8].

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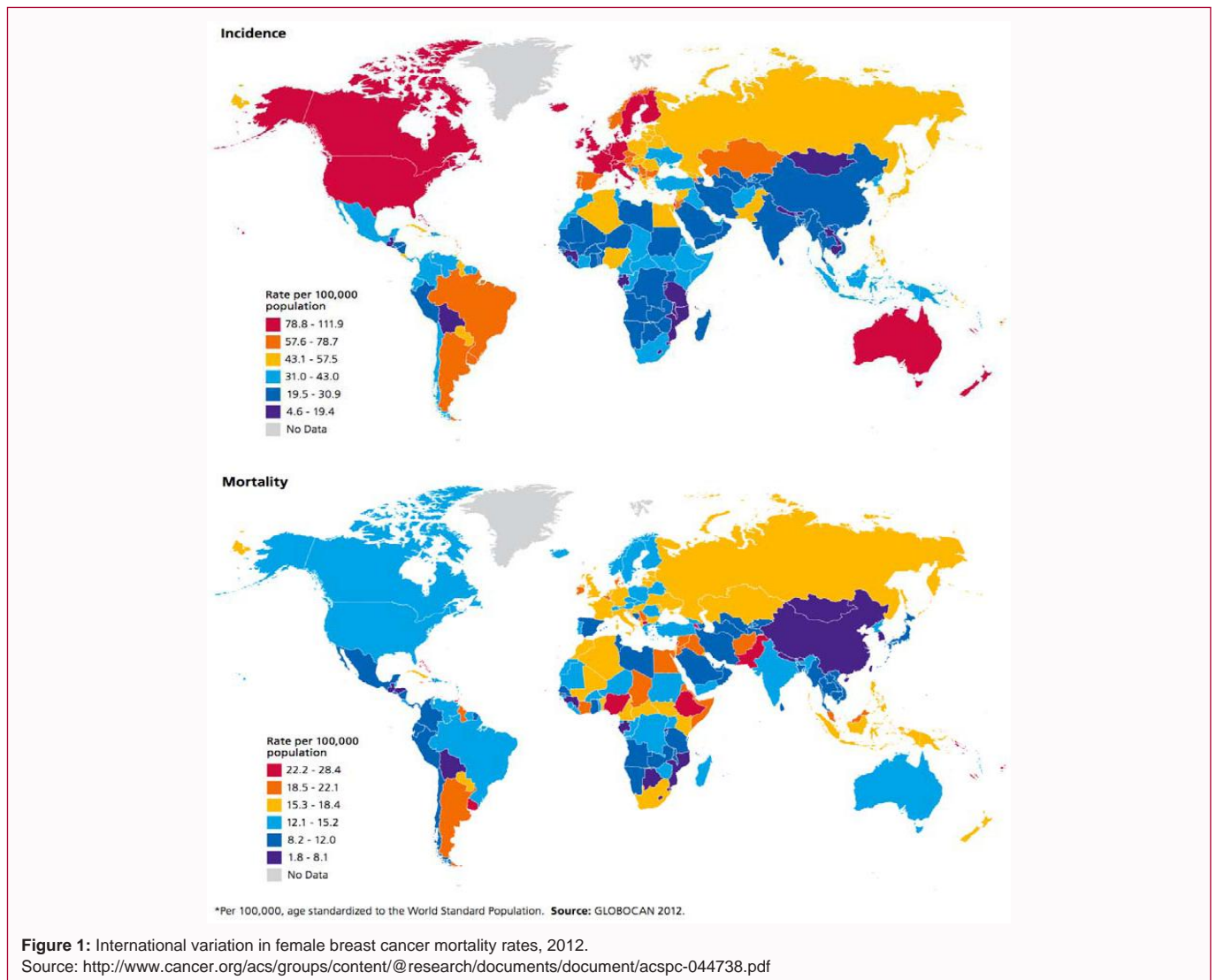
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A small number of women diagnosed with breast cancer in a community may not alert the stakeholders that breast cancer is a serious health concern for the area. For example, in 2014, six women were newly diagnosed with breast cancer in Yap, Federated States of Micronesia, a remote group of islands in the western Pacific Ocean. Based upon the 2010 census data for women in Yap State, which has a total population of approximately 11,000, it is estimated that the age adjusted incidence rate of breast cancer is 234 per 100,000 women [9,10]. This incidence rate exceeds the age adjusted incidence rate of 122.2 per 100,000 women in the United State [11].

B. Proposed solution: Research and education

Epidemiologic research into the risk factors for breast cancer in RLE as well as the true incidence and prevalence of disease would help government's direct resources into early detection, treatment and ultimately prevention of breast cancer.

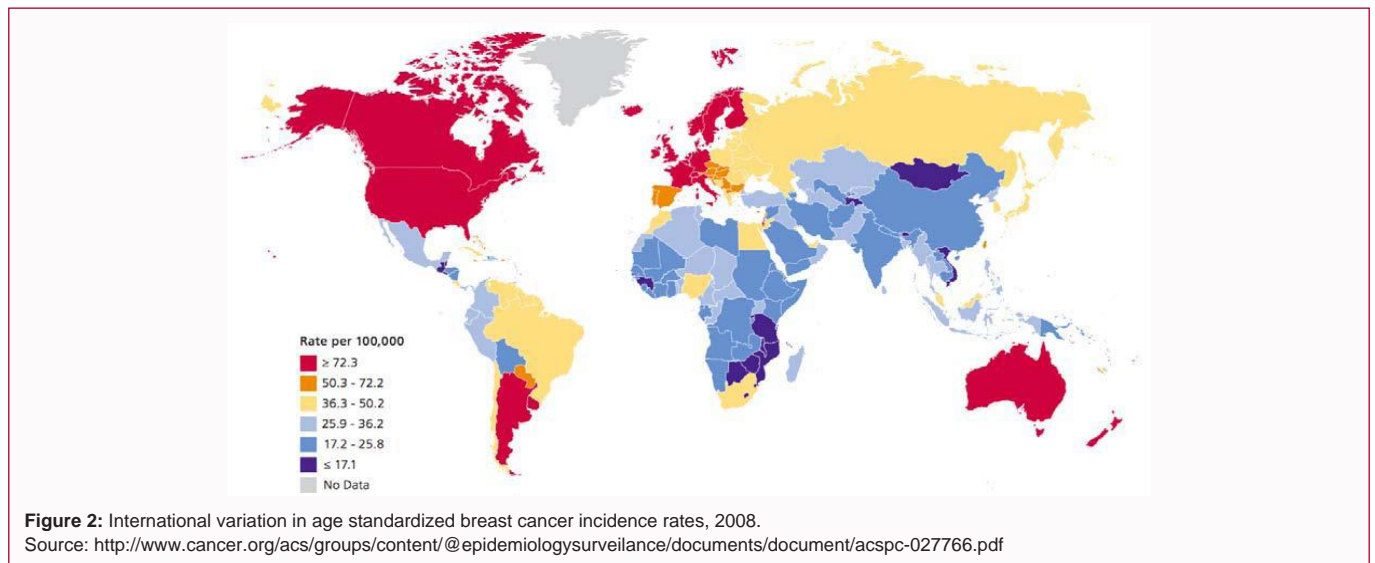
Education of both professionals and the general public is also a key component to allocating resources appropriately. Physicians should be aware of the incidence of breast cancer and include a clinical breast examination (CBE) annually for all women. In areas of major time constraints when seeing patients in the outpatient setting, physician extenders (nurses, community health workers) can be trained to perform a CBE and refer to the physician abnormal and/

or suspicious findings.

As a component of education, a public health awareness campaign can be initiated at the local ground level to encourage women to perform a self-breast examination (SBE) and to request an examination of the doctor on an annual basis and not just when the woman detects an abnormality.

To test the hypothesis that education can impact on health awareness and practice, a knowledge, attitude and practice (KAP) survey was conducted in rural Nicaragua. The breast health literacy score increased from a baseline of 63% to 93% after the education intervention [12]. Prior to the educational component of the survey, only 16 or 198 (8.1%) had a clinical breast examination and only four were physician initiated. Seventy-four percent of the participants had knowledge of breast cancer. Ten women (5.1%) had previously performed a SBE but with no clear pattern of a routine practice. Women with a FH were five times more likely to have performed a SBE, compared with women without a know FH (OR=5.5, 95% CI=1.10, 27.81, p=0.037).

Participants expressed an interest in learning how to perform a SBE. The majority of women (97.4%) stated that they were comfortable performing a self-breast examination, 94% agreed to



perform it monthly, and 77.2% had taught a friend or family member the technique before the 2-week follow-up assessment. In addition, a trained community health assistant performed a CBE, with 10 abnormal examinations identified in this group of participating women. This study showed that women with little formal education can be successfully taught about the importance of breast health and can successfully grasp the technique of a SBE.

A. Challenge: Time constraints on physicians

Anecdotally, many physicians do not routinely perform a clinical breast examination (CBE) due to time constraints and large patient volumes. This has been the author's experience in several outpatient settings in various urban and rural clinics. An ideal time to conduct a CBE would be when women are seen for cervical cancer screening. However, the queue and patient wait can be very long. An additional five minutes per patient was frequently viewed as impractical when you are seeing over 100 patients per day.

B. Proposed solution: Physician extenders

A CBE can be performed by trained professional assistants, including nurses and community health workers, as demonstrated by the KAP study in Nicaragua [12]. The trained professional can be taught to screen for abnormalities that require a referral for physician assessment and possible further evaluation. This allows physicians to use their time more effectively by treating women with serious breast health problems. The physician extenders can also be trained to teach women to perform a self-breast examination (SBE), thus assisting in the screening process and increasing a public health awareness of breast health.

A. Challenge: Mammographic screening

Radiographic limitations include machines and supplies, such as film and chemicals. Many outpatient facilities in RLE cannot afford the equipment, and even if donated, there is maintenance required to keep the machines operational. Disposable supplies, such as film, must be replenished, all of which are costly. If a suspicious lesion is found on mammography, there must be the capability of a localizing the lesion for a biopsy and there must be the capability for treatment.

B. Proposed solution: Ultrasound evaluations, regional mammographic machines and alternate screening in rural communities

Many outpatient facilities do have an ultrasound for obstetrical

use. Physicians can be trained to use ultrasound to assess if a breast mass is solid or cystic. An ultrasound can also provide characteristics that are consistent with malignancy in the absence of a histologic confirmation.

In countries with regional hospitals, mammography can be added as an important health service provided for both screening and diagnostic purposes. To eliminate the need for film, digital radiographic machines should be considered as a practical alternative to film. For example, in Yap, all radiographs are performed by digital equipment and the images viewed on computers in the outpatient clinic, which has greatly enhanced health care and circumvented the need for film and chemicals. To date, mammograms are not available.

A SBE, combined with a CBE, may provide for a reasonable screening approach for breast cancer in resource limited areas that cannot offer mammography [13-18]. While these procedures are not recommended as the sole screening methods in countries that can provide mammographic screening, they do have a role in the absence of mammographic screening. The Breast Health Global Initiative (BHGI) provides screening guidelines for RLE that are appropriate until resources become available for mammographic screening [19,20]. The approach to breast cancer screening in RLE includes the promotion of basic breast health knowledge, training in SBE performance, and encouragement of CBE promotion.

A. Challenge: Accepting a mastectomy as the treatment

Fear is a great motivator to avoid breast cancer screening. Some women may feel they would prefer not to know if they have breast cancer in order to avoid the consequences that include an operation as seemingly unacceptable as a mastectomy. In an environment that does not offer radiation therapy, the safest treatment option is a mastectomy [21]. In many areas of the world, cultural attitudes can limit women's acceptance of a mastectomy as a treatment [22-24]. And in RLE, breast conservation is rarely an ideal option either because the cancers are too large at the time of presentation or appropriate treatment options do not exist, such as neo-adjuvant chemotherapy to decrease the size of the cancer to make the patient eligible for a partial mastectomy, and radiation is not available for post breast conservation surgical procedures.

B. Proposed solution: Public health awareness campaigns, culturally appropriate strategies, supportive counseling

Sensitivity to the culture and beliefs specific to the community is an essential component to a successful screening and treatment program. And it is essential to address the treatment plan that will most likely be offered in order to appropriately prepare a woman in advance of a diagnosis. Not only can it be a tremendous shock to someone to learn that they have breast cancer, but the concept of a mastectomy may cause her to refuse treatment and not return for medical care. For example, if a woman would like to consult with a traditional practitioner or healer rather than undergo a mastectomy, keep the door open to provide medical care should the woman decide to return. Work with her and perhaps even the traditional healer on developing an acceptable approach where the woman may undergo the necessary mastectomy and still utilize traditional therapy.

While it is difficult for many women, regardless of geographic location to accept a mastectomy, many women do so and remain active participants in their communities. Women who have undergone the procedure can serve as role models and counselors for women newly diagnosed in their communities. Physicians, nurses and community health workers can make special efforts to explain body image perceptions. While breast reconstruction is an unlikely option for most women in these environments, mastectomy bras can be locally modified and used with substitute breast prosthesis. Counseling can help a woman adapt to the diagnosis and mastectomy and effectively live a full and meaningful life in their community.

Conclusion

There are certainly other issues that limit breast cancer screening detection and treatment, such as a lack of pathology and radiation therapy and chemotherapy. Diagnosis and treatment of a cancer is complex, frequently requiring sound clinical and surgical judgment when no pathologic assessment is available. The surgeon must be able to determine on the basis of the clinical examination whether or not a breast mass is malignant in order to make the correct treatment decisions. A public health initiative in the communities should be part of the overall health plan to inform the public about the risks of breast cancer, its presentation, and the role of screening to detect small cancers to afford a more favorable prognosis, and the treatment options locally and regionally available. These initiatives should be performed in a culturally sensitive manner appropriate for the target communities.

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