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Review

Breast cancer in South Asia: A Bangladeshi perspective

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ABSTRACT

South Asian countries are facing a hidden breast cancer epidemic. A significant proportion of the breast cancer cases occur in premenopausal women. Knowledge of the various aspects of breast cancer in different geographical regions is limited in South Asia. In this article, we review the Bangladeshi perspective of the epidemiology, risk factors, pathology, diagnosis and treatment of breast cancer. As in other developing countries, because of the lack of breast cancer awareness in Bangladeshi population and inadequate access to health care, most patients are diagnosed at an advanced stage of the disease. Early detection has a crucial impact on overall treatment outcomes. To battle against breast cancer in resource-limited countries like Bangladesh, it is not feasible to set up a parallel health service system solely dedicated to cancer. Therefore, a cost-effective public health strategy is needed which could reach a large number of women in the country. Considering all these issues, we propose an innovative female-based primary healthcare approach focused on awareness, screening and early detection of breast cancer in Bangladesh. This preventive strategy could be a model for other resource-limited developing countries.

1. Introduction

Breast cancer is the most common cancer in women worldwide. Even though the incidence of breast cancer in developing countries is lower that in their Western counterparts, it is rising rapidly. According to GLOBOCAN estimates, more than half (52.9%) of 1.67 million new breast cancer cases were diagnosed in developing countries in 2012 [1], while the corresponding figure for 1980 was only 35% [2]. Although in developed countries breast cancer is mainly a disease of postmenopausal women (≥50 years), almost half of all breast cancer cases (45%) in developing countries in 2010 were diagnosed in women of reproductive age (15–49 years) [2]. In Asia, the incidence of breast cancer peaks among premenopausal women in their forties, whereas among postmenopausal women in Western countries it peaks in their sixties [3]. The mortality of breast cancer is significantly higher in developing countries than in high-income countries. In 2012 nearly 62% of deaths associated with breast cancer occurred in developing countries [1].

South Asia, the home of approximately 588 million women over 15 years of age [4], faces a growing breast cancer epidemic, as the incidence of breast cancer is increasing dramatically [5]. Information concerning the epidemiology, biology, and different environmental backgrounds of breast cancer are scarce in South Asia. None of the South Asian countries have central cancer registries which could provide comprehensive nationwide data. All population-based epidemiological data in this region have been obtained from 25 Indian population-based cancer registries (that cover only 7.5% of the total Indian population) and a single Pakistani cancer registry (coverage 1%) [6,7]. An estimate of over 200,000 new breast cancer cases occurred in South Asia in 2012, and approximately 97,500 breast cancer patients died [1]. Currently breast cancer has overtaken cervical cancer as the most common cancer in South Asian women [1]. Despite current or future efforts, increases in breast cancer incidence in developing countries are expected because of the increasing lifespan resulting from efficient management of infectious diseases, and increasing adaptation to a Westernized life style [8].

With a population of over 163 million, Bangladesh is one of the most densely populated countries in the world [4]. Females have outnumbered males (84.1 versus 79.5 million) in the Bangladeshi population. About 45 million women are at reproductive age, while 13.5 million women are ≥50 years old [4]. As in other South

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Asian countries, the life expectancy of Bangladeshi women has increased significantly in recent years from 59 years in 1990 to 70 years in 2011 [9]. Women are the key drivers of the Bangladesh economy and of its social transformation through their enormous contribution in the clothing industries [10] and in microcredit- and microfinance-based development programs [11]. Healthy women are vital for healthy families and communities. However, women's problems generally get a lower priority in Bangladeshi society. Although Bangladesh has made enormous progress in the healthcare sector – especially related to infectious diseases, as recently highlighted by *Lancet* [12] – the issue of cancer is given lower priority at both policy and research levels [13]. In this review, we aim to present the current scenario of breast cancer in Bangladesh and suggest a primary healthcare-based innovative strategy for the prevention of breast cancer that could be a model for other low-income countries as well.

2. Epidemiology of breast cancer in Bangladesh

Not much information on breast cancer in Bangladesh is available. So far no effort has been made toward creating population-based cancer registries or a central cancer registry to provide comprehensive nationwide data. Therefore, the incidence and prevalence of breast cancer is mostly unknown. However, according to GLOBOCAN estimates based on the extrapolation of Indian data, 14,836 new breast cancer cases were diagnosed in 2012, with an age-standardized incidence rate (ASR) of 21.4 per 100,000 [1]. This figure is likely to be an underestimate since many cases are missed due to lack of awareness, low level of education, misconceptions, poor socioeconomic status, insufficient access to health care, and poor governance. In West Bengal, India (which has a similar culture and population structure), the incidence of breast cancer is similar to that in Bangladesh (ASR 25.2 per 100,000) [14]. The only hospital-based cancer registry tracks new cancer cases systematically in Bangladesh at the National Institute of Cancer Research and Hospital (NICRH). According to an NICRH report, 5255 breast cancer cases were diagnosed during the period 2005–2010; the mean age of the breast cancer patients was 41.8 years (age range 15–94 years) and over 56% of the cases were women of reproductive age (15–44 years) [15,16]. Similarly, in our neighboring country (India), premenopausal patients constitute about 50% of all breast cancer patients [17]. The higher proportion of premenopausal cases in Bangladesh might be due to the fact that the overall population is much younger than in high-income countries, and possibly missing cases of older women who often feel shy about seeking medical help as well as getting lower priority for treatment compared to younger family members in South Asian countries. The same pattern of a higher proportion of premenopausal cases was also seen among South Asian immigrants in the UK and US [18–20], although the incidence is significantly higher compared to women in their country of origin (Table 1) [14,21]. A recent study has shown that the age-specific incidence rate of breast cancer is significantly lower in low-income countries (LICs) than in high-income countries (HICs). The incidence of premenopausal cases is about twice as high in HICs (ASR 29.4 versus 12.8 per 100,000) as LICs, whereas the incidence of postmenopausal cases is five-fold higher in HICs (307.6 versus 65.5 per 100,000) [22]. Hence, it has been suggested that the global differences in incidence rate of breast cancer are likely due to the differences in the level of exposures to various reproductive and lifestyle risk factors [22].

Since there is no national registry of cause of death in Bangladesh or of patients' follow-up systems in hospitals, it is not possible to know about the mortality and survivorship of breast cancer. Nonetheless, GLOBOCAN has estimated that 7142 women died of breast cancer in Bangladesh in 2012 (ASR 11 per 100,000) [1]. Apart from this, a maternal health survey estimated that cancer was responsible for 21% of all women's deaths in the reproductive age range [23]. Another verbal autopsy study showed that 62% of all deaths associated with breast cancer were in women under 50 years old [24].

3. Risk factors

Some reproductive factors (age at menarche, menopause and first pregnancy, breastfeeding, parity) and non-reproductive factors (menopausal hormone therapy, family history of cancer, body mass index, alcohol intake, and others) have been linked with breast cancer risk [25]. Compelling evidence suggests that certain factors are known to reduce the risk of breast cancer, including increased parity and duration of breastfeeding [26], older age at menarche [27], and lower body mass index [28]. In contrast, use of menopausal hormone therapy [29,30], greater alcohol consumption [31], older age at menopause [27], and a positive family history [32] are known to increase the risk of breast cancer.

No case–control studies have been conducted on breast cancer risk factors in the environmental context of Bangladesh. However, well known reproductive factors may not be strongly associated with the breast cancer burden in Bangladesh, where the majority of breast cancer cases are premenopausal. Marriage at an early age, breastfeeding for a longer period of time, and multiple births are the common features in Bangladeshi society. For females, the mean age at first marriage is 18.7 years [33]. Almost all Bangladeshi babies are breastfed for the first year of life, and 90% of these children receive breast milk until the age of 20–23 months [34]. Data from the NICRH cancer registry show that over 93% of all breast cancer patients ($n = 5255$) were married. Altogether, over 78% of them were multiparous (having given birth two or more times; 56%) and grand multiparous (having given birth five or more times; approximately 22%) [15,16]. In contrast, only about 9% of the cases were nulliparous. Most of the female patients registered at NICRH came from poor family backgrounds since nearly 80% of

Table 1
Characteristics of breast cancer in Bangladesh as compared to other countries.

Features	Bangladesh	India	South Asian (SA) immigrant in UK/US	UK/US
Incidence (ASR per 100,000)	21.4	25.8[1]	SA versus non-SA: 40.5 versus 57.4 [18]	95 in UK, 92.9 in US [1]
Mean age (years)	41.8	45–49 [3]	51.8 [18]	62.8 [18]
Premenopausal	56%	50% [17]	~45% [19]	24.5% [19]
ER positive	63–72%	52–60% [58,59]	59–71.9% [19,20]	70–79.3% [19,20]
Triple negative	9–22.4%	~20–22% [42,58]	~19 [20,44]	8–12% [20,44]
Histology: invasive ductal carcinoma	95%	88.5% [58]	69.1% [19]	65.6% [19]
Stage at initial diagnosis	III–IV: ~90% [37]	III–IV: ~60% [38]	III–IV: ~16% [19]	III–IV: ~11% [19]
Tumor grade III	63%	60% [38]	41.9% [19]	34.4% [19]

ASR, age-standardized incidence rate; ER, estrogen receptor.

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