International Journal of Gynecology and Obstetrics 119 (2012) S85–S88

Contents lists available at SciVerse ScienceDirect

International Journal of Gynecology and Obstetrics

journal homepage: www.elsevier.com/locate/ijgo

IMPROVING REPRODUCTIVE HEALTH

Meeting the emerging challenge of breast and cervical cancer in low- and middle-income countries

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ARTICLE INFO

Keywords:
Breast cancer
Cervical cancer
Low-income countries
Epidemiological transition
Sexual and reproductive health

ABSTRACT

Cancer, particularly when it affects women and reproductive health, epitomizes the complexities and inequities of the epidemiological challenge faced by low- and middle-income countries. Women in resource-poor settings face a double cancer burden: the backlog of preventable cancer, and the emerging challenge of cancers that cannot be prevented but whose impact could be dramatically reduced through early detection and treatment. Disparities in cancer incidence, mortality, and other health and non-health outcomes are exacerbated by gender inequity and compounded by discrimination and stigma. The combination of these barriers implies a multiplicative challenge for women who face cancer, particularly when the disease is associated with reproduction. The horizons of maternal and reproductive health should extend to include the life cycle of healthy changes and illness that are embodied in longer life for women. Numerous opportunities exist to strengthen health systems through sexual and reproductive and women and health platforms and better meet the challenge of cancer.

1. Introduction

Low- and middle-income countries (LMICs) face a double health burden of increasingly prevalent chronic and noncommunicable disease coupled with an overlapping backlog of disease and illness associated with poverty, preventable infections, and reproductive health problems. This has been referred to as a protracted and polarized epidemiological transition in which diseases that were once considered only of the poor now cease to be the only diseases of the poor [1]. Cancer, particularly the malignancies that most affect women, encompasses a group of diseases that epitomize the complexities and inequities of this epidemiological challenge faced by LMICs [2].

The "double burden" of cervical and breast cancer faced by women in less developed countries is emblematic of the cancer transition [2]. Cervical cancer is declining in incidence in most high-income countries, yet it is far from controlled in LMICs. At the same time, breast cancer though historically less common, is increasing in incidence. Thus, women in resource-poor settings face a cancer burden that includes the backlog of preventable cancer and the emerging challenge of all other cancers that cannot be prevented with existing scientific knowledge. This emerging challenge is most clearly shown for breast cancer—a noncommunicable disease for which primary prevention is very difficult and there is no known vaccine.

Furthermore, a cancer divide exists that is especially evident for women and is exacerbated by gender discrimination [2]. The cancer divide refers to the disparities in incidence, mortality, and other health and non-health outcomes that are directly related to inequities in access and differences in underlying socioeconomic, environmental, and health conditions. As a result, preventable risk, disease, and suffering from cancer-related ill health and death are increasingly concentrated among poor and marginalized populations.

For LMIC health systems to respond effectively to these compounded challenges, a broader vision is required that goes beyond the false dichotomy of communicable versus noncommunicable disease and breaks down the barriers that have been created [3]. The transition in cancers of women clearly demonstrates the need and the potential to adopt this more holistic view and organize health systems to respond to the needs of people rather than around specific diseases. The horizons of maternal and reproductive health should extend to include the life cycle of healthy changes and illness that are embodied in successfully having women live longer.

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0020-7292/$ – see front matter
doi:10.1016/j.ijgo.2012.03.024

This paper describes the transition in women's cancers and reviews the cancer divide as it relates to the health of women. The conclusions highlight some of the opportunities for strengthening global and national programs, particularly in the context of the agenda that has been put forward by the 2011 United Nations high-level meeting on the prevention and control of noncommunicable diseases. Data are taken primarily from GLOBOCAN 2008 [4], and complemented by recent estimates published by the Institute for Health Metrics and Evaluation [5].

2. The women's cancer transition

A comparison of breast and cervical cancer trends in LMICs highlights the complexities of the cancer transition for women. In all parts of the world other than the poorest countries of Sub-Saharan Africa and South East Asia, breast cancer kills more women than cervical cancer [6].

At the same time, cervical cancer incidence and death are increasingly concentrated among the poor. The disease, despite the options for early detection and treatment in precancerous stages that were developed decades ago, still kills approximately 200 000 women each year, of whom almost 25% are younger than 50 years [5].

Indeed, the burden of these two cancers, both associated with reproduction in women, now exceeds that of many other priorities for women's health in LMICs. This is largely due to the success of efforts in public health focused on women. As a result of declines in maternal mortality, overall more adult women die of breast and cervical cancer each year than of deaths in childbirth. Considering the subgroup of women of reproductive age (15–49 years) in LMICs, and if current trends continue, the ratio of maternal deaths to breast and cervical cancer deaths will be almost 1:1 by 2025 [5].

Cervical cancer is increasingly a disease of poor countries. In 1980, LMICs accounted for approximately 80% of both incident cases and of deaths, and by 2010, the figures had increased to almost 90%. In LMICs between 1980 and 2010, incidence increased by 24% and death by 19%. In comparison, there was an impressive decline in high-income countries of approximately 30% in both incidence and mortality [5].

The contrast with breast cancer makes the transition more evident. In the case of breast cancer, both incidence and mortality are increasing throughout the world, but especially in LMICs. In LMICs between 1980 and 2010, breast cancer incidence increased by 60% and mortality by 53%, compared with 47% and 20% in high-income countries. Thus, the proportion of deaths from breast cancer that occur in LMICs increased from 49% to 63%. As of 2010, deaths from breast cancer in LMICs surpass deaths from cervical cancer by about 50% (approximately 88 000 deaths). In contrast, in 1980 there were approximately 142 000 cervical cancer deaths compared with 122 000 breast cancer deaths. The gap between the burden of breast and cervical cancer is closing, even in the poorest countries, as breast cancer incidence and deaths are increasing at a faster rate [2,5].

Time series of mortality for Mexico and Costa Rica also demonstrate the cancer transition for women. In Costa Rica, the transition is well underway and breast cancer mortality has exceeded cervical cancer mortality since at least the mid-1990s (the years for which data are available) and the difference is now approximately 14 versus 5 per 100 000 women. In the case of Mexico, cervical cancer mortality peaked at close to 16 per 100 000 women in the late 1980s and then steadily declined to a rate of less than 8 in 2008. Breast cancer mortality rose steadily reaching over 9 per 100 000 by 1995 and has remained relatively stable since [6]. Similar trends have been documented for high-income countries (Denmark, Japan, Singapore) and emerging economies (India, China) [7].

Data from within Mexico also demonstrate the transition. In wealthier states, breast cancer mortality surpassed cervical cancer mortality since the mid-1980s. In the poorer states, cervical cancer still exceeds breast cancer but the gap is narrowing rapidly, primarily because of impressive declines in cervical cancer mortality [2].

Breast cancer, often mistakenly thought to be a disease of older as well as wealthy women, is increasingly affecting reproductive-age populations in LMICs [8]. Although demographic transition explains a part (the populations of LMICs are younger), it seems unlikely to be the only factor behind these major differences in the age distribution of onset of the disease. Twice as many breast cancer cases of women aged 15–49 years have been reported in low-resource compared with high-resource regions [5].

Based on age-adjusted data, 66% of breast cancer cases in low-income, 62% in lower middle-income, and 44% in upper middle-income, compared with 33% in high-income countries, are diagnosed before age 54. Late diagnosis and lack of access to treatment combined with younger age at diagnosis explain the large differentials in age at death: 54% of deaths in low-income countries are before age 54, compared with 20% in high-income countries (Fig. 1) [9].

The differences in age at diagnosis are even more striking when late stage of diagnosis is taken into account. Although data are scarce, several LMICs report 60%–70% of cases detected in advanced stages of the disease [10] when cure is much less likely even with access to appropriate, high-quality treatment [11]. Late detection is indeed one of the major challenges to developing an effective response to breast cancer in LMICs.

3. The cancer divide for women

Women face specific and particularly difficult challenges that exacerbate their risks of dying and suffering from cancer. These risks

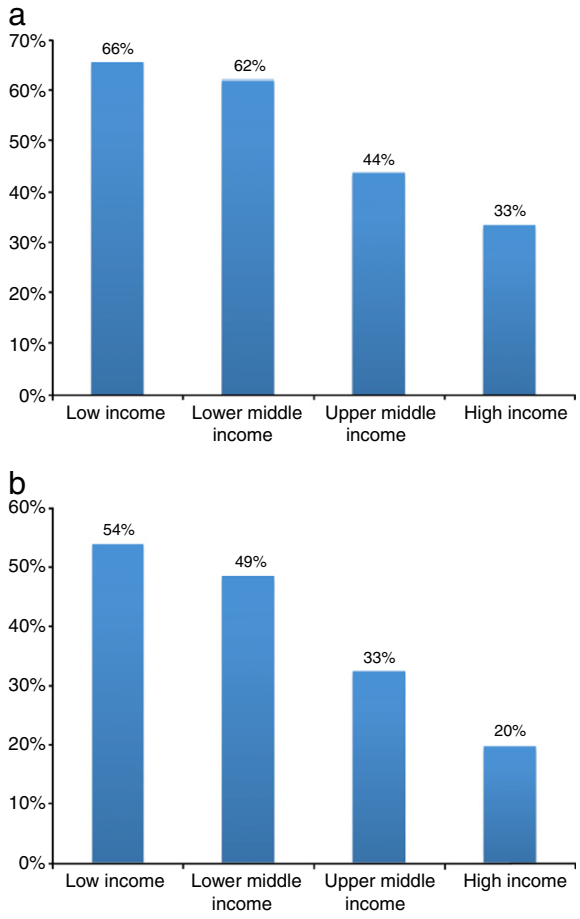

Fig. 1. Age of breast cancer (a) diagnosis and (b) mortality. Percentage younger than 54 years by country income level.
Source: GLOBOCAN 2008 [4] and World Bank World Development Indicators 2010 [8].