Multidisciplinary Approach to Breast Cancer Care

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Introduction

Worldwide, breast cancer is the most common cancer diagnosed among women and is one of the leading causes of cancer deaths (Parkin, Bray & Devesa 2001). For years, breast cancer was seen as a disease that predominantly struck white, well-to-do women in developed countries; however, breast cancer is on the rise in developing countries, with rates rising as much as sevenfold over the past decade. By 2020, 70% of global breast cancer cases will occur in the developing world (International Union Against Cancer, 2005). There may be various explanations for the increasing breast cancer incidence and mortality in developing countries. First, there have been changes such as better sanitation and control of infectious diseases which extend life spans, allowing women to age into the breast-cancer demographic. Second, the globalization of bad Western habits, including fatty diets and lack of exercise, may contribute to the disease. Finally, the low rate of early detection is considered to be one of the major reasons. Although breast cancer is a fairly new public health topic, there is less understanding and low awareness about the severity of the disease and the necessity for early detection. This also impacts the trend of breast cancer research and intervention. There have been few comprehensive breast cancer studies or interventions in Asian countries due to low awareness of breast cancer, limited resources, lack of collaboration, and lack of social support.

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Literature Review

❑ Worldwide Breast Cancer Statistics:

Worldwide, breast cancer is the most common cancer diagnosed among women (WHO & International Union Against Cancer 2005). In 2005, an estimated 1,150,000 women worldwide will be diagnosed with breast cancer, and 411,000 women will die from the disease(Parkin et al.,2005). Global differences in incidence rates and fluctuations in rates within a country are both affected by changes in risk factor prevalence and secular trends in breast cancer diagnosis. However, widespread implementation of screening mammography in the 1980s led to a steady increase in breast cancer diagnoses in most developed

countries over the latter decades of the twentieth century (Pike et al., 1983). Early detection of tumors by mammography and advances in medical treatment have improved survival such that breast cancer mortality rates previously on the rise in Western countries generally became steady during the late 1990s and, in some countries, mortality rates fell (Parkin, Bray & Devesa 2001; Ziegler et al., 1993).

Although the incidence of breast cancer in Asian countries is still lower than in Western countries, the rate of increase for the last two decades is striking. Among Japanese populations, there was a 78% increase of breast cancer incidence, and considerably larger increases of breast cancer incidence (29-35%) in other Asian countries. Influence of westernization on fertility, diet, and an affluent lifestyle have been hypothesized as an explanation for increasing breast cancer rates in Asia. Although some evidence of period effects exist, rising utilization of mammography screening is not considered to be a contributor to the observed increase, since in Asia most breast tumors are detected by physical examination (with the exception of Japan where population screening was implemented in 1987) and even found at later stages of the disease such as stage 3 or 4 (Stanford et al., 1995; Robles & Galanis, 2002; Nazario, Figueroa-Vallas & Rosario, 2000).

In the past 5 years, the incidence of breast cancer in Korea has increased and breast cancer became one of the most frequently diagnosed cancers in women (16.1% in 2001; Ahn, 2000; Yoo et al., 2002). Although the incidence of breast cancer in Korea (20.3 per 100,000) is lower than in developed countries (140.8 per 100,000 among Caucasian-Americans in the U.S), the prospects for women with breast cancer in Korea is worse than for those in developed countries. The rate of early detection is low. For example, one study indicated that only 31.3% of breast cancers were diagnosed at stage 0 or I (Ahn, 2000). The five-year survival rates (75.7%) are lower than in developed countries (Ahn, 2000; Yoo et al., 2002; National Cancer Center, 2003). Another striking characteristic of breast cancer in Korea is the age distribution. The age-specific incidence rate curve is an inverted V-shape in Korea, with the highest among women in their 40s, gradually decreasing after menopause, while the incidence of breast cancer in the U.S. rises continuously even after menopause (Ahn, 2000; Yoo et al., 2002; National Cancer Center, 2003). The median age at diagnosis in Korea is 47.0 years and the peak age of breast cancer is estimated to be 10-15 years younger than in developed Western countries (Ahn, 2000; National Cancer Center, 2003).

❑ Breast Cancer in the United States

In the U.S., breast cancer is one of the most common forms of cancer; the incidence has increased in every race since the early 1980s (Ghafoor et al., 2003). Breast cancer accounted for 32% of all new cancer cases among women in 2004 (Jemal et al., 2004). It is the second leading cause of cancer death overall, but the leading cause of cancer death among women 20-59 of age (Jemal et al., 2004). The lifetime probability of a woman developing breast cancer is 1 in 7 (Reis et al., 2003). In 2006, an estimated 212,920 new cases of invasive breast cancer(31% of all female cancer diagnoses) are expected in the U.S. An estimated 40,970 women(15% of all cancer death among women) will die from breast cancer in this year alone(ACS, 2006).

The incidence of breast cancer per 100,000 from 1996 to 2000 was 140.8 among Caucasian-Americans, 121.7 among African Americans, 97.2 among Asian Pacific Islanders (API), 89.8 among

Hispanic-Americans, and 54.8 among American Indians/Alaska Natives (AI/AN) (Reis et al., 2003). The incidence of breast cancer among API increased at 2.1% per year from 1992-2000 (Ghafoor et al., 2003). Moreover, among women over the age of 50, the annual incidence increased 6.3% among Asian-Americans, compared to 1.5% among Non-Hispanic Whites (Deapen et al., 2002).

Data suggest that the incidence varies within the U.S. API population (Ghafoor et al., 2003): Japanese-American women who have lived in the U.S. long enough to have become fully acculturated, have a higher incidence than other subgroups of Asian Americans, close to that of Caucasian-Americans, and their rates appear to be continuously increasing. The incidence of breast cancer among Korean American women (KAW) from 1988 to 1992 in Los Angeles was 21.5 per 100,000 (Lacey, Devesa & Brinton 2002) and increased to 45 per 100,000 from 1992 to 1997 (Deapen et al., 2002).

Data from the Surveillance, Epidemiology, and End Results Program show the 5-year survival rates for breast cancer are: 83% for stage I, 74% for stage II, 57% for stage III, and 27% for stage IV (Naik et al., 2003). These data indicate that the survival rate is correlated with the stage at diagnosis; thus, early detection of breast cancer increases the chance for survival through earlier treatment. There are substantial differences in the stage of diagnosis and survival rates among races and ethnicities due to socioeconomic and cultural effects (Li, Malone & Daling, 2003). Compared to Caucasian-Americans, minority women are less likely to be detected at stage I. For example, Caucasian-American women are more likely to have breast cancer detected in stage I than KAW at the rates of 50.4% and 43%, respectively, and mortality rates are lower by 10% (Li, Malone & Daling, 2003). This lower survival rate for KAW is related in part to lower breast cancer screening.

❑ Breast Cancer Screening

In spite of the controversy regarding the effectiveness of mammography, the latest Swedish study estimated a 39% decrease in mortality since 1980 for patients with invasive breast cancer (Levenson, 2002). Mammograms and prevention programs appear to play a key role in declining death rates. KAW have the lowest rates of breast cancer screening among all ethnic groups according to the 1994 National Health Interview Survey (Kagawa-Singer & Pourat, 2000). Similarly, in our previous study, the mammogram screening rate in the prior two years among KAW age 40 and older was 46.6% (Juon, Choi & Kim, 2000). In comparison to other subgroups of API, 63% of Chinese American women age 60 and over had mammograms in the prior two years (Tang, Solomon & McCracken, 2000). These current breast cancer screening rates for each subgroup of Asian-American women are unique, and KAW are far behind the Healthy People 2010 Objectives which call for 70% of women age ≥ 40 years to have had a mammogram within the prior 2 years (USDHHS, 2002). This suggests the importance of analyzing the barriers to health care access for each Asian-American subgroup separately, rather than in aggregate.

In summary, breast cancer is considered to be a global public health problem. Many steps need to be taken for comprehensive breast cancer research to reduce breast cancer incidence and mortality, and to increase quality of life among breast cancer survivors. Based on the lack of an interdisciplinary approach to breast cancer care, we need to advocate the necessity and importance of multidisciplinary strategies to improve breast cancer care, including cancer control, early detection, prevention, treatment, and palliative care.

Conceptual Framework

Systems approaches were proposed to organize and plan the research, rather than a specific theory of how a particular set of explanatory variables can be related to our health behaviors (Glass & McAtee, 2006). These approaches are able to address a broad range of factors within a single framework–from genetic to environmental, cellular to behavioral, and biological to social levels of analysis. System thinking is also logically related to knowledge and computing infrastructures necessary to link networks of researchers in their collaborative work. This proposed framework emphasizes feedback loops and cross-level influences between biology (including genetics) and social context and accounts for their interactions across the life course.

The conceptual framework for comprehensive breast cancer care is based on a multilevel framework which Glass and McAtee (2006) developed for the study of health behaviors in social and biological contexts. This proposed framework emphasizes feedback loops and cross-level influences between biology (including genetics) and social context and accounts for their interactions across the life-course. A pictorial presentation (see Figure 1) is based on two primary axes: time and a nested hierarchy of systems from genes to individual attributes, to social networks and groups, to the structural environment. Time is represented by the flow of water across a horizontal axis, while biological and social organization is represented by a vertical axis reflecting nested biological and social hierarchies.

Through the nested hierarchy, different factors on different levels interact with each other and play an important role in adherence to breast cancer screening (i.e., mammogram, clinical breast exam, breast-self examination). Race/ethnicity and age are unique attributes associated with breast cancer care. These attributes can also be considered as social and cultural contexts which play at an individual (intrapersonal) level. There are also intrapersonal factors such as knowledge, beliefs, attitudes, and self-efficacy which are antecedents to health behaviors that provide the rationale or motivation for the behaviors. Accessing health care resources and acquiring appropriate skills are also intrapersonal factors.

At the interpersonal level, social networks or social support that would be offered by family members, friends, and neighbors would affect intrapersonal level attributes (e.g., knowledge, belief, and attitude) and help an individual adopt health behaviors for breast cancer prevention or early detection. Provider characteristics (e.g., ethnicity, gender) and recommendations are also important interpersonal factors related to breast cancer screening. These interpersonal factors not only affect future behavioral attempts but also influence individuals' social environments, their own interpretation of behavioral outcomes, and their outcome expectations.

At the community level, neighborhood characteristics may vary by SES which shapes a range of social contextual factors that may be related to health behaviors. These measures of neighborhood will be obtained from the census including percent of poverty, mother-only household, home ownership, college educated residents, and unemployed. Finally, at the structural level, policy or healthcare systems play an important role for the Breast and Cervical Cancer Mortality Prevention Act of 1990 (CDC, 2005) and the Mammography Quality Standards Act of 1992 (Hoffman, 1994). The first act guided the CDC to create the National Breast and Cervical Cancer Early Detection Program (NBCCEDP).

The NBCCEDP helps low-income, uninsured, and underinsured women gain access to timely, high-quality breast and cervical cancer screening and diagnostic services. The second act was to standardize the quality of mammography services received by women in the U.S. The goal of these quality standards is to ensure that all women nationwide have access to safe and effective mammography services.

This society-behavior-biology nexus will play a powerful role in understanding from the needs of target populations, planning, to program development, implementation, evaluation (process, impact, and outcome), and policy implications. Moreover, the approach incorporates critical constructs from ecological, multilevel and life course perspectives related to breast cancer prevention and control behaviors.

Conclusion

As one of the steps to increase breast cancer awareness and emphasize the necessity of early detection and comprehensive breast cancer research, we hosted the first multidisciplinary breast cancer conference in Asia. The goal of the conference was to bring scientists, researchers, healthcare providers, policy makers, and advocates together to develop multidisciplinary strategies to reduce breast cancer and promote breast cancer awareness and health rights of women through research, education, screening, treatment, and holistic care.

The first conference, called "Global Breast Cancer Conference (GBCC)," was held October 11-13, 2007, in Seoul, Korea. A total of 1004 participants from 26 countries attended the conference, including 250 breast cancer survivors.

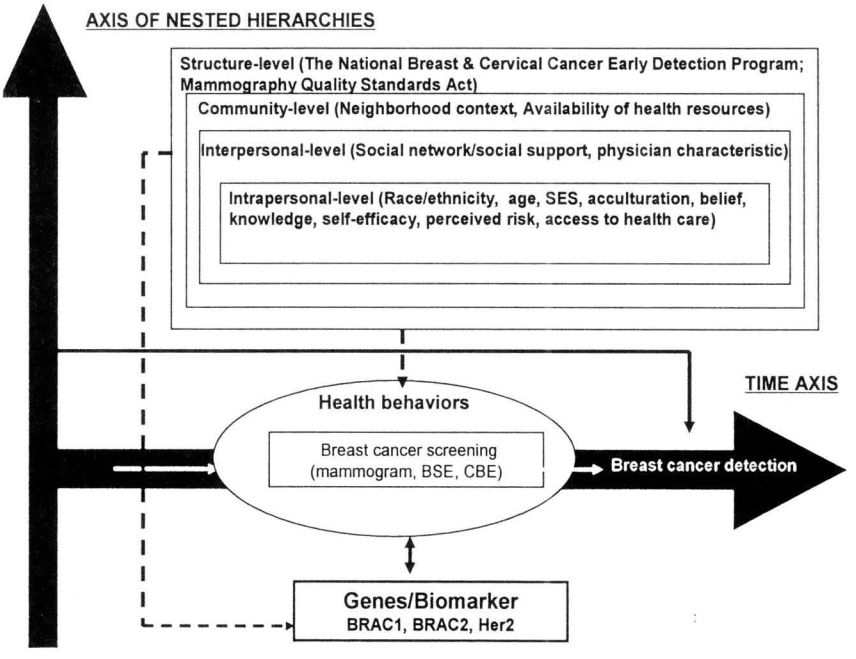

Figure 1. Conceptual Framework for Comprehensive Breast Cancer Care

Overall evaluation of the conference organization and content was great: More than 80% satisfied with conference organization, panel sessions, and luncheon sessions and 83% are planning to attend the next conference in 2009. We will keep organizing this conference every other year. In 2009, we will collaborate with the Asian Breast Cancer Society to host the 2nd GBCC in order to build a sustainable and comprehensive breast cancer program in Asia.

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Abstract

Multidisciplinary Approach to Breast Cancer Care

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Aim: The purpose of this paper is to present the importance of multidisciplinary strategies in cancer prevention and control, especially comprehensive breast cancer care.

Background: Worldwide, breast cancer is the most common cancer diagnosed among women and is the leading cause of cancer deaths. Although the incidence of breast cancer in Asian countries is still lower than in Western countries, the rate of increase for the last two decades is striking.

Methods: Data on cancer mortality, incidence, and risk factors were summarized by using the most recent data available from population-based cancer registries affiliated with the International Union Against Cancer, the National Cancer Institute's Surveillance, Epidemiology, and End Results (SEER) program and the CDC's National Program of Cancer Registries (NPCR).

Results: Global differences in breast cancer incidence and fluctuations in rates within a country still exist. The incidence of breast cancer in Asian countries was lower than in Western countries. Breast cancer incidence in the United States decreased each year during 1999-2003. On the other hand, morbidity and mortality related to breast cancer in Asia has increased significantly.

Conclusion: Multidisciplinary strategies to reduce breast cancer mortality and promote breast cancer awareness are addressed. Lessons learned from multidisciplinary approaches to cancer treatment and control will be valuable in implementing future breast cancer research in the fields of basic, clinical, and population research in Asia.

Keywords: breast cancer care, multidisciplinary approach, system thinking

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