Commentary

Questionable Data and Preconceptions: Reconsidering the Value of Mammography for American Indian Women

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Introduction

Should breast cancer screening be promoted among American Indian women? Popular perceptions about breast cancer risk in American Indian populations might steer one to conclude that it should not be. Breast cancer screening has historically been considered a low public health priority for American Indian communities. This position stems in part from a belief that breast cancer is too rare an event among American Indian women to warrant the widespread use of mammography.1-3 In this article we look beyond popular beliefs and question whether existing data on breast cancer incidence provide adequate information for making decisions about the promotion of mammography in American Indian communities. Our conclusions contradict some commonly held beliefs and challenge the appropriateness of existing breast cancer data for needs assessment in specific American Indian communities.

What We Do and Don’t Know about Breast Cancer in American Indian Populations

Most of what we know about breast cancer in American Indian populations comes from either the Indian Health Service (IHS) or the National Cancer Institute’s Surveillance, Epidemiology, and End Results (SEER) tumor registries. The SEER registries provide some of the richest periodic information on cancer incidence, stage of diagnosis, survival, and mortality available for any US population. The most recent race-specific data available from the SEER registries, for 1977 through 1983, suggest that breast cancer incidence is considerably lower among American Indian women than among White women (21.7 per 100 000 vs 93.3 per 100 000).4 Although the differences are striking, these data are not applicable to all American Indian populations. Roughly 75% of the American Indian population in the SEER data come from Arizona and New Mexico, but only 19% of the American Indian and Alaska Native population live in these states.5 Since cancer incidence, mortality, and risk factors among American Indians have been shown to vary substantially across regional location and tribal affiliation,6,7 generalizing the SEER data to groups not represented by the American Indian populations living in Arizona and New Mexico is highly problematic.

The IHS provides regional breast cancer mortality estimates on an annual basis, and breast cancer incidence rates for the years 1980 through 1987 were recently published for a variety of American Indian and Alaska Native populations using IHS services.2 The data published in this latter report highlight the substantial variation in cancer risk across American Indian populations and suggest that breast cancer incidence rates may range from a low of 18.5 per 100 000 to a high of 106 per 100 000, depending on the particular region or tribe. While providing more detail than ever before available on regional and tribal distinctions in breast cancer incidence, the data published in this report may substantially underestimate breast cancer incidence in many American Indian communities. This is because these data were based on IHS hospital discharges, thereby excluding...
cancer patients not requiring hospitalization and those cared for outside the IHS service network. Because of this limitation, these data have questionable value for assessing absolute levels of cancer incidence in specific populations.

A final shortcoming of the existing knowledge about cancer risk in American Indian populations lies not in the data themselves, but in the common tendency to focus on relative rather than absolute risk when interpreting these data. The majority of studies reporting cancer risks in American Indian and Alaska Native populations have reported incidence rates only in the form of standardized incidence ratios, which compare the incidence among American Indians with the incidence in the general population or the White population.5,8-12 The four studies providing absolute levels of incidence in the American Indian or Native populations studied have focused either exclusively or primarily on excesses and deficits in cancer risks relative to Whites rather than the relative ranking of site-specific cancer incidence rates within the Native populations studied.5,13-15

A common interpretation of available breast and cervical cancer incidence data illustrates how this emphasis on relative rather than absolute risk may lead to inappropriate conclusions about the value of mammography for American Indian women. Available sources of cancer incidence data suggest that the incidence of cervical cancer is two to three times higher among American Indians than among Whites, while the incidence of breast cancer is two to four times lower than among Whites. On the basis of these relative differences, cervical cancer has been acknowledged as a serious public health issue in American Indian populations, garnering substantial attention and resources, while breast cancer has been deemed a low public health priority. What is often overlooked is that these same data suggest that, in most American Indian populations, the absolute incidence of breast cancer is actually higher than the absolute incidence of cervical cancer.

To summarize, reliance on existing sources of data on cancer incidence in American Indian populations, which are limited by lack of generalizability, underestimation, or a tendency to focus on relative rather than absolute measures of cancer incidence, may have mistakenly steered resources away from the promotion of mammography among American Indians. The following findings from a screening program in Minnesota further challenge the assumption that available data adequately represent breast cancer risk in all American Indian populations and raise new questions about cancer risk in American Indian populations of the Northern Plains.

Findings from the Minnesota Breast and Cervical Cancer Control Program

The Minnesota Breast and Cervical Cancer Control Program has provided free breast and cervical cancer screening to approximately 42,000 Minnesota women since 1992 with funds provided by the Centers for Disease Control and Prevention. Services are delivered to women who qualify through a network of over 200 sites, including 5 on American Indian reservations and 1 in an urban American Indian clinic. While the majority (87%) of the women screened through the program are White, approximately 8% are American Indian. To date, 19 of the 1371 American Indian women who received mammograms through the program have been diagnosed with breast cancer. This proportion (.014) is roughly 55% higher than the proportion of White women screened through the program who have been diagnosed with breast cancer (.009). The differences do not mirror those documented in existing sources of incidence data. Likely explanations for the differences (such as an older age distribution among American Indian participants, or the detection of prevalent cases in a relatively unscreened American Indian population) are not supported by our data. The American Indian women participating in our program are younger, report more prior experience with mammography, and are diagnosed at earlier stages, on average, than the White women participating in our program. Had the relatively higher proportion of breast cancer cases detected among American Indians been primarily attributable to detection of prevalent cases in an unscreened population, we should have detected a higher proportion of late-stage cancers.

Although the differences could be explained by many factors (including random variation) that are perfectly consistent with American Indians' having considerably lower breast cancer incidence rates than Whites, they do raise the question of whether traditional assumptions about low breast cancer risk in American Indian populations apply to the American Indian women in this region. Unfortunately, since screening program data cannot be used to estimate incidence rates, and since existing cancer data either cannot be generalized to American Indians in the region or systematically underestimate cancer incidence, we are unable to discern at this time whether these patterns reflect underlying differences in breast cancer risk. However, regardless of what the underlying incidence rates are, the fact that 19 American Indian women were diagnosed with breast cancer through the Minnesota program defies the assumption that breast cancer does not affect American Indian women and suggests that a reevaluation of the level of breast cancer risk in this particular American Indian population may be appropriate.

Conclusions and Recommendations

A number of lessons can be learned from this discussion of breast cancer risk and the promotion of mammography among American Indian women. First, decisions about the allocation of public health resources to cancer prevention and control in American Indian populations should be informed more by absolute levels of cancer incidence in local American Indian populations than by relative differences in incidence noted in published comparisons with White populations.

Second, the SEER data should not be used to drive public health policy decisions for American Indian populations outside the Southwestern region of the United States. Because the American Indian population is diverse in culture, history, and health behaviors, the breast cancer risk in any one tribe or region may not necessarily mirror the risk in the few American Indian populations for which we have data. Regional differences in cigarette smoking, although not shown to be related to breast cancer risk, provide an excellent example of the diversity in the American Indian population. Published estimates of smoking prevalence range from 13% among Navajo Indians of the Southwest to 70% among urban American Indians in the Northern Plains.7 This variation in health behaviors, and the well-documented variation in American Indian cancer rates across regions and tribes, highlights the fact that needs assessments should be conducted at the local level. Surveillance of cancer risk in local American Indian populations has already been successfully carried out in a
number of states (Alaska, Montana, and New York). and these efforts should serve as models for other states and localities.

Third, if we are to accurately assess the need for cancer prevention, screening, and intervention efforts in American Indian communities, we will need data that better represent the diversity of this population. In particular, information on breast cancer incidence is needed to reevaluate the assumption that breast cancer does not affect American Indian women in high enough proportions to warrant encouraging and facilitating their use of mammography.

Finally, the perception that breast cancer does not occur among American Indian women, and therefore should be of little concern to them, is misguided, at least with respect to American Indian women in Minnesota. While competing morbidity may be a valid reason not to screen American Indian women at the same rate as other women, the assumption that breast cancer does not affect American Indian women is not. Until breast cancer incidence data that adequately represent American Indians of the Northern Plains are available, and as long as free screening programs such as the Minnesota Breast and Cervical Cancer Control Program exist, American Indians in this region should be screened according to the same guidelines as all other women.

In summary, the belief that their breast cancer incidence is too low to justify widespread mammography use by American Indians comes out of a very liberal interpretation of existing data on breast cancer risk. Each of the common sources of data on breast cancer risk among American Indians suffers important limitations and is, in most cases, an inadequate tool for assessing the need for breast cancer screening at the local level. Given the limitations of existing data on breast cancer risk in American Indian populations, it may be appropriate to reconsider the current allocation of resources to mammography in all American Indian communities.

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References