

Comparison of breast cancer survival in two populations: Ardabil, Iran and British Columbia, Canada

Parvin Yavari^{1&3} T. Gregory Hislop³ Chris Bajdik³ Alireza Sadjadi² Morteza Bashash³ Anahita Ghorbani² Mehdi Nouraei² Masoud Babaei² Reza Malekzadeh² Maria Cristina Barroetavena⁴

Shahid Beheshti University of Medical Sciences, Iran¹ Digestive Disease Research Centre, University of Tehran² Cancer Control Research - BC Cancer Agency³ Sociobehavioural Research Centre - BC Cancer Agency⁴

Abstract

BACKGROUND

Patterns in survival can provide information about the burden and severity of cancer, help uncover gaps in systemic policy and program delivery, and support the planning of enhanced cancer control systems.

OBJECTIVE

To describe the one-year survival rates for breast cancer in two populations using population-based cancer registries: Ardabil, Iran, and British Columbia (BC), Canada.

METHODS

All newly diagnosed cases of female invasive breast cancer were identified in the Ardabil cancer registry and the BC cancer registry for 2003. The International Classification of Disease for Oncology (ICD-O-3) was used for coding cancer morphology and topography. Survival time was determined from cancer diagnosis to death. Age-specific one-year survival rates, relative survival rates and weighted standard errors were calculated using life-tables for each country.

RESULTS

Breast cancer patients in BC had greater one-year survival rates than patients in Ardabil for each age group.

CONCLUSIONS

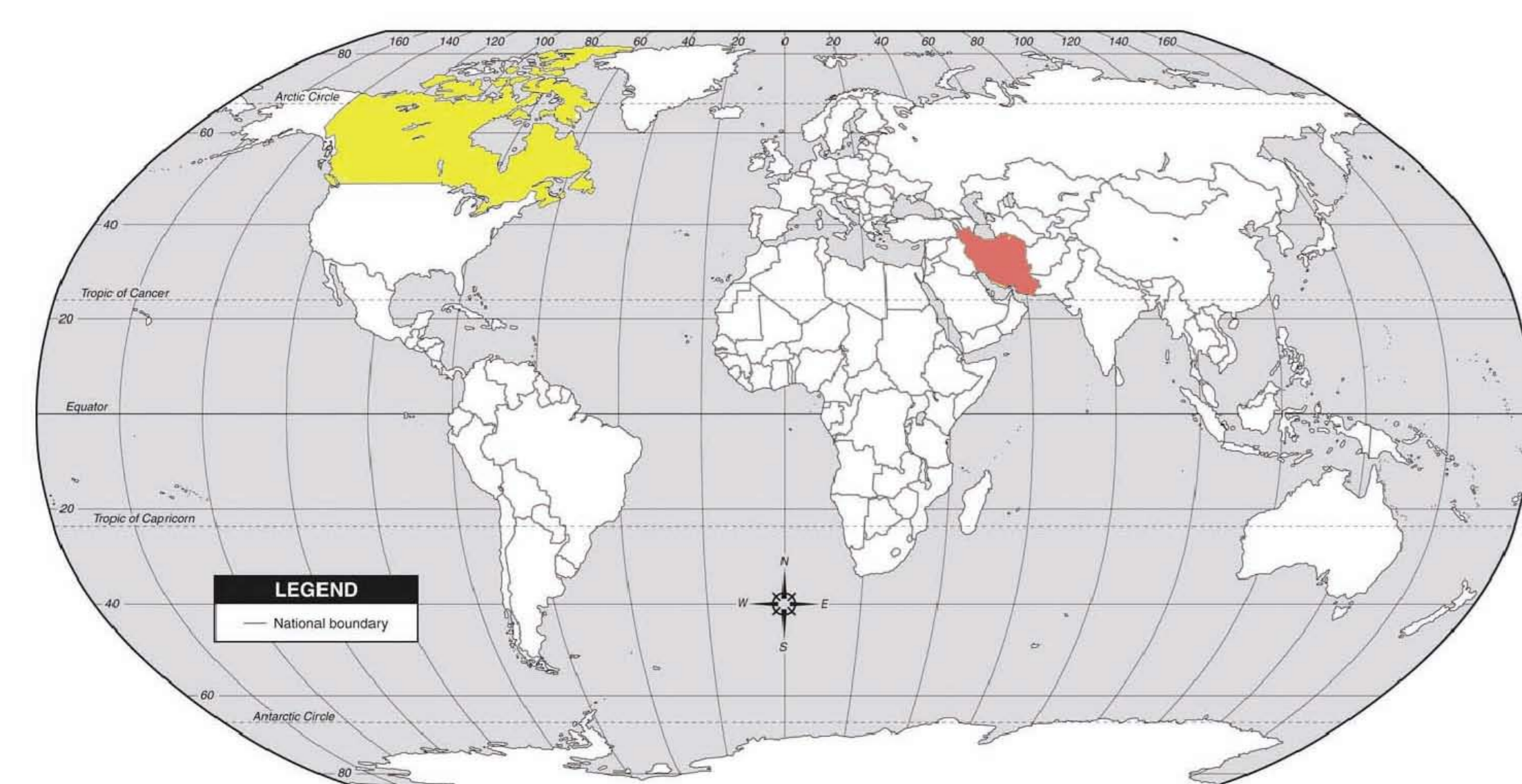
These findings support the need for breast cancer screening programs (including regular clinical breast examinations and mammography), public education and awareness regarding early detection of breast cancer, and education of health care providers.

Background

Patterns in cancer incidence can provide important insight into the impact of lifestyle upon cancer development whereas patterns in survival can provide information about the burden and severity of cancer. Identifying differences in survival between populations can help to uncover gaps in systemic policy and program delivery, and support the planning of enhanced cancer control systems.

Varying survival rates for breast cancer have been reported in the literature among different ethnic populations. Asian American women are reported to have better survival from breast cancer as compared to other major ethnic minority groups. South Asian women with breast cancer have inconsistent reports, with better survival than others in England and California but worse survival in BC.

Despite the extensive knowledge about incidence and survival rates for cancer in the western world, little information is available for the majority of developing countries. International comparisons involving developing countries are few in number. Where done, survival differences have been largely attributed to differences in patient's age, stage of disease at diagnosis, and the presence of metastasis. Socioeconomic factors, differential access to health care, insurance status, comorbidities, and tolerance to prescribed treatment have also been suggested to determine survival. Immigration status and ethnicity may also play a role.



Objective

To describe the one-year survival rates for breast cancer in two populations using population-based cancer registries: Ardabil, Iran, and British Columbia (BC), Canada.

Methods

STUDY GROUPS

Two population groups with established population-based cancer registries were examined: residents in Ardabil, Iran and BC, Canada.

Ardabil province, located in the northwestern Iran, is a mountainous land with an area of nearly 18,000 square kilometres and a population of 1.1 million persons, 46% living in urban areas. This province is a good candidate for study in Iran because its cancer patterns have been studied since the 1970s, its cancer registry is relatively complete, its population is largely homogeneous (98% being of Azeri ethnicity), and there is minimal immigration into this area.

In contrast, BC, the westernmost province in Canada, has a land area of nearly 945,000 square kilometres and a population of over 4 million persons with various ethnic backgrounds. The provincial cancer registry was established in 1969, with cancer registration mandated by law, and it has excellent standards of quality control, completeness of registration and follow-up.

STUDY POPULATION

All newly diagnosed cases of invasive breast cancer (ICDO c50.0-50.9) in women 20 years of age and older were identified in the Ardabil cancer registry and the BC cancer registry for the year 2003. The International Classification of Disease for Oncology (ICD-O-3) was used for coding cancer morphology and topography.

Survival time was then determined from cancer diagnosis to death. In Ardabil province, information on survival status and the date of death (if deceased) was collected directly by interviewing the registered cases or their families. In addition, the death registry in Ardabil was used to confirm the collected information and to gather this data for registered cases who could not be contacted for interview. Information on the patient's age and date at diagnosis, gender and cancer site was obtained from the cancer registry.

In BC, the survival status of all registered cancer patients is routinely collected by the cancer registry from government vital statistics. Information on the patient's age and date at diagnosis, gender, cancer site, survival status and date of death was collected directly from the cancer registry.

ANALYSIS

Adults were defined as people age 20 years and older. Age-specific one-year survival rates were calculated for adult women in the age groups 20-39 years, 40-49 years, 50-59 years and >60 years. The relative survival rate and a weighted standard error were calculated using life-tables for each country.

Results

Table I. shows the number of adult women diagnosed with breast cancer during the study period in Ardabil and BC, and a one-year survival rate for each age group. Breast cancer patients in BC had greater one-year survival rates than patients in Ardabil for each age group. In BC patients, one-year survival rates decreased with the patients' age at diagnosis. The rates in Ardabil did not follow this pattern, although the small number of cases makes trend difficult to identify. The median age of breast cancer diagnosis was 61.3 years (range 24-104 years) in BC and 47.0 years (range 29-78 years) in Ardabil. About 23% of BC patients and 59% of Ardabil patients were younger than age 50 at the time of diagnosis. The age-standardized one-year relative survival rates in BC was 0.99 (SE = 0.003) for adult women younger than age 50 years and 0.97 (SE = 0.013) for women age 50 and older. The age-standardized 1-year relative survival rate in Ardabil was 0.17 (SE = 0.039) for adult women younger than age 50 and 0.16 (SE = 0.042) for women age 50 and older.

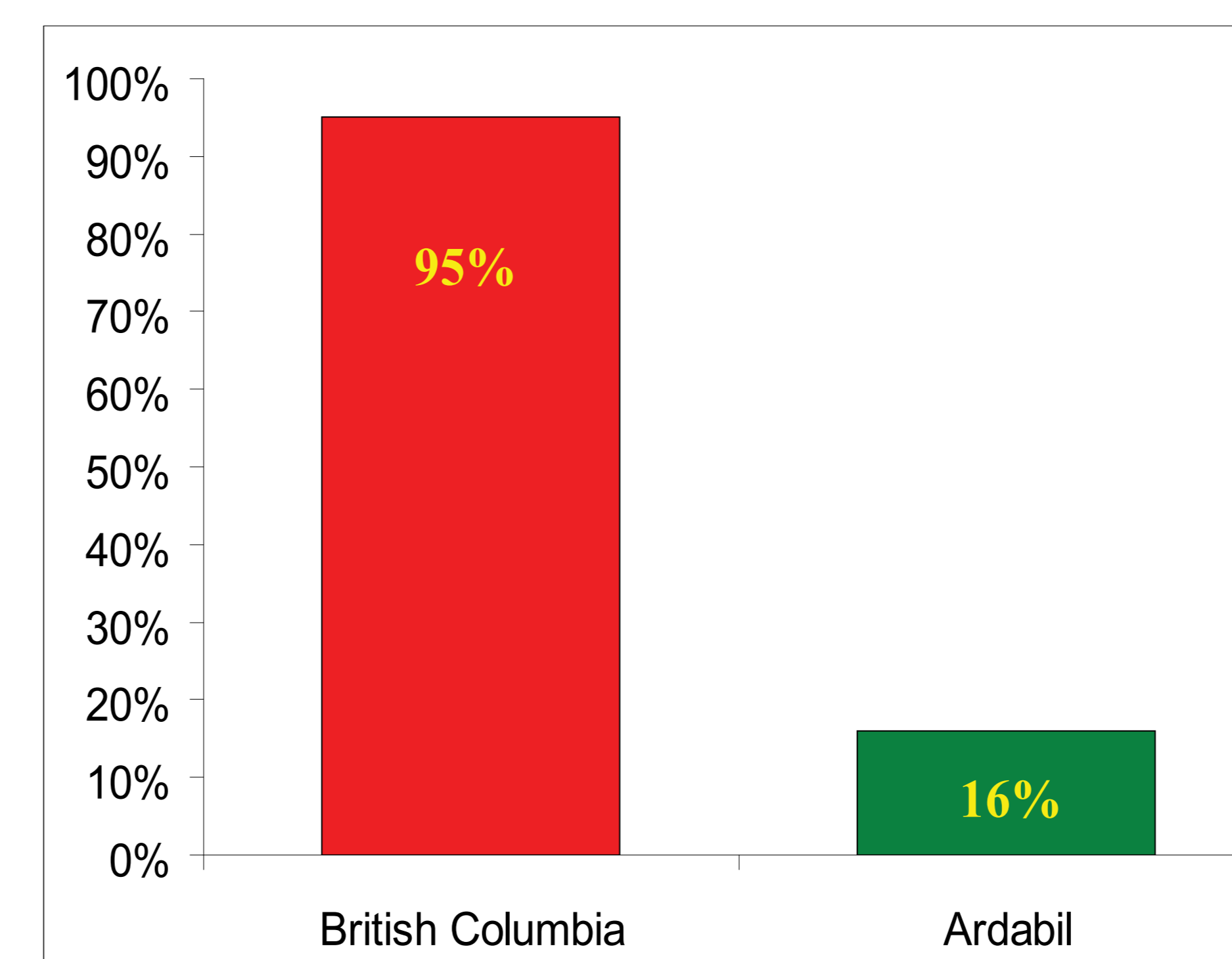
TABLE ONE

One-year survival rates for female invasive breast cancer cases diagnosed in 2003 in Ardabil (Iran) and British Columbia (Canada) by age group.

Age	Ardabil		British Columbia	
	Number of cases	One-year survival rate	Number of cases	One-year survival rate
20-39	15	0.20	139	0.99
40-49	15	0.13	463	0.99
50-59	13	0.23	631	0.97
60+	8	0.00	1341	0.93
Total	51	0.16	2574	0.95

FIGURE ONE

Overall one-year survival rates for female invasive breast cancer cases diagnosed in 2003 in Ardabil (Iran) and British Columbia (Canada).



Discusions & Conclusions

There are clear differences in survival between these two populations which reflect variations in severity of cancer, possibly resulting from policy and practices regarding screening and treatment, cancer biology, and registry registration.

In Ardabil, low survival rates may be largely explained by differences in screening practices. In BC, a province-wide screening mammography program was established in 1988. However, despite current evidence supporting population-based screening for breast cancer, there is no organized screening program for breast cancer in Iran. Lack of a screening program, low awareness of breast cancer, earlier age at diagnosis, structural barriers to accessing cancer treatment services, low income and lack of a usual source of care may all contribute to lower survival from breast cancer in Iran. We believe that early detection and better management using standard screening and treatment guidelines would contribute considerably to improving survival from breast cancer in these women.

In BC, breast cancer survival rates were high for all age groups, likely the result of screening mammography and advances in adjuvant therapies following surgery for breast cancer. Worthy of note was a trend for lower survival with advancing age, especially over 75 years of age. This is surprising, given that others have reported higher survival rates in Canadian women over 40 years of age, and in British women diagnosed in their 50s and 60s as compared to either younger or older women. This observation may be due to the very short period of follow-up in the current study which gives a limited view of prognosis.

LIMITATIONS

The short follow-up period, giving only a very short-term view of prognosis; the lack of detailed clinical information in the cancer registries, such as staging and treatment information; and the small study population in Ardabil province, resulting in a relatively large variance.

The extend of registration in the Ardabil cancer registry as it is a newly established one. The cases were diagnosed in 2003, we could not extend the length of follow-up beyond one year because survival data was only available to the end of 2004.

CONCLUSIONS

For both Ardabil province and BC, there is ongoing need for public education and awareness regarding early detection of breast cancer.

There is a clear benefit from the establishment and implementation of screening programs for breast cancer, including regular breast examination, clinical breast exam and mammography, so that early lesions can be detected with a better survival and reduction of mortality.

Continued research into the causes of the disease, its prevention and improved methods of detection and treatment are essential if we are to make inroads into the control of this important cancer on a global scale.

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