



Review

Global ovarian cancer health disparities

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HIGHLIGHTS

- Ovarian cancer incidences are highest in Europe and North America, and lowest in Africa and Asia.
- Mortality to incidence ratios are highest in Africa and in the U.S. women of African descent.
- Further research is necessary to fully elucidate and resolve racial disparities in ovarian cancer.

ARTICLE INFO

Article history:

Received 21 September 2012

Accepted 10 December 2012

Available online 22 December 2012

Keywords:

Ovarian cancer

Race

Health disparities

ABSTRACT

Objective. The objective of this article is to broadly review the scientific literature and summarize the most up-to-date findings on ovarian cancer health disparities worldwide and in the United States (U.S.).

Methods. The present literature on disparities in ovarian cancer was reviewed. Original research and relevant review articles were included.

Results. Ovarian cancer health disparities exist worldwide and in the U.S. Ovarian cancer disproportionately affect African American women at all stages of the disease, from presentation through treatment, and ultimately increased mortality and decreased survival, compared to non-Hispanic White women. Increased mortality is likely to be explained by unequal access to care and non-standard treatment regimens frequently administered to African American women, but may also be attributed to genetic susceptibility, acquired co-morbid conditions and increased frequency of modifiable risk factors, albeit to substantially lesser extent. Unequal access to care is, in turn, largely a consequence of lower socioeconomic status and lack of private health insurance coverage among the African American population.

Conclusions. Our findings suggest the need for policy changes aimed at facilitating equal access to quality medical care. At the same time, further research is necessary to fully resolve racial disparities in ovarian cancer.

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Contents

Introduction	259
Ovarian cancer incidence	259
Ovarian cancer mortality	259
Screening, risk factors and early detection	260
Genetics	260
Treatment	261
Survival	261
Conclusions and future directions	262
Conflict of interest	262
Acknowledgments	262
Appendix A. Supplementary data	263
References	263

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Introduction

Ovarian cancer is the sixth most common cancer and the seventh cause of death from cancer in women worldwide [1]. However, this malignancy takes even greater toll on females in the United States (U.S.), where it is the fifth leading cause of cancer-related deaths in women (after lung, breast, colorectal, and pancreatic cancers) and is the most common type of gynecological malignancy [1]. Although ovarian cancer accounts for only 3% of all cancers in U.S. women, this malignancy is disproportionately deadly due to the absence of either specific symptoms or effective screening and early detection strategies, leading to over 70% of patients being diagnosed with stage III and IV tumors, which generally have a poor prognosis even with aggressive and immediate treatment. Indeed, the average relative 5-year survival rates for stage III and IV tumors are 35% and 20%, respectively [2].

In addition to being disproportionately deadly, ovarian cancer is a striking example of racial-related health disparity. Worldwide, the highest incidences are observed in non-Hispanic White, followed by Hispanic, Asian and African women; however, mortalities are higher in Africa where access to accurate diagnostics and sophisticated treatments is limited. In the U.S., ovarian cancer incidences follow the worldwide trend; however, mortality is increased in American women of African descent despite presumable equal access to medical care. In addition, African American women present with more advanced tumors [3–10], tend to have a higher prevalence of unstaged or not classified tumors [4,11,12], are reportedly being undertreated or untreated [13–16], and have shorter disease-free survival [2]. These factors may predispose women of African descent that are diagnosed with ovarian cancer to higher death rates (71%) compared to women of European (66%), Hispanic (59%) or Asian (50%) descent [1]. Though the exact causes of racial disparities in ovarian cancer remain unclear, they are likely to be multifaceted [9,17]. Numerous reports elucidate racial disparities across the entire continuum of the disease; however, attempts to gather the separate, sporadic information into a comprehensive, “big picture” perspective have been rare. The goal of this manuscript is to review the scientific literature and summarize the most up-to-date findings on ovarian cancer racial health disparities. This manuscript will thus facilitate an understanding of the various ovarian cancer health disparities in the U.S. and worldwide, supporting an effort to eradicate them.

Ovarian cancer incidence

A striking disparity in ovarian cancer incidence is observable worldwide. The highest incidences are reported in Europe and North America (Canada and the United States). The lowest incidences are noted in China and Africa. According to the GLOBOCAN 2008 database [18], the incidence rates range from over 11 cases per 100,000 in Europe to less than 3 cases per 100,000 in Africa. The majority of South American, Asian, and Caribbean countries are at the intermediate range of 4–8 cases per 100,000 (Fig. 1). Because ovarian cancer is generally a disease of older women, reduced life expectancy observed in the developing countries, may potentially lead to decreased ovarian cancer rates. However, confounding factors such as access and quality of care and early detection significantly complicate teasing out the direct effect of life expectancy on ovarian cancer. It appears, with the information that is available, that other factors (unrelated to life expectancy) influence worldwide disparities observed in ovarian cancer incidence and mortality.

Parkin et al. [19] presented a comprehensive review of ovarian cancer incidence in 23 world regions during the period of 1983–1993. By comparing the data by Parkin et al. [19] with the most recent Globocan data (Fig. 1), it could be concluded that, although individual world regions might have slightly changed positions in relation to each other, global ovarian cancer incidences and disparities around the world have not changed significantly in the last 30 years.

Both the worldwide and U.S. trends reveal the highest incidence in the non-Hispanic White women, followed by Hispanic, African and

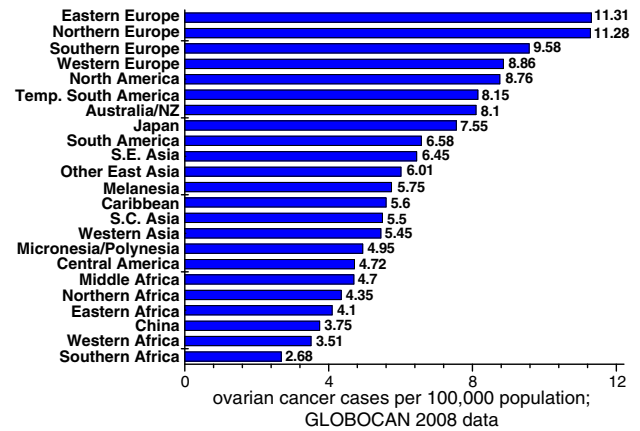


Fig. 1. Incidence of ovarian cancer by world region. GLOBOCAN 2008 data. Complete list of countries included in the world regions, is shown in Appendix A. NZ: New Zealand; S.E. Asia: South-Eastern Asia; S.C. Asia: South-Central Asia.

Asian women (Fig. 2A, open symbols). However, absolute incidence rates are proportionally higher in the U.S. for every racial group (Fig. 2A, open symbols), compared with the worldwide rates. Although no comprehensive explanation to this phenomenon exists at this time, it is plausible to suggest that environmental factors that influence an average U.S. female (lower childbearing, diets higher in saturated fats and caloric load and decreased physical activity), as well as increased life expectancy combined with improved detection strategies, might be at least partially responsible for the observed increase in ovarian cancer incidence. Additional research is required to fully elucidate the grounds for increased susceptibility of U.S. females to ovarian cancer.

Ovarian cancer mortality

Worldwide ovarian cancer absolute mortality is by large proportional to its incidence; however, developed countries tend to demonstrate improved mortality/incidence (M/I) ratios due to advancements in detection and treatment (Fig. 2B). In general, African countries have intermediate to low absolute mortality rates, but high M/I ratios; this might be explained

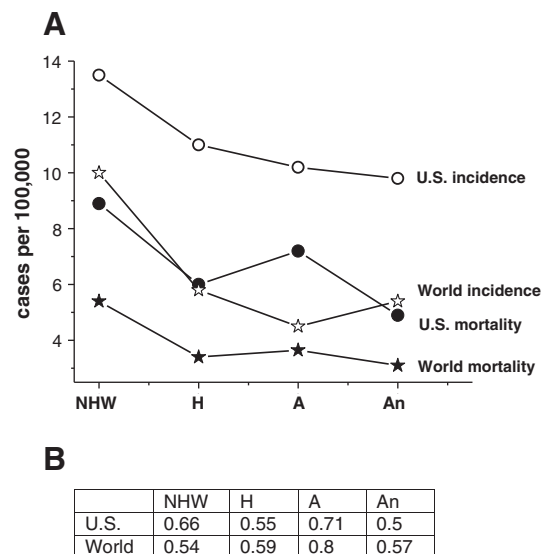


Fig. 2. A. Ovarian cancer incidence (open symbols) and mortality (closed symbols) rates worldwide (stars) and in the U.S. (circles). B. Mortality/incidence (M/I) ratios. Average worldwide rates were calculated using the GLOBOCAN 2008 database [18]: NHW (Non-Hispanic White) women – Northern, Central, Eastern and Western Europe; H (Hispanic) women – Central and South Americas and Mexico; A (African) women – North and Middle Africa; An (Asian) women – South-East, South-Central and East Asia.

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