Original Research

Treatment patterns among breast cancer patients in the United States using two national surveys on visits to physicians' offices and hospital outpatient departments

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Abstract

Background: Despite the availability of previous studies, little research has examined how types of anti-neoplastic agents prescribed differ among various populations and health care characteristics in ambulatory settings, which is a primary method of providing care in the U.S. Understanding treatment patterns can help identify possible disparities and guide practice or policy change.
Objectives: To characterize patterns of anti-neoplastic agents prescribed to breast cancer patients in ambulatory settings and identify factors associated with receipt of treatment.
Methods: A cross-sectional analysis using the National Ambulatory Medical Care Survey data in 2006–2010 was conducted. Breast cancer treatments were categorized by class and further grouped as chemotherapy, hormone, and targeted therapy. A visit-level descriptive analysis using visit sampling weights estimated national prescribing trends ($n = 2746$ breast cancer visits, weighted $n = 28,920,657$). Multiple logistic regression analyses identified factors associated with anti-neoplastic agent used.
Results: The proportion of visits in which anti-neoplastic agent(s) was/were documented remained stable from 2006 to 2010 (20.47% vs. 24.56%; $P > 0.05$). Hormones were commonly prescribed (29.69%) followed by mitotic inhibitors (9.86%) and human epidermal growth factor receptor2 inhibitors (5.34%). Patients with distant stage were more likely than patients with in-situ stage to receive treatment (Adjusted Odds Ratio [OR] = 2.79; 95% CI, 1.04–7.77), particularly chemotherapy and targeted therapy. Patients with older age, being ethnic minorities, having comorbid depression, and having U.S. Medicaid insurance were less likely to receive targeted therapy ($P < 0.05$). Patients with older age, having comorbid obesity and osteoporosis were less likely to receive chemotherapy, while patients seen in hospital-based settings and settings located in metropolitan areas were more likely to receive chemotherapy ($P < 0.05$).

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Conclusions: Anti-neoplastic treatment patterns differ among breast cancer patients treated in ambulatory settings. Factors predicting treatment include certain socio-demographics, cancer stages, comorbidities, metropolitan areas, and setting.

Introduction

Despite the availability of previous studies on breast cancer treatment patterns,[1–10] little research has focused on ambulatory medical care, which is according to the National Health Statistics Report, a primary method of providing health care services in the U.S. [11] Therefore, estimating trends in breast cancer treatment in ambulatory settings may help fill a gap in understanding breast cancer treatment patterns and factors associated with treatment, or treatment disparities in various populations.

Although evidence largely supports the benefits of cancer treatment,[12] there has been concern regarding treatment disparities among cancer patients in the U.S.[10,13] Previous research has reported variations in breast cancer treatment among patients with different socioeconomic status and races,[1–5] particularly disparities in receipt of treatment, health outcomes, and survival.[2,5–9] However, existing evidence has come from hospital- or population-based registries and is limited to some geographic areas, types of insurance, settings, or locations of practice.[1–4,8,14,15] For example, studies using hospital-based registries might be more likely to capture certain types of treatment such as intravenous chemotherapy while less likely to represent hormones or oral chemotherapy regimens which are usually administered in ambulatory settings.[16] Additionally, using some population-based registries may limit generalizability. For instance, studies using Surveillance, Epidemiology, and End Results (SEER), or SEER-Medicare data are usually limit to elderly U.S. Medicare patients.[1,3,10,15,17] Hence, younger populations or other those with other types of insurance, including Medicaid or private insurance, may not be well represented.

Additionally, studies examining how types of anti-neoplastic agents prescribed differ among various populations are limited. Specifically, little research has addressed whether factors such as setting where care was provided, type of insurance, or location of practice, are related to treatment patterns. These factors can be categorized as structural barriers that have potential impact on the receipt of cancer treatment.[14] Since treatment of breast cancer has been reported to decrease mortality rate from breast cancer,[18] examining whether or not breast cancer treatments are used with similar frequency across population subgroups receiving ambulatory health care is important because it may help identify treatment disparities among diverse, geographically representative populations.

To fill these existing knowledge gaps, the objective of this study was to characterize the patterns of anti-neoplastic agents prescribed to nationally representative breast cancer patients across time in ambulatory settings. This study also examined factors associated with the anti-neoplastic agents prescribed. These findings can help understand breast cancer treatment patterns and possible treatment disparities.

Methods

Study design and data source

This is a cross-sectional, retrospective study using the 2006–2010 records-based or encounter level data of two national surveys – the National Ambulatory Medical Care Survey and the National Hospital Ambulatory Medical Care Survey (NAMCS/NHAMCS) conducted by the U.S. National Center for Health Statistics (NCHS). The NAMCS/NHAMCS are national, annual probability sample surveys supplying information about provision and use of ambulatory medical care services. The NAMCS/NHAMCS use a complex, stratified, multistage, probability design involving a national sample of patient visits to non-federal physician offices and to non-institutional short-stay hospitals, including emergency departments (EDs) and outpatient departments (OPDs), respectively.

Data from the sampled visits are recorded by the physician or staff on an encounter form during