Male Breast Cancer

Examining gender disparity in diagnosis and treatment

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BACKGROUND: Although men make up a small percentage of those diagnosed with breast cancer, they are usually diagnosed at a later stage than women, increasing their chance of mortality. The reasons for this gender disparity require additional study.

OBJECTIVES: This article examines current literature on male breast cancer, including reasons for the gender disparity and interventions that may help to address it.

METHODS: An integrative review was conducted, and 12 studies were selected for inclusion.

FINDINGS: Study consensus is that male breast cancer is an underresearched subject and that increased research efforts may improve outcomes. In addition, interventions could help to decrease the gender disparity in breast cancer detection.

ABOUT 2,550 MEN WILL BE DIAGNOSED WITH BREAST CANCER in 2018, and about 480 men will die from the disease that same year (American Cancer Society [ACS], 2018). Although men account for less than 1% of breast cancer cases in the United States, they are more likely than women to be diagnosed with advanced stage breast cancer (ACS, 2017b). Breast cancer that is found early, and that is small and has not yet spread, is typically easier to treat successfully than breast cancer discovered at a later stage (ACS, 2017a). In addition, a diagnosis of advanced stage breast cancer may warrant more intense and aggressive treatment, as well as an increase in expense for treatment (Ottini et al., 2010). Overall, the mortality rates for men and women diagnosed with breast cancer are similar, but men are generally diagnosed at a later stage than women, and, consequently, they often live for a shorter length of time after being diagnosed (American Society of Clinical Oncology [ASCO], 2018).

In addition, the rate of breast cancer diagnosis in men has increased, jumping 26% from 1973–1998 (Rudlowski, 2008), and racial disparities among men diagnosed with breast cancer exist. Black men have the highest incidence rates of breast cancer, with 2.7 of every 100,000 men being diagnosed with the disease, followed by White men, with an incidence rate of 1.9 of every 100,000 men (ASCO, 2018). Although male breast cancer cases constitute about 1% of the total population of patients with breast cancer, men face a significant risk because they are generally diagnosed at a later stage than women. Education for the general population and healthcare professionals, coupled with early detection and treatment plans targeted toward men, may decrease the gender disparity in breast cancer (Al-Haddad, 2010). This integrative review will examine research from 2000–2016 on male breast cancer that investigates the gender disparity that exists at the time of initial detection (i.e., men are generally diagnosed with breast cancer at a later stage than women), as well as possible reasons for and interventions to minimize this disparity.

Methods

Search Strategy and Operation Process

PubMed, PsycINFO®, CINAHL®, and Sociological Abstracts were searched for literature published from 2000–2016 using the following keywords: male, breast cancer, and staging. Studies were included in the review if they were peer-reviewed and met the following criteria:

- Involved male patients with breast cancer aged older than 18 years
- Noted possible reasons for the gender disparity in breast cancer (either based on data or not)
- Suggested nursing interventions (either based on data or not)
- Were written in English

KEYWORDS

breast cancer; male breast cancer; gender disparity; interventions; treatment; diagnosis

DIGITAL OBJECT IDENTIFIER

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Studies were excluded if they addressed the racial disparity in breast cancer, included information on the transgender community, were written prior to 2000, and focused on female breast cancer. Database searches resulted in 3,845 nonduplicate hits (see Figure 1). Overall, 12 studies were selected for final inclusion (see Table 1).

Whittemore and Knafl’s (2005) integrative review method was chosen because of the paucity of research and the need to include multiple methodologies (quantitative and qualitative), as well as the method’s focus on evidence-based practice.

Quality Appraisal
The Critical Appraisal Skills Programme (CASP) method was used to evaluate the quality of the studies used for this integrative review (Nadelson & Nadelson, 2014). CASP checklists, specific to each study type, were used to evaluate each of the 12 studies selected for inclusion in this integrative review (9 cohort studies, 2 case control studies, 1 qualitative study). Each study was evaluated for validity, results, and practical nursing interventions (see Table 2).

Results
The studies selected for inclusion in this integrative review (N = 12) addressed the rarity of male breast cancer, the gender disparity in breast cancer, possible reasons for the gender disparity, the paucity of research on male breast cancer, and potential interventions to decrease the gender disparity. All 12 studies suggested that advanced stage breast cancer detection was the norm for men.

Selected Studies
QUALITATIVE STUDY: Al-Haddad (2010) found that because of later breast cancer detection, men often present with larger tumor size and at an older age than women. According to this case study, which compared the treatments of a man and a woman with breast cancer, men also have a lower survival rate than women as a result. In addition, men require more invasive and longer treatment regimens, and their prognosis is poorer. Al-Haddad (2010) suggested that late detection in men can be traced to the societal identification of breast cancer as a woman’s disease and to men’s denial that they also can contract breast cancer. The feminization of breast cancer may be the reason that men wait until visible signs appear (e.g., inverted nipple, noticeable lump on the breast). The patient in this case study had an inverted nipple and thought it was normal; he did not know that men could be diagnosed with breast cancer and did not mention anything to his doctor until nipple discharge appeared (Al-Haddad, 2010). Al-Haddad (2010) noted that nurses should promote breast health, educate men about breast cancer risk factors, and advocate for early detection and prevention; according to the study, additional research is needed to develop specific interventions for men with breast cancer.

“The mortality rate is higher for men diagnosed with breast cancer than for women diagnosed with the disease.”
COHORT STUDIES: A quantitative study by Anderson, Jatoi, Tse, and Rosenberg (2010) compared male breast cancer to late-onset female breast cancer and noted that progress made in terms of survival rates has been much more significant among women than among men. Using Surveillance, Epidemiology, and End Results (SEER) Program data from 1976–1985 and from 1996–2005, Anderson et al. (2010) showed that breast cancer deaths for men declined 28% and 42% for women. Although breast cancer survival rates have improved for both sexes, the progress made for men lags behind the progress made for women. Anderson et al. (2010) suggested that late-onset breast cancers in men and women may be related to environmental and/or nonhormonal risk factors, including diet and obesity.

In a review, Nahleh and Girnius (2006) showed that the incidence of male breast cancer is rising, but the mortality rate is unchanged. Although male breast cancer cases are increasing in the United States, rising 26% from 1973–1998, the number of U.S. cases is still significantly lower than the number of cases elsewhere, such as sub-Saharan Africa, where the incidence rate of male breast cancer is about 15%; only about 1% of the entire U.S. population of patients with breast cancer is male. The authors suggest that these trends may be attributable to a lack of awareness about male breast cancer because of its rarity or about treatment options. Nahleh and Girnius (2006) examined in this study three genetic mutations that, although rare, are associated with male breast cancer: founder effect, in which interbreeding over several generations can cause rare mutations; hamartoma, a benign tumor that grows because of the faulty development of an organ; and Cowden syndrome, which involves abnormal tissue growth (Nahleh & Girnius, 2006). Hormonal research could lead to improved understanding and new opportunities for treatment that would yield better outcomes for men with breast cancer, who are currently treated in the same ways as women with breast cancer (Nahleh & Girnius, 2006).

| TABLE 1. CHARACTERISTICS OF SELECTED STUDIES |
|-----------------|-----------------|-----------------|
| STUDY           | LOCATION        | SAMPLE                  | FINDINGS                                                      |
| Al-Haddad, 2010 | Canada          | 1 man with breast cancer | Education and early detection may help to decrease the gender disparity. |
| Anderson et al., 2010 | United States | 161 men with breast cancer | Nurses may help to educate and support men with breast cancer. |
| Iredale et al., 2007 | United Kingdom | 186 surveys          | Men need specific and gender-neutral breast cancer information. |
| Mattarella, 2010 | United States  | –                        | Risk factors for male breast cancer were identified. |
| Mouchawar et al., 2001 | United States | 400 family practitioners | Physicians lack knowledge regarding hereditary breast cancer and male breast cancer. |
| Nahleh & Girnius, 2006 | United States | Surveillance, Epidemiology, and End Results Program data from 1973–1998 | Genetic mutations and their effects on male breast cancer were identified. |
| Peate, 2001     | United Kingdom | –                        | Nurses may act as advocates for male breast cancer. |
| Ruckart et al., 2015 | United States | 71 men with breast cancer and 573 controls | The effect of the environment on male breast cancer incidence was identified. |
| Rudlowski, 2008 | Germany         | –                        | Male breast cancer risk increased among men with these characteristics: never married, benign breast disease, gynecomastia, Jewish ancestry, and history of breast cancer in first-degree relatives. |
| Tawil et al., 2012 | Lebanon       | 47 men with breast cancer | In Lebanon, the incidence of male breast cancer is higher than it is in the West, and men diagnosed with breast cancer present at a younger age. |
| Thomas, 2010    | United States  | 28 men                  | 80% of men were not aware that they could get breast cancer. |
| Villeneuve et al., 2010 | 8 European countries | 104 men with breast cancer and 1,901 controls | Environmental and occupational risk factors were identified. |
Rudlowski (2008), in a review, noted that no randomized clinical studies have information on the optimal diagnostics and treatments for male breast cancer, in part because it represents such a small percentage of breast cancers. Lack of awareness about male breast cancer, as well as gender-specific variations in breast cancer (i.e., physiologic differences between men and women, including hormonal differences), were identified as the reasons for late detection and poor prognosis of male breast cancer. No interventions were identified, except for the need for more research.

In a quantitative study, Tawil et al. (2012) examined the clinical and immunohistochemical differences between male breast cancer and female breast cancer. This study aimed to describe male breast cancer cases in Lebanon and compare these cases with those in the male breast cancer literature to determine if geographical differences exist. Forty-seven male breast cancer cases were retrospectively reviewed. The median age of patients was 62 years, and the median tumor size was 2.2 cm. Histologically, 36 patients had been diagnosed with ordinary infiltrating ductal carcinoma, 5 had adenocarcinoma not otherwise specified, 3 had infiltrating pleomorphic lobular carcinoma, 1 had mucinous carcinoma, 1 had pure ductal carcinoma in situ, and 1 had fibrosarcoma. In contrast, of the female patients, 85 had been diagnosed with infiltrating ductal carcinoma, 12 had infiltrating lobular carcinoma, 1 had mucinous carcinoma, 1 had papillary carcinoma, and 1 had colloid carcinoma. The male patients were older and had higher hormone receptor and lower HER2/neu expression than the female patients. Although these results are typical for a Caucasian population, some differences exist in terms of breast cancer in Lebanon versus the West. For instance, the median age of male breast cancer diagnosis in Lebanon is 62 years, compared to 67 years in the West. In addition, the incidence of infiltrating lobular carcinoma is higher in Lebanon than in the West, and the higher occurrence of axillary node involvement in Lebanon may signify the existence of a biologically different and more aggressive male breast cancer in Lebanese men.

Mouchawar, Klein, and Mullineaux (2001), in another quantitative study, looked at breast cancer information needs using a random sample of 400 family physicians in Colorado. Based on survey results, these physicians lacked knowledge regarding hereditary breast cancer, including the increased risk for disease among men with the BRCA2 mutation. Although all the physicians in this study reported taking a family history as part of their regular practice, the majority said they had not referred any male patients with a family history of breast cancer for BRCA1 or BRCA2 testing. All physicians taking part in the study reported an interest in learning more about hereditary breast cancer. The authors recommended that outreach efforts focused on cancer genetics and aimed at primary care physicians in the United States take place.

In a qualitative study, Thomas (2010) explored the awareness and knowledge of male breast cancer among English-speaking men, with the goal of obtaining information that could be used to direct clinical practice and the development of gender-specific educational interventions. Twenty-eight men, all of whom had at least one maternal blood relative with breast cancer, were interviewed. A majority of these participants were not aware that men could get breast cancer, and although all the participants were at higher risk for breast cancer, given their positive family history, all reported that their providers had never discussed the disease with them. Most participants could not identify any signs of breast cancer, aside from a lump in the breast. Almost half of the participants voiced concerns that a diagnosis of breast cancer would cause them to question their masculinity. Participants also suggested ways that men, as well as healthcare professionals and the lay public, could be better made aware of and educated about their risk for this disease, emphasizing the need for the development of evidence-based, gender-specific health promotion and disease prevention interventions for men.

### Table 2.

<table>
<thead>
<tr>
<th>STUDY</th>
<th>STUDY TYPE</th>
<th>CASP CHECKLIST TYPE</th>
<th>QUALITY RATING*</th>
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</thead>
<tbody>
<tr>
<td>Al-Haddad, 2010</td>
<td>Qualitative</td>
<td>Qualitative</td>
<td>4 of 8</td>
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<tr>
<td>Anderson et al., 2010</td>
<td>Quantitative</td>
<td>Cohort</td>
<td>9 of 11</td>
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<tr>
<td>Iredale et al., 2007</td>
<td>Mixed methods (sequential)</td>
<td>Cohort</td>
<td>8 of 11</td>
</tr>
<tr>
<td>Mattarella, 2010</td>
<td>Review</td>
<td>Cohort</td>
<td>7 of 11</td>
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<tr>
<td>Mouchawar et al., 2001</td>
<td>Quantitative</td>
<td>Cohort</td>
<td>8 of 11</td>
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<td>Cohort</td>
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<td>9 of 11</td>
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<tr>
<td>Ruckart et al., 2015</td>
<td>Quantitative</td>
<td>Case control</td>
<td>8 of 9</td>
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</tr>
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*Questions were answered with “yes,” “no,” or “can’t tell.” The ratio indicates the number of “yes” responses and the total number of questions.

CASP—Critical Appraisal Skills Programme.

Note. A higher ratio of “yes” responses indicates greater reliability of the study.
Mattarella (2010), in a review, presented possible reasons why male breast cancer research is rare, suggesting that the public and healthcare professionals lack awareness about the disease. Similarly, Pituskin, Williams, Au, and Martin-McDonald (2007) found that just 2 of 20 men interviewed knew that men could develop breast cancer; in addition, men usually wait about 19 months after signs of breast cancer appear before seeing their physician. Pituskin et al. (2007) noted that interventions to minimize the gender disparity in breast cancer include involving male patients with breast cancer in more research, developing practical resources specific to men at high risk for breast cancer, being sensitive to the psychological issues men face when dealing with breast cancer, and using gender-neutral language.

Iredale, Williams, Brain, France, and Gray (2007) used a cross-sectional survey and interviews to collect demographic, psychological, and clinical data among men in the United Kingdom with breast cancer, intending to identify the information needs specific to male breast cancer and what men need for improved care. Overall, in this sequential mixed-methods study, 161 surveys were returned, and 30 men were interviewed. Results from both indicate that these men feel that they did not receive enough information about breast cancer, that the information they did receive is directed toward women, that verbal information is more helpful than written information, and that gender-specific information is needed.

In a review, Peate (2001) examined nursing interventions for men who may feel isolated because of their disease; these interventions would empower them with education about breast cancer and allow them to become more involved in their care. These interventions targeted factors known to affect men's health, such as health-damaging behaviors, and centered on preventive programs. Collaboration among various entities (e.g., physicians, community healthcare programs, social support groups) to address specific issues concerning men's health was also noted, as was the promotion of health-related activities (e.g., exercise programs) among the local male population at risk for breast cancer. The author stated that age, sexual orientation, socioeconomic status, physical ability, and ethnicity must be considered when targeting men at risk for breast cancer. In addition, verbal information specifically directed toward men is helpful, as are written materials (e.g., leaflets, booklets) if written for men.

**CASE CONTROL STUDIES:** In addition to genetic and hormonal differences between men and women, there may also be a difference in environmental vulnerability in terms of breast cancer. Villeneuve et al. (2010), in a quantitative study, examined 104 men with breast cancer and 1,901 controls in eight European countries, finding that endocrine disruptors, including alkylphenolic compounds, may play a role in the incidence of male breast cancer. Occupational exposures were assessed on a case-by-case basis; an increase in male breast cancer incidence was noted among motor vehicle mechanics, forestry and logging workers, furniture manufacturers, painters, and paper makers. Endocrine disrupters may be environmental carcinogens, and Villeneuve et al. (2010) noted that education may help to decrease the gender disparity in breast cancer. However, this study was conducted in Europe, and the compounds used in the occupations examined may not be the same as those used in the United States.

Ruckart, Bove, Shanley, and Maslia (2015), in another quantitative study, evaluated associations between exposure to contaminated residential drinking water and male breast cancer from 1960–1980, prompted by the identification of a high incidence of male breast cancer at the Marine base in Camp Lejeune, North Carolina. The study consisted of 71 men with breast cancer and 373 controls. After adjusting for age at diagnosis, race, and service in Vietnam, the odds ratio (OR) for each Marine stationed at Camp Lejeune was 1.14 (95% confidence interval [CI] [0.65, 1.97]). Adjusted ORs for high residential cumulative exposures to tetrachloroethylene (PCE), 1,1-dichloroethylene (DCE), and vinyl chloride, which were found in the drinking water, were 1.2 (95% CI [0.16, 5.89]); 1.5 (95% CI [0.3, 6.11]); and 1.19 (95% CI [0.16, 5.89]). However, these results were based on more than one case in the high cumulative exposure categories (a group exposed to high levels of affected water for the longest time compared to Marines exposed to lower levels of affected water for a shorter period of time). Male Marines with breast cancer stationed at Camp Lejeune with a high cumulative exposure to trichloroethylene (TCE), PCE, DCE, and vinyl chloride were associated with earlier age at onset for male breast cancer (Ruckart et al., 2015). Results from this study suggest possible associations between male breast cancer and being stationed at Camp Lejeune and having cumulative exposure to TCE, PCE, DCE, and vinyl chloride. However, this study was limited by small numbers of cases in the high cumulative exposure categories. In addition, this study did not evaluate the impact of TCE, PCE, DCE, and vinyl chloride on the women also stationed at Camp Lejeune, who were also exposed to the contaminated drinking water.

Although Villeneuve et al. (2010) and Ruckart et al. (2015) identified chemicals that may be linked to a higher incidence of male breast cancer among men who have been exposed to them, the inclusion of women and genetics may have been useful. Neither study identified whether the men had any risk factors for breast cancer, including genetic risk factors, and neither study compared women and the impact of the chemicals on their health.

**Discussion**

Male breast cancer is often treated similarly to female breast cancer, with treatment being dependent on disease stage (ACS, 2018).
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2018). All healthcare professionals have the responsibility to know and make available all current information on male breast cancer; in addition, men should be educated about breast cancer with tools and techniques that are targeted to their needs (Iredale et al., 2007).

A diagnosis of breast cancer is upsetting, particularly for a man who may view breast cancer as a woman’s disease and may feel less masculine as a result. Being sensitive to the psychological issues men with breast cancer face and establishing a caring environment will support and enhance education and treatment. Men with breast cancer found nurses to be the most helpful and supportive healthcare professionals (Iredale et al., 2007). More research is needed to support nurses in their development of educational techniques specific to men regarding risk factors for breast cancer, as well as early detection and care. Nurses can play an integral part in decreasing the gender disparity that exists within breast cancer by raising awareness of the disease and its effect on men, such as by teaching all patients about male breast cancer. Risk factors for the disease should be promoted, breast examinations should be included in assessments of all men at risk for the disease, and the community should be educated about the disease during health fairs and other events.

The main objective of this review was to examine the current research on male breast cancer staging, with additional goals of identifying reasons for the later-stage diagnosis of most men with breast cancer and determining interventions to target the gender disparity existing within breast cancer. Little research examines male breast cancer, including the risks for male breast cancer, the experience of the patient, and appropriate interventions. More research on a host of related topics is necessary.

Limitations
This review is limited in scope, with a focus on reasons for the gender disparity in breast cancer. Because no studies examined specific nursing interventions and only suggested them, it is unclear which interventions would be most beneficial. In addition, because studies were evaluated with varying quality, findings from studies should be interpreted with caution.

Conclusion
Breast cancer affects women and men, but men are at a disadvantage because studies indicate that they usually present at a later stage than women, which negatively affects their treatment and prognosis. Nurses have an opportunity to lead the charge in decreasing the gender disparity through education and the creation of a comfortable environment for men to express their feelings (Al-Haddad, 2010).

Current techniques used to educate women with breast cancer can also be used in educating men with the disease, as long as the information provided targets men (Al-Haddad, 2010). Additional techniques, such as counseling, humor, spirituality, guided imagery, and mind diversion activities, may also benefit men with breast cancer (Sadruddin, Jan, Jabbar, Nanji, & Tharani, 2017). Modifying nursing practice to incorporate the techniques described in this article is a first and important step in ensuring that men understand that they can get breast cancer, know the risk factors for breast cancer, and are aware of when to advocate for themselves.

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REFERENCES


