

Review

Influence of physician, patient, and health care system characteristics on the use of outpatient mastectomy

Sara Shahbazi, M.P.H.^{a,*}, Stephanie J. Woods, Ph.D., R.N.^b

^aDepartment of Health Services Research, College of Health and Human Services, University of North Carolina at Charlotte, 9201 University City Blvd, Charlotte, NC 28223-0001, USA; ^bSchool of Nursing, University of North Carolina at Charlotte, Charlotte, NC, USA

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Abstract

BACKGROUND: Breast cancer is the 2nd leading cause of cancer deaths among women in the United States. Breast cancer surgeries can be performed on either an inpatient or ambulatory basis. This systematic review of literature on outpatient mastectomy examines what is known about the factors that influence the use of this procedure, existing public policies, and strategies to promote the appropriate use of outpatient mastectomy.

METHODS: Factors associated with the utilization of outpatient mastectomy were categorized and discussed under the following headings: “patient level,” “physician level,” and “system level.”

RESULTS: Potential contributing factors to the use of outpatient mastectomy at the patient level were race, educational level, comorbid conditions, cancer stage, and health insurance. Contributing factors at the provider level were demographics, surgeon specialty, and whether physician is an American or international graduate. The associated factors at the system level were state policy and legislation and hospital characteristics.

CONCLUSIONS: The evidence in the research literature suggests that the use of outpatient mastectomy is a function of interactions between patient and physician characteristics, managed care influences, and the state policies and laws.

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Breast cancer is the second leading cause of cancer deaths among women in the United States (US) after lung cancer. Breast cancer poses a huge medical and economic burden for women and their families, and accounts from 15% to 20% of all cancer costs and 1% of the total

healthcare expenditure in the US health care system.¹ Surgical treatment of breast cancer has been described for centuries. Historical analysis of this treatment reveals that the efficiency and the extent of surgery has always been a source of controversy.² The primary treatment for nonmetastatic breast cancer (stages 0 to III) is surgery (breast conserving surgery [BCS] or mastectomy) to remove the tumor. BCS, also known as lumpectomy, involves removing only the breast lump and some normal tissue around it. In contrast, mastectomy refers to removal of the entire breast.³

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* Corresponding author. Tel.: 704-305-3258; fax: 704-687-1655.

E-mail address: sshahbaz@uncc.edu

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Nowadays, breast cancer surgeries (including BSC and mastectomy) can be performed on either an inpatient or ambulatory basis. Outpatient procedures do not require an overnight hospital stay and patients may go home several hours after surgery. Previous literature documents that breast cancer surgery including quadrantectomies, axillary lymphadenectomies, simple or radical modified mastectomies, and sentinel lymph node biopsies represents a good choice as an outpatient procedure “when it is superficial and does not imply any significant bleeding or electrolyte shifts.”⁴

Moreover, previous studies show no evidence of differences in quality or outcomes of health care between patients receiving outpatient breast cancer surgery compared with those receiving inpatient surgery.⁵ Warren et al conducted a large population-based study to explore utilization trends and outcomes after outpatient mastectomy (OM) in the US. Their study included all women aged 65 and older in the fee-for-service Medicare program between 1986 and 1995. These researchers found that outpatients and patients with a 1-day stay had nearly equal rates of re-hospitalization for surgery-related complications.⁶ Rovera et al⁴ evaluated the feasibility and efficacy of outpatient breast cancer surgery and assessed its benefits. They interviewed 88 women who were treated as outpatients at the Department of Surgical Sciences, University of Insubria in Varese, Italy from July 2003 to December 2006. Their results showed the efficacy and the safety of the outpatient procedures performed in an ambulatory setting. The researchers found no intraoperative complications, and the patients’ readmissions were due to nausea and emesis in 1 case, dyspnea (difficulty in breathing) in another case; only 2 readmissions were due to surgical complications.⁴ Dravet et al⁷ indicated that women who had OMs tended to experience fewer side effects and were more satisfied with the procedure than patients who had been admitted to the hospital after the surgery. In contrast, Bian et al⁸ found a negative association of OM with the use of breast reconstruction, suggesting that the patients receiving OM may not receive adequate postmastectomy care.

Previous studies also cite the psychological effects as one of the greatest benefits for OM procedure. Dooley⁹ reported from a study of 204 mastectomy patients between 1995 and 1997 that women who underwent OMs felt more control over their recovery and treatment options. McManus et al¹⁰ in a study addressing the surgical, financial, and psychosocial advantages of outpatient procedure among 118 patients who underwent outpatient breast cancer surgery between 1991 and 1993, found that patients had a high level of satisfaction with ambulatory surgery and experienced faster healing and recovery at home within the family milieu. Moreover, McManus et al confirmed the cost effectiveness of outpatient breast cancer surgery vs inpatient procedures. For eg, they found that outpatient cost was \$1,572 compared with an average 3-day inpatient cost of \$6,282, for a potential savings of \$4,710, or 75%, per patient for modified radical mastectomy. Outpatient cost for lumpectomy with axillary node dissection was

\$1,080 compared with an average 2-day inpatient cost of \$4,907, for a potential savings of \$3,827, or 78%, per patient.¹⁰ However, this study took place almost 20 years ago, so the average costs and savings will differ today.

Multiple factors, including patient’s age, geographical location, cancer stage, coexisting medical conditions, and health insurance influence whether a patient will receive surgical breast cancer procedures as an inpatient or an outpatient.⁴ Most researchers in the field have concentrated on inpatient and outpatient BCS procedures rather than mastectomy. However, this article will focus exclusively on mastectomy procedures as almost all BCS surgeries are now being performed on an ambulatory basis.

Over the last decades, an extensive body of literature has examined factors associated with the likelihood of receiving BCS procedures among breast cancer patients. However, limited research is available regarding the use of OM. The purposes of this review are to: (a) examine the factors contributing to OM; (b) identify patient characteristics associated with having an OM, (c) examine the physician factors related to the likelihood of receiving an OM procedure; (d) identify the health care system characteristics influencing the use of OM; and (e) discuss existing public policies and identify a strategy that addresses optimization of OM.

Methodology

Reviewing process

The literature search for this systematic review was completed using MEDLINE, PubMed, and Google Scholar. Search terms included combinations of “OM,” “disparities,” “state policies,” “patient characteristics,” “physician characteristics,” and “hospital characteristics”. Reference lists of comprehensive review articles were examined for relevant articles not available in MEDLINE, PubMed, and Google Scholar searches. The full texts of all the relevant articles were independently reviewed by the authors. The methodological quality of the studies was assessed using the Downs and Black checklist¹¹ which was designed for assessing study designs and has been found to be valid and reliable for critically evaluating the quality of both randomized and nonrandomized studies. The checklist was modified to include specific questions related to the outcome of the current review, for eg, some criteria were removed because they were not appropriate for this review. The modified checklist (Table 1) consists of 14 “yes” or “no” questions, including 7 general questions related to the accuracy of outcome measures, data analysis, and internal and external validity of the selected studies and 7 specific questions related to the factors contributing to OM (ie, characteristics of the patients, physicians, and healthcare system, patient and/or physician preferences for surgical choice, state policies regarding OM, type of insurance and/or pay source, and type of ambulatory center in which

Table 1 Checklist to assess the methodological quality of the studies specific at patient, physician, and system characteristics contributing to OM

Criterion	Bian et al	Rovera et al	Warren et al	Dooley	McManus et al	Ferrante et al	Salasky et al	Case et al	Luther et al
Is the hypothesis/aim/objective of the study clearly described?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Were the statistical tests used to assess the main outcomes appropriate?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Are the main outcomes to be measured clearly described in the Introduction or Methods section?	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Are the main findings of the study clearly described?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Were the main outcome measures used accurate (valid and reliable)?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Was there adequate adjustment for confounding in the analyses from which the main findings were drawn?	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Were those subjects who were prepared to participate representative of the entire population from which they were recruited?	Yes	No	Yes	No	No	No	No	Yes	No
General Score	7	5	7	5	5	6	6	7	6
Are the characteristics of the patients, physician, or system included in the study clearly described?	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Is it a comparative study (inpatient vs outpatient)?	Yes	No	Yes	Yes	Yes	No	No	Yes	Yes
Is there information about all the breast cancers operated on in the study period from which OM patients were selected?	No	No	Yes	No	No	Yes	No	Yes	Yes
Are patient/physician preferences for surgical choice addressed?	No	No	No	No	No	No	No	No	No
Were policies regarding OM for the state/states under study discussed?	No	No	Yes	No	No	No	No	Yes	No
Was the type of insurance/pay source assessed?	No	No	Yes	No	No	Yes	No	Yes	Yes
Was the type of ambulatory center in which patients received OM noted?	No	Yes	Yes	No	No	No	Yes	Yes	No
Specific score	2	1	6	2	2	3	2	6	4

Range for general and specific score is 7.
OM = outpatient mastectomy.

patients received the OM). From the checklists, studies were then given a general score (based on the responses to general questions) and a specific score (based on the responses to specific questions pertinent to objectives of this review). Discrepancies in quality assessment and data extraction were resolved through consensus discussion.

Outpatient mastectomy trends in the US. Ambulatory surgery for mastectomy is not a new concept. This practice has been shown to be safe and effective with equivalent complication rates and high psychological satisfaction when compared with in-patient hospital care.^{4,6-10} The use of outpatient, so-called “drive-through”, breast cancer surgery increased rapidly in the US during the 1990s.⁸ According to Warren, the number of OMs, where surgery is done without an overnight stay, increased from virtually 0% in 1986 (2 of 47,295 procedures) to 10.8% in 1995

(4,831 of 44,940 procedures).⁶ During the same study period, a decisive shift toward decreasing lengths of stay for mastectomies occurred.⁶ From 1986 to 1988, 46.9% of the total 117,982 mastectomy patients had a hospital stay of 6 or more days. By 1993 to 1995, however, only 11% of the total 118,336 mastectomy patients had lengths of stay of 6 or more days. Among the remaining patients during that 2-year period, 18.6% stayed overnight or had an outpatient procedure; 29.2% stayed 2 days; 22.5% stayed 3 days; 12.6% stayed 4 days; and 6.3% stayed 5 days.⁶ This trend continued to from 1993 to 2000 where the proportion of patients with breast cancer receiving day surgery increased from 3.2% to 19.4% for mastectomy and from 48.9% to 77.8% for BCS in the US.⁸

Contributing factors to OM. In the past, the suitability of patients for outpatient procedures was based on tradition

rather than being evidence-based.¹² Currently, identifying a patient's suitability for an ambulatory procedure is considered a dynamic process that depends on the complex interplay between patient characteristics (eg, coexisting medical conditions), physician characteristics, and system characteristics.^{1,2,6,13} Therefore, the decision about the appropriate hospital length of stay after surgical treatment for breast cancer is made by the patient and her physician and in the shadow of the current policies and legislation. Finding from mastectomy studies identify several major factors as contributors to OM procedure. Review of the global literature indicates that these factors can be categorized into 3 groups: patient-level, physician-level, and system-level. All these factors are described in detail in the following.

Patient-level

Previous literature has documented an association between patient characteristics and the likelihood of undergoing an OM.⁸ Patient characteristics, such as patient preference, demographics, and overall health status, are considered the primary predictors of patient selection for ambulatory surgery processes.⁸ In this section, patient-level factors related to the use of OM are discussed.

Patient preference. Patient preferences are powerful determinants of breast cancer treatment and play an important role in shaping the pattern of surgical treatment, especially in the absence of a surgeon recommendation or influences from insurance companies favoring 1 procedure over another.^{14,15} Previous breast cancer studies have shown that when both BCS and mastectomy procedures are medically appropriate, increased patient participation in surgery decisions was associated with a higher likelihood of having a mastectomy.¹⁶ However, there is almost no research addressing the association between patient preference and use of OM, or the determinants of patient preferences for inpatient vs OM. Moreover, patients, potential patients, and cancer survivors can play a critical role in promoting better policies regarding cancer care through advocacy. For eg, they can help broaden the understanding of both the scope and limitations of laws regarding OM procedure. Although major advocacy campaigns, with appeals to the legislatures, outlawing "drive-by mastectomy" raged across the US 1 to 2 decades ago, no studies have directly discussed the role of patients as advocates, or oppositions to OM, or the OM-health insurance protection policies.

Age. Contradictory results have been reported in the literature regarding the association between patient age and utilization of OM. According to a 2003 Agency for Healthcare Research and Quality's (AHRQ) report, an OM generally is recommended for young women.¹³ However, some previous studies have reported higher rates of OM procedure among women age 65 and over.⁸ Ferrante et al,¹⁷ using state discharge abstracts and the state tumor registry data, identified patients who have been diagnosed

with breast cancer and treated with mastectomies in Florida in 1994 and found that OMs were more likely to be performed on women age 65 and over. Warren et al⁶ found no significant association between patient age and the likelihood of undergoing OM in their study. There is little empirical literature looking at age and OM utilization in middle-aged women.

Race. Disparities exist in the use of OM procedure among racial minorities. Studies suggest that nonwhites are less likely to receive OM than their white counterparts.⁸ Salasky et al¹⁸ examined the differences in the use of OM based on patient race. These researchers examined data from 47,318 patients enrolled in the American College of Surgeons National Surgical Quality Improvement Program Participant Use File who had undergone a mastectomy during the years 2007 to 2010. The authors indicated that more than half (62.6%) of mastectomies were performed in the outpatient setting. All racial minorities had lower rates of OM, with 63.8% of white patients, 59.1% of African-American patients, 57.4% of Asian, Native Hawaiian, or Pacific Islander patients, and 43.9% of American Indian or Alaska Native patients having had an OM. After adjusting for multiple factors, African-American patients, American Indian or Alaska Native patients, and those of unknown race were all less likely to undergo OM compared with white patients.¹⁸ According to Warren et al,⁶ nonwhite patients were also significantly less likely to undergo outpatient modified radical mastectomy (removal of both breast tissue and lymph nodes) than white patients.

Educational level. No studies were found that examined a patient's educational level as a predictor for the likelihood of undergoing OM. There is a possibility that patients with low educational level are more likely to undergo outpatient procedures, as they usually have higher likelihood of being uninsured compared with patients with advanced educational attainment.¹⁷ Nevertheless, it is impossible to conclude this from the limited available research.

Comorbid conditions and cancer stage. In general, the decision on outpatient or inpatient care should be made on an individual basis. For every patient, the nature of any pre-existing condition, its stability, and functional limitation needs to be evaluated.¹⁹ Most previous studies suggested that the patient's medical conditions greatly influence the type of procedure they receive.⁶ Researchers emphasized that patients with a high burden of comorbidities (such as hypertension or diabetes) or advanced and/or metastatic cancer are more likely to have inpatient surgery whereas women without these conditions are more likely to undergo OMs.^{6,8}

For women with early-stage breast cancer, undergoing a lumpectomy is as effective as having a mastectomy, and is usually performed as an outpatient procedure. In a study by Case et al, investigating the influence of payer and state on the use of OM, cancer stage factor demonstrated an important effect. The authors found that the adjusted

likelihood of receiving an OM was significantly lower if a woman had metastases.²⁰ Bian et al⁸ also postulated that patients with a higher stage of cancer at diagnosis were more likely to receive inpatient surgery.

Health insurance. Although it is well established that the OM procedure is medically safe and feasible, it may not be appropriate for some patients. However, cost-conscious insurance companies may limit a patient's choice to OM procedure to lower hospital costs,⁶ although, for some women, an overnight stay is not enough to begin their physical and emotional healing.

A study conducted by the AHRQ, "outpatient mastectomy: clinical, payer, and geographic influences", offers an interesting insight regarding the impact of health insurance on the use of OM procedure.²⁰ The authors examined medical records from 5 US states: Colorado, Connecticut, Maryland, New Jersey, and New York between 1990 and 1996, and concluded that women without health insurance or those who were Health Maintenance Organization members were 30% to 60% more likely to undergo OM procedures than women with health insurance, Medicare, or Medicaid coverage. The researchers also examined the trends and patterns for OM in the 5 states and found a significant increase in the rate of OM in the late 1990s, in part because of pressures from insurance companies during those years to make OMs mandatory.²⁰ In contrast, Ferrante et al¹⁷ did not find any association between health insurance type and having an OM. However, their findings were consistent with other studies in showing higher rates of OM among women without health insurance.¹⁷

Physician-level

Although patient demographics, health conditions, and patient preference play an important role in determining the suitability of this outpatient surgery, in almost all cases the physician decides if the patient needs to be admitted as an inpatient or outpatient for their mastectomy. Therefore, it is important to examine the physician characteristics that influence the use of ambulatory procedures. In this section, several physician-level factors related to the use of OM are discussed.

Physician demographics. Studies suggest that physician demographics, such as age and gender, influence the delivery of healthcare. For instance, according to Franks and Bertakis,²¹ female family and general physicians in the US and Canada are more likely to work in office-based practices compared with their male counterparts, and therefore not have as much influence on the likelihood of having an OM procedure. More evidence is needed to examine the impact of gender on deciding the setting for a mastectomy. Luther and Studnicki²² found that none of the physician demographic variables proved to be significant in their investigation on selection of a surgical choice (mastectomy vs BCS procedure) for breast cancer treatment the association between surgeon volume.

Surgeon volume. There is limited empirical literature examining the relationship between the likelihood of having an OM and surgeon volume (the number of procedures performed by the surgeon). In a retrospective cross-sectional analysis of 1997 to 1998 data from Florida inpatient and outpatient settings, Luther and Studnicki²² found that the mastectomy rate was higher among patients of low-volume surgeons compared with those of high-volume surgeons, largely because high-volume surgeons were more likely to perform BCS rather than mastectomy. However, their study did not show any significant results for the relationship between surgeon volume and likelihood of having an OM.²²

Specialty board certification and surgeon specialization.

Medical specialty certification in the US is a voluntary process. Board certification is widely recognized as a mark of a physician's exceptional expertise in a particular specialty and/or subspecialty of medical practice and this information is publicly available.²³ A number of studies have supported the validity of board certification as an indicator of a specialist's superior medical knowledge and their high quality of care. Successfully passing board certification examinations have been positively associated with physician clinical performance and patient care outcomes.²⁴ Sharp et al,²⁵ in a systematic review of 33 studies of physician certification and clinical outcomes published between 1966 and 1999, found 16 studies demonstrating a significant positive association between certification status and positive clinical outcomes, 3 studies showing worse outcomes for certified physicians, and 14 studies indicating no association. However, limited evidence is available on the relationship between the specialty board certification and the utilization of ambulatory surgeries, including OM.

American or international medical graduate. To date, the association between using ambulatory surgeries and whether the physician had graduated from a US or foreign medical school has received little attention. Luther and Studnicki²² indicated that low-volume surgeons who were more likely to perform a mastectomy rather than a BCS procedure were more likely to have graduated from international medical schools. Considering that most of the breast cancer surgeries (both BCS and mastectomy) in their study were performed in an outpatient setting, it could be suggested that graduates of non-US medical schools are more likely to perform OMs; however, more evidence is needed to confirm this association.

System-level

State policy and legislation. Although patient and physician characteristics remain important, the state in which a woman undergoes a complete mastectomy significantly influences options related to surgical choice (outpatient vs inpatient) for breast cancer treatment.¹⁸ Having a mastectomy in an ambulatory setting has been a sensitive issue,

sparkling public debate, and governmental action in many states. States have been particularly active in passing laws concerning breast cancer treatment, for eg, legislation ending the practice of OM and/or BCS with lymph node dissection.^{6,7} The growing popularity of outpatient breast cancer surgery, particularly OM, began to attract widespread public attention in the US in 1997, including warnings against “drive-through” mastectomy. Since then, more than 20 states in the US have passed laws mandating inpatient coverage for breast cancer surgery.⁸

As outlined in the previous section, AHRQ researchers, Case et al,²⁰ conducted a study to examine the influence of payer and state on the use of OM in light of state and federal length of stay managed care legislation in 5 states between 1990 and 1996. The researchers found that even after controlling for payer, clinical, and hospital factors, the state remains an important determinant of whether a woman can receive an OM. In their study, women who received a mastectomy in Colorado, Connecticut, Maryland, or New York were anywhere from 1.3 to 8.6 times more likely to have an outpatient procedure compared with women in New Jersey.²⁰ Furthermore, Bian et al⁸ in a study using 1993 to 2002 data from the Surveillance, Epidemiology and End Results cancer registries and Medicare claims found geographic variations and state laws significantly impacted the likelihood of receiving an OM. Among Connecticut, Hawaii, Iowa, New Mexico, and Utah, Utah had the highest average annual proportion of OM (27.2%), whereas Connecticut had the lowest average annual proportion of OM (3.9%) during the 10-year study period (4 years before the passage of the law related to inpatient coverage for breast cancer surgery in 1997).⁸

Hospital characteristics. Characteristics of the ambulatory setting, such as free-standing vs hospital-based Ambulatory Surgery Center, teaching vs nonteaching, and for-profit vs nonprofit deserves special attention as it influences the ability to manage complex patients based on the availabilities of personnel and equipment. Warren et al indicated that OMs were more likely to be performed in for-profit or nonteaching hospitals. Women treated in for-profit hospitals were 56% more likely to have OM than women treated in nonprofit hospitals.⁶ However, Case et al study indicated that the likelihood of receiving an OM was 60% lower in a publicly funded hospital but this rate did not differ between private nonprofit and for-profit hospitals. In addition, Case et al²⁰ found that women were less likely to receive an OM in teaching compared with nonteaching hospitals. Further research is needed to assess such discrepancies in findings and the impact of hospital characteristics on the utilization of OM.

Existing public policies

The practice of outpatient breast cancer surgery has been controversial in the US. Opponents of the outpatient procedure allege increased managed care as a contributing factor for the growing rate of OM in the US, and express concerns that

by pressuring patients to undergo outpatient surgery, managed care plans may take away the patient’s right of choice with potentially detrimental implications for the quality and outcomes of health care.^{26,27} Proponents, on the other hand, counter that the choice of OM may offer a surgery delivery setting better reflecting the preferences of patients and their physicians and may not adversely affect the health outcomes of women having outpatient breast cancer surgery.²⁸

The public furor over OMs reached a peak in the US in 1997 and attracted widespread public attention, including warnings against “drive-through” mastectomy in the 1997 US Presidential State of Union Address and the introduction of the Breast Cancer Patient Protection Act of 1997. Since then, more than 20 states in the US have passed laws mandating inpatient coverage for breast cancer surgery.⁸ One of the most famous existing public policies influencing the use of OM is the Breast Cancer Patient Protection Act, which prohibits insurance providers from limiting benefits for any hospital length of stay to less than 48 hours for a mastectomy or 24 hours for a lymph node dissection. It does not require that the patient stay in the hospital for the full 48 hours, only that the hospital stay be covered if deemed essential by the patient’s surgeon.⁸

Strategies to Promote the Appropriate Use of Outpatient Mastectomy.

The actions taken on medical issues are usually determined by the political lobbying efforts of particular groups rather than by sensible medical priorities and patient preferences. As a general rule, policy makers and regulators support should be reserved for those health policies that raise competition and promote the use of service providing more affordable care, whereas maintaining high quality care and stringent safety standards. In light of the many benefits outpatient procedures, including OM, have brought to the health care system, policy makers should develop and implement policies that enhance access to, and utilization of, ambulatory health care services. One way to promote the appropriate use of OM might be to set up an independent Advisory Council to provide input to federal and state agencies regarding this sensitive public policy issue or similar dubious subjects. It is crucial to allow medical decisions, including the decision for selection of a surgical option, to be made by patients and doctors, as opposed to insurers. There are women who are satisfied with shorter lengths of hospital stay. However, for some women, OM or less than 2 days of inpatient care after surgery may not be safe. The primary goal of clinical policies is to improve patient care. Yet, sometimes, patient interests are not directly represented on guidelines panels and the guidelines limit patient treatment options including the choice of having inpatient vs outpatient procedures.

Comments

The overall increase in ambulatory surgeries can be explained primarily by 2 major factors. First, health care

policies have created economic incentives that encourage ambulatory surgery. Second, the efforts of managed care organizations to minimize hospitalizations costs may have influenced the increase in the rate of OM procedures.⁶ Most of the literature on OM indicates that it is safe and effective and an alternative to an inpatient procedure when a patient is in good health has early-stage breast cancer, and the physician confirms the suitability of the procedure. The evidence in the research literature suggests that the use of OM is a function of interactions between patient and physician characteristics, managed care influences, and state policies and laws. However, it is impossible to conclude from the available evidence which one has the most impact on the likelihood of undergoing OM. Patient race, education-level, comorbid conditions, cancer stage, and health insurance all act as contributing factors in determining the suitability of OM for breast cancer patients. However, there is a paucity of literature specially examining the relationship between the use of OM and physician characteristics such as demographics, volume, specialty board certification, and graduation from a US or foreign medical school. State policies and legislation as well as pressures by managed care organizations to decrease costs are important determinants of options for the type of setting where a woman can receive her mastectomy.

This review provides important information for policy makers and health systems managers as they evaluate, legislate, and monitor the influence of federal and state policies on the use of outpatient services. The article provides policy makers with information on factors associated with the use of OM and should be taken into account in any debates in the area of outpatient regulation. Understanding these factors by health policy makers is important in promoting the appropriate use of OM.

Although this systematic review of literature examined information regarding the inter-related patient, physician, and systems characteristics, much of the literature on OM is 10 or older. Current research is needed to establish the quality of care and patient outcomes with OMs. Future population-based research is needed to provide detailed information on the role of physician characteristics as well as differentiate the impact of the state policies and managed care (insurance companies) and geographic location on the use of the OM procedure. An additional limitation of this review is that the available studies used inconsistent cancer staging systems and definitions of progression, which makes comparisons across studies difficult. Considering that the stage of cancer is one of the most important factors in choosing treatment, future population-based research is needed to provide more precise information regarding patient outcomes with the use of OM in studies with similar cancer staging systems.

In conclusion, as the use of OM continues to grow, more evidence-based studies are necessary to ensure patient choice, safety, and health outcomes. The influences exerted by managed care organizations on the patient and physicians need to be carefully examined to make certain that all

options of treatment are available for women in need of breast cancer surgery. Policy makers and health systems managers are invited to facilitate public debates and deliberate using available research as they monitor and legislate federal and state policies on the use of outpatient services, particularly OM.

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