



Perception of Healthcare Providers Regarding Breast Reconstruction “Women’s Health and Cancer Rights Act “(1998) Through Evaluation of Continuing Medical Education Conference

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Abstract

Purpose: Studies have shown increase in breast reconstruction after the federal 1998 Women’s Health and Cancer Rights Act, however, disparities in breast reconstruction remain. Reconstruction disparities are multifactorial: including demographics, comorbidities, access to information and knowledge of available procedures. The aim of this study is to: assess the perception of Breast Reconstruction Coverage as a Federal Law amongst health care providers in West Virginia.

Methods: Data was collected in two consecutive conferences in 2015 and 2016. During both conferences attendants received a lecture on breast reconstruction options with emphasis in education of the “Women’s Health and Cancer Rights Act”. Perception was measured through pre and post questionnaire in an Annual Continuing Medical Education (CME) Conference.

Results: In 2015, eighty-one attendants completed both questionnaires. Initially 42% answered the correct answer and post-conference 61.7% of the providers were aware that insurance would cover reconstruction.

In 2016, one hundred and nineteen attendants completed both questionnaires. Before conference 37.82% of providers were aware that patients could receive their breast reconstruction covered by insurance and it changed to 69.7% after conference.

An effectiveness score was designed to evaluate perception of providers pre and post-conference. The effectiveness score did not show statistically significant change in 2015, whereas in 2016 it showed statistically significant change in perception of WHCRA. ($p < 0.001$). When comparing 2015 and 2016, there is a positive impact of the conference education and positive perception change from 2015 to 2016.

Conclusion: Although this is a survey limited to a few number of participants, it shows that there are still limitations regarding healthcare provider’s perception of breast reconstruction possibilities for patients and timing of referral. It highlights the need for continuous education of physician/providers to increase breast reconstruction awareness. Intervening in patient-physician communication can result in breast reconstruction surgery rates more consistent with the overall population (urban and rural), overcome the negative effects of racial/ethnic disparities in breast reconstruction and improve quality of life among the underserved patient population.

Keywords: Breast reconstruction; Breast cancer; Mastectomy

Background

A United States of America female’s lifetime risk of developing invasive breast cancer is approximated to be 12% or 1 in 8 females during their lifetime [1,2]. It is estimated that about 240,000 women will be diagnose with breast cancer per year. Of these diagnoses, it is projected that 60% of patients will undergo breast-conserving therapy, while 40% will undergo mastectomy [1]. The diagnosis and treatment of breast cancer can inflict significant stress on patients, while breast reconstruction can lead to improve of body image, sexuality and self-confidence [3-5].

In 1998, the Women’s Health and Cancer Rights Act (WHCRA) was passed which mandates that

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Table 1: The question placed on the pre and post conference questionnaire regarding post-mastectomy breast reconstruction and the WHCRA. The correct answer is D. Patient should be referred to a plastic surgeon as she wishes and breast reconstruction is covered under WHCRA 1998.

65yo, F, with diagnosis of invasive ductal carcinoma will undergo modified radical mastectomy with sentinel node biopsy. Patient has PEIA insurance (West Virginia – Public Employees Insurance Agency) and she asks you about possibilities for breast reconstruction. Your answer is:
a) Patient is considered elderly and due to her age she does not qualify for breast reconstruction.
b) You will send her to see a plastic surgeon and you advise her that her insurance may not cover her reconstruction.
a) You advise her that breast cancer comes first and she should worry about her mastectomy first, possible need of adjuvant chemotherapy and/or radiation therapy; then you will refer her for breast reconstruction.
b) You will send her to see a plastic surgeon and you advise her that all insurances cover reconstruction.
c) Breast reconstruction is contra-indicated in patients that will undergo radiation therapy.

all insurance carriers cover post-mastectomy breast reconstruction [6,7]. Additionally in 2001, there was a legislation that placed penalties for insurance companies who were noncompliant with the WHCRA [7,8].

With the placement of this legislation it was presumed that women would have greater access to post-mastectomy breast reconstruction. In a recent study, Xie et al. [8] analyzed the different rates in post-mastectomy breast reconstruction from 1998 to 2007. The period of analysis included a year previous to the WHCRA in statement and many years following. Between 1999 and 2000 in the states, that did not have laws regarding insurance coverage prior to the WHCRA, utilization of post-mastectomy breast reconstruction rates rose between 31-36% [8]. During the entire study period 1999-2007, the states increased breast reconstruction after mastectomies by 50% [8]. After the institution of the Women's Health Care Rights Act significant improvements were observed in quality of life amongst women that underwent post-mastectomy breast reconstruction compared with women that underwent mastectomy and no reconstruction [3-5,9,10].

Nonetheless, increase in post-mastectomy breast reconstruction and changes in healthcare policies promoting insurance coverage for reconstruction after mastectomy, did not eliminate disparities in breast reconstruction. Barriers to breast reconstruction after mastectomy still persist. The reasons are multifactorial: low socioeconomic status, lack of insurance, low literacy level, language barrier, race, comorbidities, type of hospital are amongst the identified factors for disparities in treatment of breast cancer [3,5,8]. Additionally, patients may not be informed of the option of breast reconstruction, may not be referred to a plastic surgeon or may accept that their insurance will not cover a "cosmetic" procedure. The dissemination of the information related to breast reconstruction policies may have different penetrance depending on socioeconomic status [3].

Chung et al. [9] evaluated a New York State database between 1998 and 2006 with aims to study the racial/ethnic insurance variation in breast reconstruction and the affect of implementation of WHCRA in 1998. Interestingly immediate post-mastectomy breast reconstruction increased amongst all women during the period, however, the racial/ethnic gap between white and minority became greater between 1998 and 2006. It suggested that health education materials and documents explaining patient's rights and benefits can be too confusing to many patients without college degrees and breast reconstruction is an elective subspecialty procedure that patients with lower level of health literacy may not have a complete understanding of its benefits [11].

Currently there is research and database information on women and post-mastectomy reconstruction, but unfortunately there is a lack of information on physician/providers perceptions/recommendations [11,12]. Breast reconstruction is an elective and

subspecialty procedure and it is important to discuss perception of physician/providers that are educating patients in treatment of breast cancer as they have an influence on patient's decision regarding breast reconstruction.

Tseng showed that patients in near-metro and rural areas are less likely to undergo breast reconstruction [11]. Their observations are probably due to presence of less plastic surgeons in rural communities, difficulty of traveling to more urban areas and presence of providers that are less likely to refer patients for reconstruction [12].

Based on that conclusion, we conducted a pre- and post-conference questionnaire to the participants of the Annual West Virginia University Breast Cancer Conference. The main objective was to: 1. determine if there is a need to increase education to providers in West Virginia regarding delivery of information in breast reconstruction to breast cancer patients. 2. Assess healthcare provider perception of breast reconstruction rights (WHCRA 1998) pre and after conference.

Methods

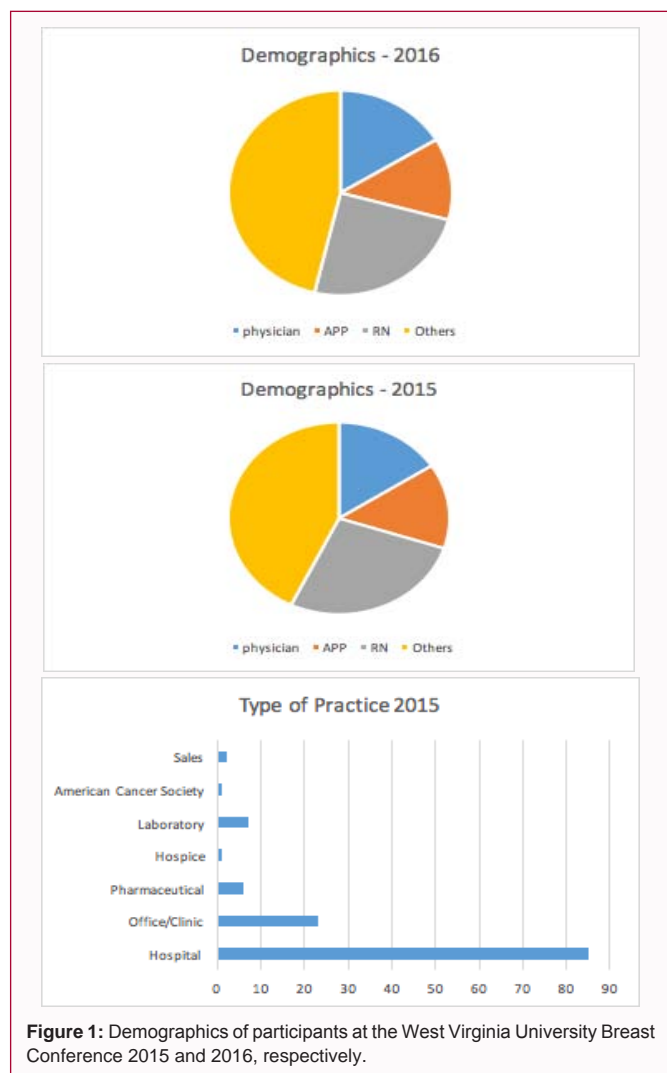
Study design and setting

The data for this paper was collected from pre and post-conference questionnaire at the Annual West Virginia University Breast Cancer Conference in 2015 and later repeated in 2016. A pre and post-conference questionnaire had to be filled and returned in order to receive Continuing Medical Education (CME) hours. A single question was added to conference questionnaire that specifically assessed if participants had any knowledge of the WHCRA mandating coverage for post-mastectomy breast reconstruction (Table 1).

A question was formulated where an insured patient asks to be referred to a plastic surgeon pre-mastectomy and the answers ranged from:

- Patient is too old to undergo breast reconstruction.
- Provider refers to a plastic surgeon, but advises patient that insurance will not cover breast reconstruction.
- Breast reconstruction is an elective procedure and patient should focus on breast cancer treatment first.
- Provider will refer to a plastic surgeon and breast reconstruction is covered by insurance.
- Patient is not a candidate for reconstruction as she will undergo radiation therapy.

Data was collected from the questionnaire including demographics of the conference attendants including: county of residence, practice type (private or academic), and position in the practice (physicians, Advanced Practice Practitioners, Registered Nurses, etc.). Eighty-one participants completed both the pre and



post conference questionnaire in 2015 and ninety-eight in 2016.

During the conference attendants received a thirty-minute lecture on breast reconstruction options and information regarding WHCRA (1998). The responses to the pre-conference questionnaire were collected prior to lecture and post-conference questionnaire collected at the end of conference.

Statistical analysis

A score was defined to evaluate the improvement of healthcare provider in perception of breast reconstruction. The score was divided as a combination of three components:

- Providers whose perception improved after the lecture. They selected the wrong answer pre-conference and the correct answer post-conference (θ_{ic}).
- Providers whose perception worsened after lecture. They selected the correct answer pre-conference and changed to a different answered post-conference (θ_{ci}).
- Providers whose perception remained incorrect. They selected wrong answer pre-conference and post-conference (θ_{ii}).

Results from 2015 and 2016 questionnaire were analyzed through a likelihood ratio test to estimate if perception of breast reconstruction

Table 2: Counts and proportions for Question in 2015. The "effectiveness score" in 2015 was 24.7-33.3-4.9= -13.6%. This score is NOT statistically significant different from zero at a 5% significance level (p-value = 0.116).

2015		Post course		
		correct	incorrect	TOTAL
Precourse	Correct	30 (37.0%)	4 (4.9%)	34 (41.9%)
	Incorrect	20 (24.7%)	27 (33.3%)	47 (58.0%)
TOTAL		50 (61.7%)	31 (38.3%)	81

changed amongst providers.

Results

Participants demographics

In 2015, amongst the 133 conference attendants there were: 21 physicians, 36 registered nurses, 19 advanced practice practitioners, 2 social workers amongst others (Figure 1). Between them: 85 practitioners practice in a hospital facility and 23 in outpatient clinics (Figure 1).

There were 17 out of 55 countries from WV represented (Figure 1). In addition, there were participants from: Pennsylvania, Ohio, Virginia and Maryland (Figure 1). We collected 81 completed pre and post-conference questionnaires.

Attendants' perception pre-conference: The pre-conference form showed that 26% of attendants believed that patients referred to a Plastic Surgeon would have to pay for their reconstruction, 42% believed that patients could receive their reconstruction covered by insurance, 28.4% believed that patient should think about their cancer treatment before considering seeing a plastic surgeon (Table 2). This shows a lack of information and/or decreased importance of breast reconstruction discussion during the initials encounters—reiterating that plastic surgery is an elective and subspecialty referral.

Attendants' perception post-conference: After conference 61.7% believed that insurance would cover reconstruction, 11% believed that insurance would not cover reconstruction, 27% believed that patients should undergo mastectomy, radiation, and chemotherapy before seeing a plastic surgeon (Table 2). Those results showed that although lecture improved education of the WHCRA, it may not have affected their perception in regards to when in the cancer treatment a patient should be referred to a plastic surgeon.

Participants demographics: In 2016, amongst the 147 attendants there were: 24 physicians, 19 advanced practice practitioners, 36 registered nurses amongst other providers including: social workers, PhDs, physical therapists, medical assistants, licensed practical nurses, etc. We collected 119 completed pre and post-conference questionnaires.

Attendants' perception pre-conference: The pre-conference form showed that 30.3% of attendants believed that patients referred to a Plastic Surgeon would have to pay for their reconstruction, 47% believed that patients could receive their reconstruction covered by insurance, 19.3% believed that patient should focus on their cancer treatment before considering seeing a plastic surgeon (Table 3). This shows a lack of information in regards breast reconstruction options and 1998 Women's Health and Cancer Rights Act (WHCRA), but suggests that attendants are more willing to refer patients to a plastic surgeon in the initial encounters (47% will refer to a plastic surgeon).

Attendants perception post-conference: After conference: 69.7%

Table 3: Counts and proportions for Question in 2016. The "effectiveness score" in 2016 was 40.6-12.5-3.1= +25%. This score is statistically significant different from zero at a 5% significance level (p-value< 0.001).

2016		Post course		TOTAL
		correct	incorrect	
Precourse	Correct	42 (43.8%)	3 (3.1%)	45 (46.9%)
	Incorrect	39 (40.6%)	12 (12.5%)	51 (53.1%)
	TOTAL	81 (84.4%)	15 (15.6%)	96

Table 4: The "effectiveness score" is defined as the proportion of providers who transitioned from an incorrect to the correct answer minus the proportion of providers who gave an incorrect answer post course (transitioning from either an incorrect or the correct answer). The conference lecture appeared to be much more effective in 2016 than 2015 (not formally tested).

Year	Effectiveness score	Effectiveness score SE	p-value
2015	-13.6%	8.7%	0.116
2016	+25.0%	7.2%	<0.001

believed that insurance would cover reconstruction, 3.4% believed that insurance would not cover reconstruction, 9.2% believed that patients should undergo mastectomy, radiation, and chemotherapy before seeing a plastic surgeon (Table 3). Those results showed that lecture improved education of the WHCRA and attendees' perception of importance of referring patient to a plastic surgeon during the initial encounters as part of overall breast cancer care.

Statistical Analysis

Since the same providers are tested pre and post-conference, the test results are correlated. Rather than comparing the proportion of correctspre and post-conference, the effectiveness of the lecture is evaluated by considering the transitions between correct and incorrectanswers. An "effectiveness score" is defined as the difference between the proportion of providers transitioning from an incorrect to the correct answer (θ_{ic}) and the sum of the proportions of providersmoving from incorrect or correctanswers to an incorrectanswer (θ_{ii} and θ_{ci} respectively). A statistical test of hypothesis is used to evaluate whether this "effectiveness score" is significantly different from zero ($H_0 \theta_{ix} - \theta_{ix} - \theta_{ii} = 0$ vs. $H_1: \theta_{ix} - \theta_{ix} - \theta_{ii} \neq 0$). The counts shown in (Tables 2 and 3) form multinomial distribution and the hypothesis of interest can thus be tested by means of a likelihood ratio test. The results are shown in (Table 4).

The effectiveness score shows significant change in perception in the year of 2016, statistically significant (p< 0.001). Although it did not show a statistically significance between pre and post-conference perception in 2015, when compared 2015 and 2016 there is a positive impact of the conference from 2015 to 2016 (Table 4).

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Discussion

Rates of reconstruction vary from study to study and it can range from 8% to 81%. Patient's demographic characteristics, age, ethnicity, minority, low income and low health literacy play a role in the likelihood of post-mastectomy breast reconstruction. Lack of information and inability to involve patients in their decision are also

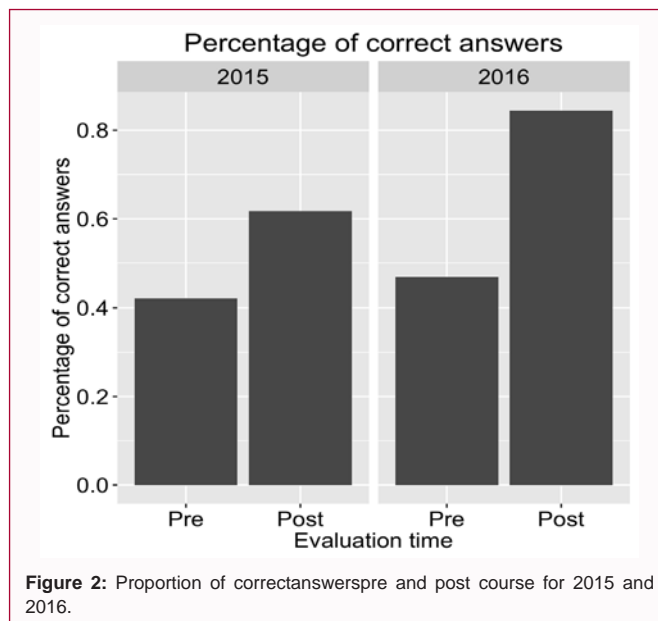


Figure 2: Proportion of correctanswerspre and post course for 2015 and 2016.

identified barriers to breast reconstruction.

From our data, there was a change in healthcare providers' education of the WHCRA and perception of importance of referral for breast reconstruction changed from 42% to 61.7% in 2015 and from 47% to 69.7% in 2016; respectively before and after a CME educational intervention (Figure 2).

Financial restraint related to insurance coverage and accesses to plastic surgeons are also responsible for differences in breast reconstruction in the rural population. There are studies supporting the difference in breast reconstruction showing that uninsured or Medicaid patients receive less breast reconstruction. This could be due to language barrier, lack of information, access to breast reconstruction, and low income patients may find more difficult to spend time away from work [5,9].

It is clear that in many states there is an overall increase in utilization of post-mastectomy breast reconstruction [8]; however, in rural states such as West Virginia there are barriers to providing this capacity of care. Our population of attendees was limited to mostly WV and then within the state of WV only 17 counties were represented. These 17 counties were also centralized to the region surrounding West Virginia University, which as an academic center allows for more access to healthcare-Institution type impacts the rate of post-mastectomy reconstruction. Those patients who complete their care at an academic hospital traveled twofold the distance of women who received treatment at a community center; however, the patients treated at academic center underwent reconstruction at significantly higher rates than at the community hospital [13]. The lack of representation of more rural areas in the state such as the Southern portion is likely due to the barriers of travel for these providers. This geographical isolation can play a role in patients' access to a complete range of healthcare services. It has been demonstrated that patients that undergo a mastectomy followed by immediate reconstruction must travel significantly larger distances that have increased over time, to care than those that do not complete reconstruction [13].

Furthermore, an improvement of healthcare provider and patient awareness regarding the psychological benefits of breast reconstruction and additional reconstructive options can cause an

impact on increase of breast reconstruction.

Some studies observed an increase of immediate breast reconstruction after the WHCRA with relative increase in utilization of immediate breast reconstruction in Medicare and Medicaid patients suggesting a larger impact on underserved populations. However, private insured patients are still more likely to undergo immediate reconstruction suggesting that breast surgeons are more likely to refer a privately insured patient to a plastic surgeon [4].

Research from survivors underscores critical skills such as: information, communication, and problem solving. It is important to remember that insurance alone does not ensure access, quality, cultural competency, diversity within the provider workforce [5]. Benefits of insurance in regards to breast reconstruction also needs active promotion of patient and provider education.

Studies have shown that patient's preferences, cultural beliefs and knowledge about breast reconstruction and its benefits strongly influence the decision for breast reconstruction [9,11]. Therefore, it is possible that women with higher income, greater level of education are positively associated with health literacy and knowledge of benefits of breast reconstruction. This implies in a greater use of breast reconstruction services by this patient population. Similarly, lack of effective communication between patients and physicians, especially regarding elective, subspecialty procedures such as breast reconstruction can lead to a decrease of use and awareness of those services [9-11].

Education through Continuing Medical Education (CME) hours has been the standard of post-medical school and residency graduate education. There has been a recognized pattern that increased medical knowledge as assessed via testing does not always equate to a better practice of medicine based on the newly acquired theoretical knowledge [13]. A study has shown that CME affects physicians' practices at the minimum for 6 months [13]. Other studies support that the addition of testing increases the retention of information and leads to a better application of the knowledge in the future [13]. Although testing is not the best assessment for application of knowledge it is still the gold standard for evaluating the effectiveness of CME [13]. Using both the pre and post conference questionnaire as a requirement for receiving CME hours at the conference increased the number of attendants that completed the questionnaire. Having both a pre and post assessment showed that the quality of CME at the conference was effective in increasing education to a number of attendants about the WHCRA.

Conclusion

Using pre and post-conference questionnaires demonstrated an increase in healthcare providers' education of the WHCRA at the 2015 and 2016 West Virginia University Breast Cancer Conference.

Continuing Medical Education (CME) became more and more important in changing education in medical practices. It is important to promote further outreach programs and clinics in WV, and tracking the number of post-mastectomy breast reconstruction in the coming years to evaluate for a long term effectiveness of the WHCRA education.

Several studies suggest that patients and providers are influenced by financial considerations, which indicates a need to increase education of available coverage and evaluate barriers to breast reconstruction among patients, particularly minority women [9].

Availability to insurance coverage often is not enough to assure equal access to health care. A higher level of education and communication amongst providers and vulnerable populations is required [11]. Additionally, patient-physician interactions vary by race and ethnic differences in trust and communication. Physician's play a critical role in discussing procedures and recommendations with patients and even impact how women will make decision to pursue reconstruction.

Post-mastectomy is shown to improve psychological outcomes in women undergoing mastectomy [4-13] and efforts to increase access to breast reconstruction such as the New York State law of 2010 [10] mandating physicians to discuss options for breast reconstruction before surgery are continuing. Disparities in health care remain a topic of discussion in the United States. Breast reconstruction is an elective procedure and despite innumerable studies showing benefit in patients that underwent mastectomy, improvements in referral and breast reconstruction is one of those inequalities in health care. The widening in health care can be improved if physician/providers continue to concentrate efforts towards mitigation of those differences by increasing recognition, providing equal information and understandable communication between patients and providers.

Decision for breast reconstruction is a process influenced by clinical factors such as cancer staging, patient's comorbidities, health care system and provider's biases. The process of decision-making relies on an informed interaction between patient and physician/provider and studies have shown that under informed patients and lack of communication constitute obstacles for women to receive breast reconstruction despite the WHCRA of 1998 [6].

An improvement of patient-physician communication can potentially improve quality of life after diagnosis and treatment of breast cancer.

Future research can be directed towards development of communication skills, training as well as cultural sensitive materials for providers other than plastic surgeons who appear to be the primary information givers to this population. Additionally, research should be directed towards development of interventions to measure physician giving information and patient health literacy improvement.

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