Contemporary Clothing Issues of Women Who Are Post-Mastectomy

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CONTEMPORARY CLOTHING ISSUES OF WOMEN WHO ARE POST-MASTECTOMY

by

Carol Beard

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CONTEMPORARY CLOTHING ISSUES OF WOMEN WHO ARE POST-MASTECTOMY

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Western Michigan University, 2011

The intent of this three-paper format dissertation is to examine three topics germane to the clothing requirements and clothing acquisition of women who are post-mastectomy. Each paper’s focus resides within a broader theme of addressing a population that has specialized clothing needs. While each study is independent in nature, they build on each other. The first paper describes the demographics of the population and how those demographics and treatment path for breast cancer provide a different framework for reaction to the retail offerings currently on the market. The next paper focuses on the association between demographics and treatment path of post-mastectomy women and the preferences associated with venue selection for procuring clothing. Specifically, paper two looks at the importance of brick-and-mortar atmospherics as it relates to the characteristics of the fitting rooms as well as the importance of a sensitive and knowledgeable staff in the fitting room area. Lastly, looking through the framework of the differing demographics and treatment paths, paper three reviews discharge information needed to assist in clothing selection and modification. Paper three also addresses written information that women who are post-mastectomy desire in relation to clothing selection and modification after breast cancer.
surgery, as well as potential clothing issues to expect throughout the treatment process and post-surgery stages.

Results from the first study develop an overarching concept to the design modification needed for the broad target market of women represented by the term *post-mastectomy*. The second study yields the breadth of issues germane to the challenges posed by physical surroundings when selecting clothing, based on demographics and treatment path. The third study defines the discharge information post-mastectomy women desire in the clothing transitions required to address issues throughout the treatment process.
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CHAPTER I

INTRODUCTION

Breast cancer is the second most common cancer found among women, second only to skin cancer (“Cancer Facts & Figures,” 2011). Accounting for one out of four diagnosed cancers, breast cancer is the second leading cause of cancer deaths among women in the United States (“Cancer Facts & Figures,” 2011). In 2010, the American Cancer Society statistics estimated 209,070 new cases of invasive breast would emerge (“Cancer Facts & Figures,” 2011). As of January 2006, there were approximately 2.5 million women living with a history of breast cancer (“Cancer Facts & Figures,” 2011). A breast cancer history includes a unique treatment path that may include surgery, chemotherapy, radiation therapy, and treatment with hormones. These various treatment paths can leave the body noticeably changed, resulting in struggles with clothing fit, clothing comfort, and clothing-related aesthetic concerns as these women have resumed their day-to-day lives (Jackson, 2004; Wassner, 1982).

Background

Physiological Concerns

In order to understand the post-mastectomy women’s concerns, one must have a working knowledge of the physical impact of breast cancer treatment. The first physiological concern is surgical procedures, followed by adjuvant therapies and radiation
therapy (Bredin, 1999; Kraus, 1999; Sammarco, 2001). Scars from breast cancer surgery and reconstructive breast surgery impact clothing selection for subsequent concealment of scars. These same concealment issues influence attributes of the retail fitting room needed to evaluate clothing as well as post-surgery education needed to empower women who are post-mastectomy to make choices that enhance the image they have of their post-surgery body. Body temperature vacillations, hair loss, and skin sensitivities caused from treatment therapies are among the sequelae that affect clothing option desires, concern for atmospherics of retail fitting rooms, and post-surgery education needs. The physiological impact of breast cancer treatment has to be understood before there can be any comprehension of the body image, appearance, and psychosocial concerns of women who have experienced breast cancer.

**Surgical procedures.** Surgical treatment for breast cancer includes both breast conserving and non-breast conserving modalities. Breast conserving treatment includes:

1. Lumpectomy, an operation in which the breast lump, along with a portion of the normal tissue around it, is removed. This type of surgery is often followed by radiation treatment and/or chemotherapy with its accompanying hair loss (Figure 1).

2. Partial (segmental) mastectomy (quadrantectomy), in which more of the breast tissue is removed and again possibly followed by radiation therapy and chemotherapy (Figure 1).

Non-breast conserving treatment includes the following procedures:
1. Simple mastectomy, in which the total breast is removed but does not include the lymph nodes under the arm or the muscle tissue beneath the breast itself (Figure 1). One or both breasts may be removed.

2. Modified radical mastectomy, an operation in which the entire breast is removed along with some of the lymph nodes under the arm; this is the most common when the whole breast is being removed.

3. Radical mastectomy (currently a rare procedure) occurs when the removal is extensive and includes the entire breast, lymph nodes, and the chest wall muscles under the breast (“Surgery for Breast Cancer,” 2009).

Non-breast conserving surgeries may be followed by radiation therapy and chemotherapy.

While radical mastectomy was the surgical treatment of choice initially, this surgery is rarely the operation of choice today because the less-invasive modified radical mastectomy has been proven equally successful. As a result, every effort is being made by surgeons to use breast conserving surgeries whenever a less invasive approach is indicated from the diagnostic testing (“How Is Breast Cancer Treated,” 2009).

The skin incisions for a mastectomy vary, as noted in Figure 2, which depicts two of the available incisions (Jeziorski et al., 2007) that are chosen based on the type of tumor, quadrant location of the tumor, facilitation of incision closure, and cosmetic implications. The remaining body configuration will vary by the type of surgery and the closure technique that was used.
Figure 1. Surgical Interventions

Figure 2. Incisions

Post mastectomy, women who have experienced non-breast conserving treatment may elect to continue with breast reconstruction surgery to rebuild the breast from body tissue. This reconstruction is done by a plastic surgeon. The breast mound is created to appear approximately the same size and shape as it was prior to surgery. This surgery entails transplanting tissue from either the abdomen or upper back to create the breast mound. Choosing to add the nipple and areola is optional. The remaining body configuration will vary according to the type of surgery and closure technique that is used.
Figure 3 depicts the scarring implications of these surgery choices (“Breast Reconstruction After Mastectomy,” 2009).

Accordingly, the garment fitting problems will vary according to the incision performed and the extent of surgery, a fact first noted in a research study by Wilkerson (1977).

**Post-surgical complications.** Lymphedema of the arm and hand are post-mastectomy complications that can affect clothing selections as well as nerve pain called post-mastectomy pain syndrome (PMP). Lymphedema, cited to be of concern in studies as early as 1944 (Rydell, Jennings, & Smith, 1958), remains an issue (Becker, Assouad, Riquet, & Hidden, 2006) for women who are post-mastectomy. This complication affects approximately 30% of patients after conventional mastectomy and is the most common complication of surgery. Swelling of the arm and hand caused by this complication can be intermittent or permanent. After mastectomy, women need to be careful to protect their swollen arm from such incidental injury as cuts or abrasions, burns, bruising from carrying heavy objects on the affected side, all of which can stimulate the edema process. In addition to discomfort from the edema, there can be limited mobility as well as a risk
of infection that could then exacerbate the dysfunction of the lymph system.

Lymphedema can be extreme enough to cause serious disfigurement, pain, or loss of functionality. Since this swelling can cause intense discomfort, clothing that is non-constricting is a necessity. The variation of size in affected arms may complicate the fit with clothing in relation to the size of the armscy and sleeves. The combination of all of these difficulties can create emotional anguish (Ganz, 1999; Golshan & Smith, 2006; Quint, 1963). There is a void of research regarding how to clothe the arm with lymphedema in a suitable manner.

Post-mastectomy pain (PMP) is a form of pain associated with a nerve injury that occurs during the surgical procedure. This pain is sharp in nature and is superimposed on feelings of aching, burning and tightness (Randal, 1998). Patients can also have scar sensitivity, post radiation skin discomfort, as well as phantom breast pain. As many as 40% of post-mastectomy patients are noted to experience some form of this neuropathic pain problem at some point in time post-surgery with the sensations significantly interfering with activities of daily living. If these pain problems continue unrelieved, they can lead to unnecessary suffering, anxiety, and ongoing depression (Baron et al., 2000; Kwekkeboom, 1996; Randal, 1998). Since a 1999 study of PMP by Smith, Bourne, Squair, Phillips, and Chambers noted clothing friction to be an aggravating factor of this pain syndrome, fabrication and style selection of clothing can minimize the contribution of physical experiences that translate into pain entities and create psychological distress for the post-mastectomy woman.

**Adjuvant treatments.** In addition to surgical treatment, adjuvant therapies including chemotherapy, hormone treatments, and radiation therapy are used to treat
breast cancer that leave perceptible if not conspicuous changes taking place within the body (Geddie, 2004). These post-surgical treatments can result in an array of prospective changes in appearance.

One of chemotherapy’s most traumatic side effects is alopecia (hair loss). For most women, their hairstyle is an essential part of their personal identity and plays an important role in social and sexual communication (Batchelor, 2001). Hormonal manipulation can cause weight gain through fluid retention, as well as causing menopausal symptoms or masculinization, depending on drugs or procedures. An individual woman’s adjustment will be influenced by these changes and her response to the alteration in appearance. Psychological adjustment will improve when attention is given to assessing and meeting individual appearance needs of the breast cancer survivor (Feather, Kaiser, & Rucker, 1988). Clothing that conceals scars and minimizes the physical differences in the chest silhouette can be means for appearance management on a daily basis. Clothing choices and use of breast prosthesis can function to reduce physical awareness and uneasiness about appearance (Feather, Rucker, & Kaiser, 1989a).

Radiation therapy is a treatment that is local to the cancer site and intended to eradicate cancer cells that can still exist after surgery. It may also be used prior to surgery to help shrink the size of the tumor. The treatments themselves are painless and the side effects, in general, are limited due to the latest equipment and technologic innovations. Most patients experience erythema (redness of the skin due to inflammation) but not severe side effects, unless a maximal dose is required to the skin surface. The erythema occurs approximately two weeks following the initial radiation treatment and usually continues for two weeks. Some women report swelling, skin sensitivity with skin feeling
thicker, and possible discoloration of skin. There has been some association of radiation therapy with a higher rate of inflammation in the arm and some chest wall inflammation of connective tissue that have resulted in pain developing in the chest area. Post-radiation skin care suggestions include avoiding tight fitting clothing as well as avoiding underwire bras to minimize irritation to the chest wall skin. If a more sustained reaction or rare cases of ulceration and necrosis occur, clothing selection and fabrication of clothing can be used to minimize increased irritation to sensitive skin (Perun, 2004; Sorenson & Metzger, 2000).

**Psychosocial Morbidity**

The literature conveys that the combined impact of cancer and mastectomy produces a measurable psychosocial morbidity. Over and above the adjustment that women must make to the curing therapies, they must deal with the psychosocial sequelae. These adjustments include the overall emotional distress and a disruption in performing social, work, and family roles (Sammarco, 2001). Among the potential risks are impaired body image and diminished femininity (Stellman, 1987).

**Body image.** If the classic definition Schindler developed in 1935 is used, body image is the component of self-concept that involves the picture of one’s own body which we form in our minds and is the way our body appears to ourselves. Body image is one of a number of components such as role performance, appearance, sexual attractiveness, etc., that is used to create that over all image of “self.” In 1990, Price expanded the body image concept to include the following three components: body reality, which is the body as it really exists (not necessarily as we would like to see it); body ideal, which is the
picture in our heads of how we would like our body to look and perform (norms of weight, shape, etc., can become distorted in the mind); and body presentation—how the body is literally presented to the outside environment. The emphasis that society places on breasts coupled with the social stigma associated with having had cancer often creates emotional tension and depression for breast cancer survivors. Body image for a woman includes the symbolic meaning and importance of her breasts. The more she values her breasts, the more devastating the effects of having a mastectomy can be. Several studies have suggested that if women believe their breasts are important to feelings of femininity and an overall sense of attractiveness, if a high value is placed on physical appearance, and if they consider themselves highly feminine prior to treatment, they will have a propensity for dissatisfaction with body image after treatment (Carver et al., 1998; Kraus, 1999). Although early detection of breast cancer contributes to less invasive surgical procedures and less invasive treatment, breast cancer survivors still must deal with many changes to the way their body looks and functions. Treatment for breast cancer will create a struggle with fit, comfort, and aesthetic concerns related to apparel post-surgery (Jackson, 2004; Wassner, 1982). Although there are many common concerns with post-mastectomy women, the different psychosocial stages are uniquely experience by post-mastectomy women. This unique path will influence their clothing needs and desires as they cope with lifestyle demands and try to find some sense of control to take a more active role in what is impacting their life.

Strategies in the psychosocial adaptation to cancer vary, but Carver et al. (1998) found that while women may experience little control over the outcome of their breast cancer, they can turn efforts toward things they can control such as their appearance.
When women who have had breast cancer turn their efforts toward appearance management, they feel better about themselves. According to Paek’s study in 2001, clothing that is attractive and appropriate can be used to transform the body appearance and regain self-esteem. Bredin’s study in 1999, which used in-depth interviews of three post-mastectomy women, sought to focus on body image issues of the participants and articulate their experiences with altered body image post breast cancer surgery. While the study went on to pilot massage intervention as a means to help in adjusting to the change in their body image, Bredin did indicate that the participants could cope with their illness more effectively if they could keep up appearances and conceal with clothing how they were different.

**Appearance aesthetics.** Kaiser (1985) defined appearance as referring “to the total, composite image created not only by clothing, but also by the human body and any modifications to the body that are visually perceived” (p. 5). According to Kaiser, appearance management encompasses all the attention, decisions, or any acts that relate to one’s appearance. This concept then includes all the activities and thought processes that lead to purchasing as well as wearing a clothing item. Appearance management encompasses what we do to and for our bodies in a visual way. All individuals engage in some form of appearance management on a day-to-day basis in order to shape our identities for other people. Appearance management ameliorates the consequences of visible differences.

Clothing is part of a much larger context of appearance and careful selection of clothing influences how we want other people to see us. Clothing can be an instrument in the beautification of self and can be used to generate positive feelings toward self. An
attitude of self-worth can be restored by careful selection of clothing that emphasizes what one sees as attractive and camouflages the less desirable features that detract from the person’s appearance. Less desirable features may include figure variations perceived as negative (Chowdhary, 2008; Horn, 1981; Kaiser, 1985). One of the major concerns for women after breast surgery is a perceived loss of femininity, which is at the forefront of her post-surgery psychological needs (Feather, Kaiser, & Rucker, 1989b). For people with physical hindrances, such as mastectomy, appearance management may be used to conceal the physical consequences by emphasizing other aspects of the self, concealing the visible effects of breast surgery (Feather, Wainstock, Remington, & Ringenberg, 1988; Kaiser, 1997). Price (1990) stated that “if appearance is important, then body-image care becomes a critical part of rehabilitation efforts” (p. 589). By emphasizing the positive with careful attention to the details of clothing, a woman who has had mastectomy surgery can boost her moral and increase self-confidence. Clothing can be involved in restoring feelings of self-worth (Feather, Kaiser, & Rucker, 1989a, 1989b; Wilkerson, 1977). The appearance of the form of one’s body can be altered through the use of clothing articles with emphasis on fit and configurations of garment parts (for example, necklines and sleeves). Even clinginess of fabric can visually create or re-create a body form. A body surface can be visually altered through the use of apparel (Kaiser 1985).

**Clothing**

Clothing can be treated as cues to make judgments at the micro level regarding the wearer, and at the macro level, culture and societies. As an individual develops “self,”
clothing can manifest visual images of those changes. Individuals are rapidly conditioned to recognize that dressing “appropriately” brings a positive response, while dressing “inappropriately” draws a negative response. Clothing can generate social approval and psychological satisfaction (Chowdhary, 2008). Clothing attributes play an important function for the post-mastectomy woman as fit, fabrication, and comfort play important roles in appearance management (Chowdhary & Ryan, 2003; Wilkerson, 1977).

**Clothing fit issues.** The results of wardrobe engineering can be noteworthy. The consideration of a clothing item’s fit begins when the garment style is selected. The elements of design that include line and color combine to create the visual and structural fit of the garment. Line can lengthen (vertical), shorten (horizontal), or shorten and widen (diagonal) and thus work with figure variations to disguise irregularities and lead the eye up to focus attention on facial features rather than the area of breast amputation (Rasband & Liechty, 2006; Wilkerson, 1977).

Clothing also needs to move with the body and care needs to be taken not to constrain the chest wall where surgery has occurred or the arm on the surgical side with edema concerns. Thus, the selection of fit and of sleeves and bodices becomes an important consideration. The garment silhouette and type of fabric control the amount of ease that is allowed for movement and overall fit. Garment design may be based on a close or loose fit. A close fit may be too restrictive for the early post-mastectomy woman who has a new surgical scar, or one who is experiencing post-mastectomy pain (PMP) as well as concerns for lymphedema. A close fit that is very form-fitting may never be a satisfactory garment. Waist details, darts and curved seams, and shaped insets may all create an undesired constrictive silhouette. A loose fit can also camouflage the figure
beneath. Controlling fullness by using soft gathers, shirring, release tucks, or pleating rather than darts or fitting control seam may be design details for consideration (Wilkerson, 1977).

**Fabric selection.** While fabric selection is not critical to the fit of a garment, the addition of a stretch fiber such as Lycra can alter the amount of ease offered by the garment and influence how closely it clings to the body. Early post-op women may need to protect surgical incisions, contend with skin irritations from radiation, and counter PMP discomfort (Jackson, 2004).

A clinging type fabric tends to define the shape of the body even if the overall silhouette is loose. General principles of design would dictate that heavy or short figures would look best in solid colors, vertical lines, curving lines, and random design motifs. Larger prints, plaids, or horizontal type designs work better on the slender well-proportioned figure. Indefinite outlines can break up space and direct where the eye goes. Careful fabric and print selection can visually move the eye away from breast amputation and swelling issues (Jackson, 2004; Wilkerson, 1977).

Chemotherapy, with its often early onset of drug-induced menopause, can create a need for breathable fabrics for temperature control. Natural fibers such as cotton, rayon, lyocell, linen, silk, and wool will create a more comfortable close environment due to their properties of comfort, resilience, and natural absorbency. A fiber that lets heat flow out and air flow in helps keep the body at an even temperature. Woolens are also supple and yield with body movement. While synthetics are easy-care with wrinkle resistance, good dimensional stability, and resistance to abrasion, they are low in absorbency and can cause excess moisture to accumulate on the surface of the fabric rather than being
absorbed by the fiber. In addition to assisting with heat regulation, careful fabric selection can protect the body from outside stimuli and irritation (Kadolph, 2007).

Texture in fabrics (heavy, bulky, fuzzy fabrics) can be used to create optical illusion, absorb light to make figure areas less noticeable, and add emphasis to areas of the figure. If texture is used carefully, it can hide figure imperfection and enhance favorable figure variations. Careful selection in relation to roughness or smoothness, and hardness or softness will be important considerations in the immediate post-operative period. This careful selection will protect skin from potential irritations or increase of discomfort from post-mastectomy pain (Kadolph, 2007; Rasband & Liechty, 2006; Wilkerson, 1977).

**Comfort in clothing.** In 1985, Slater stated that comfort can be defined as the absence of discomfort or of negative sensations. This is seen as an important concept in understanding clothing. In a 1985 study, Sontag addressed three dimensions of comfort with clothing that included physical, psychological, and social aspects. Sontag indicated that aesthetic characteristics of clothing will affect psychological comfort: when dressed in something that agrees with or expresses our own self-concept accurately, people are more psychologically comfortable. Social comfort is the mental state of comfort as it relates to social interaction: wearing something appropriate to an occasion creates satisfaction in relation to the impact made on others, or that some standard of conformity with peers was met (Paoletti, 2001; Shivers, 1980; Sontag, 1985). We may choose clothing for any one of the three reasons, but Sontag indicated that the three comfort reasons are interacting with each other in some way. Post-mastectomy women deal with attaining physical comfort in their clothing by carefully selecting the fabric, seaming
details, and overall ease of garments as they work with post-treatment discomfort issues. In addition, they also look at the socio-psychological interaction within the external environment while social and cultural exchanges are taking place and how their post-mastectomy appearance is impacting this exchange (Jackson, 2004).

**Breast prosthesis.** The use of an external breast prosthesis can help to improve body image, decrease emotional stress, and improve overall quality of life. The use of the prosthesis is seen as a means to restore a sense of normality and femininity, but practical problems can surface with its initial use. Problems can include dislodgment of the prosthesis during exercise, restricted clothing choices, weight of the prosthesis, and sweating under the prosthesis when the weather is warm (Roberts, Livingston, White, & Gibbs, 2003). A common reason for deciding to have reconstructive surgery is to eliminate the necessity of the external prosthesis and have more options in clothing.

While there are many common concerns with post-mastectomy women, the unique path that different psychosocial stages of post-mastectomy women are on will influence their clothing needs and desires as they cope with lifestyle demands (Sammarco, 2001). They want to find some sense of control and take a more active role in what is impacting their life. These various roles, and stages of life in which these roles are being assumed, will influence the classification of clothing and the style features the post-mastectomy woman is seeking (Feather, Kaiser, & Rucker, 1989b; Winkler, 1977). Having appropriate foundational information regarding clothing and prostheses may help women with their psychological well-being post-surgery as it relates to their physical and psychological rehabilitation. Appearance is a major issue and appearance adjustment starts with what is worn in the hospital post-surgery. Appearance issues continue with
immediate post-hospital needs while receiving postoperative care and then long-range needs for managing issues with scarring, use of prosthesis, and intimate wear (Winkler, 1977).

**Review of Relevant Research**

A plethora of research is available regarding the social and psychological effects from breast cancer treatment, especially mastectomy. Some research addresses clothing—the clothing concerns that post-mastectomy women have and the importance of using clothing as a tool to accommodate the effects of treatment. Wilkerson (1977) surveyed 19 post-mastectomy women to ascertain their selection criteria for clothing. She also looked at their reaction to a wide variety of styles of clothing and features that were on the market at that time and could potentially meet the post-surgery needs of these women. Wilkerson’s sample had participants who all wore a prosthesis, did not include anyone over 50 years of age, and had only 5 women having full-time employment. A larger sample size that includes a wider demographic is needed in future research that places emphasis on clothing that pertains to current trends and demographics. Surgical choices today for mastectomy emphasize breast conserving methods which redefines the clothing needs in terms of scar placement and resulting silhouette.

Heyl (1977) developed an instrument to measure attitudes of women toward mastectomy and to determine the number and nature of the variables that should be included. Heyl then surveyed 152 women over 30 years of age, with 105 women not having had mastectomies and 47 that had had mastectomies. The instrument was found to be sensitive in predicting the individualized nature of attitudes toward mastectomy
remaining stable regarding age groups and levels of mastectomy. The instrument continues to be used; however, it lacked women from differing socioeconomic levels.

In 1985, Rudd and Dodson conducted a study to investigate clothing-related needs of the post-mastectomy woman and to generate designs that satisfied that need. Eight garment criteria were established and 30 possible garments designs were generated with 10 selected for evaluation by a panel of post-mastectomy women. Post-mastectomy women were found to have certain functional and psychological clothing needs, in part determined by the type of surgery. While this study indicated that the results of the study could be used for future prototype development, the publication failed to define what the prototypes were developed or the design criteria defined as a result of the study.

Meacham, Kleibacker, Pitts, and Rudd in 1986 undertook a study for the purpose of developing ways of providing both attractive and comfortable clothing for post-mastectomy women. Objectives were to perform a needs assessment as well as to develop designs and adaptations in four categories of clothing. Prototype garments were created from original designs, by adapting commercial patterns, adapting ready-to-wear garments, and ending with a final evaluation of garments. One hundred twenty-one women responded to a survey by indicating that the greatest clothing difficulties occurred with evening wear and swimwear. The most often expressed problem was necklines that were too low. Swimwear lacked support to anchor it to the chest wall. Evening wear had issues with gaping or low-cut necklines and did not adequately cover scarring in the armhole region. For other clothing, sleeves were found to be too snug correlating with the incidence of edema. Selection criteria in order of importance included the following factors: attractiveness on self, appearance of garment and fit, comfort, care requirements,
and cost. The least important considerations were fashion and distinctiveness. An unnamed number participated in evaluating undisclosed designs. This study failed to relate demographics to the selection or to disclose the design adaptations to the survey population. There is a need to define the criteria in relation to this distinct target market in order for industry to garner information for necessary clothing adaptations.

In 1985, Feather and Lanigan investigated clothing problems of 40 post-mastectomy women by looking at the use of a prosthesis, the use of reconstruction surgery, changes in lifestyle and feelings toward self, identification of related clothing problems, and the relationship among variables. Fifty percent of women indicated they no longer felt comfortable wearing some clothing styles. Problem garments were the same as those cited in the Meacham et al. (1986) study. There was general satisfaction with prostheses available. Breast reconstruction was done the most by young women, those employed outside the home, and women who expressed less confidence in their post-operative appearance. To better evaluate reconstruction and use of prosthesis, a larger sample size with varying demographics would be needed to validate the results. Further study could incorporate what modifications to clothing would be needed for problem garments to meet the needs of women who are post-mastectomy.

In a series of seven articles by Feather and varying co-authors from 1988-1989 (Feather, Kaiser, & Rucker, 1988, 1989a, 1989b; Feather & Wainstock, 1989a, 1989b; Feather, Wainstock, & Pitts, 1989; Feather, Wainstock, Remington, & Ringenberg, 1988), surveys of over 600 post-mastectomy women were conducted. This research found a significant relationship to exist among clothing importance, appearance satisfaction, and self-esteem. In 1988, Feather, Wainstock, Remington, and Ringenberg assessed the
survey for educational needs and social support. Educational needs fell into six categories, in order of importance: breast cancer information, personal hygiene/exercise and nutrition and weight control ranked equal, prosthesis/clothing information, social support, and sexual issues. Feather, Kaiser, and Rucker developed an appearance satisfaction and self-esteem model from the 1988 survey and then did follow-up interviews of 27 of the participants in order to supplement the quantitative analyses. Overall in the survey, medical-related issues were perceived as being the most critical, then clothing importance, followed by social issues. There was a link between self-perception and the clothed appearance that the woman imagined she presented to others. Marital status, education, treatment, and ranked importance of clothing had little impact on appearance satisfaction; age and breast reconstruction showed only a modest impact on appearance satisfaction. Breast loss was an obvious change, but interview data supported the idea that side effects of adjuvant therapy could be equally upsetting to appearance and self-esteem and easy to manage.

In 1989, Feather, Kaiser, and Rucker looked at self-completion theory to explain why women strive toward the wholeness that is associated with the use of a breast prosthesis or breast reconstruction. Women who had reconstruction showed different concern priorities than those who did not; use of prosthesis and satisfaction with prosthesis were weakly related. Prosthesis satisfaction could be predicted by the demographic variables of age, employment, and marital status and foremost attitude of appearance satisfaction and concealment followed by attitudes toward sexuality. The use of a prosthesis was related most to employment, appearance, concealment, and age. In 1989, Feather, Rucker and Kaiser also looked at use of clothing as a method of coping
with the negative social connotations of malignancy and disfigurement caused from surgery. Attributes of clothing that were found to be problematic included bust emphasis and having bare shoulders. Clothing with back closures was also reported to be difficult to wear. Clothing categories that were exceptionally problematic were swimwear and nightwear. Attitudes toward sexuality were related significantly to concerns women had about presenting a good appearance in nightwear. Swimwear and concealment was significantly related to concerns with nightwear. The overall assessment of clothing in the 1988 survey included looking at swimwear, nightwear, dressy, formal, summer casual, and office/work clothes. This study included a large sample size and confirmed the importance of clothing as it relates to appearance and self-esteem.

Since 20 years have elapsed since the completion of this study, it would bear confirming if educational needs remain on prosthesis and clothing post-mastectomy that were cited in the findings of this study. With changing treatment options and more women seeking career opportunities, the contemporary clothing issues may be different. While these studies have verified the concerns in relation to low necklines, swimwear, and nightwear, there is a need to see if these issues have changed with breast conserving approaches to mastectomy and the more prevalent use of reconstructive surgery. Former studies did not address demographic differences.

Sleepwear, also termed nightwear in the above Feather studies, was addressed by Paek in 2001 when she surveyed 75 post-mastectomy women in relation to clothing importance and body image with their preferences for sleepwear. Paek looked at different fabrications and five sleepwear styles to ascertain if this could be an important factor for improving post-mastectomy women’s perception of their bodies. Results showed that
sleepwear could help improve women’s perceptions of their bodies and that post-mastectomy women wanted comfort and feminine designs in their sleepwear. This was a comprehensive study that offered concrete suggestions for the fashion industry to use in designing and producing nightwear for post-mastectomy women. While demographics were addressed in this study such as age, marital status, ethnic origin, occupation, mastectomy information, and educational status, there was no documentation of socioeconomic status.

Chowdhary and Ryan (2003) selected 21 post-mastectomy participants to use an entire set of apparel items from catalog sources that had been adapted for post-mastectomy women. Participants used the modified clothing for a period of 12 weeks. Chowdhary and Ryan sought to ascertain if an improvement in self-esteem could be noted from use of adapted clothing currently available on the market. The second purpose was to look for any change in apparel satisfaction after using these products that were specifically designed for post-mastectomy women. By comparing means prior to and following the study, Chowdhary and Ryan found no improvement in the self-esteem scale. However the participants, based on the clothing satisfaction scale, had an improvement in satisfaction with the adapted clothing. This study used a small sample with limited clothing selection but would serve well as a pilot study and could be extended to include more clothing items that are applied to a larger, more representative sample of post-mastectomy women using a more inclusive model of demographics.

In 2004, Jackson did a qualitative study of post-mastectomy women with data saturation occurring with 13 post-mastectomy participants. The study started with a recruitment interview, then 6 weeks of journaling by participants, a second interview, and
then a debriefing session with other participants in the study. The study included basic demographic data and then used open-ended and semi-structured questions to obtain data on clothing preferred by the breast cancer survivor, looking specifically at functional and aesthetic needs. Issues arose in the area of appearance aesthetics, clothing comfort, and body image. Participants’ areas of concern were lack of clothing information available pre- and post-surgery, issues with appearance aesthetics, issues with clothing comfort, and issues with clothing as it relates to body image. Aesthetic concerns included wanting to appear symmetrical, look “reasonable,” and use appearance alteration to camouflage surgery. Comfort concerns centered on physical comfort while wearing prosthesis and clothes, a sense of psychological comfort in not being able to be identified as a breast cancer survivor, and the desire to avoid the psychological discomfort other people assumed she would feel if she did not wear her prosthesis. Comfort issues immediately post-surgery focused on comfort first and then camouflage and appearance aesthetics. Since clothing is outside the medical realm, Jackson found that these clothing issues were not considered important by the treatment team and were inadequately addressed.

With the diverse population of post-mastectomy women that have crucial appearance management requirements, there is a need to refine hospital discharge information materials to meet the contemporary clothing issues of the woman who is post-mastectomy. Journaling by women in Jackson’s study revealed that post-mastectomy women think about clothing, clothing options, and their body image more than they revealed in the initial interviews. The process of shopping in stores depressed most participants in the study and they moved to shopping through catalogs or online. They felt like their choices in clothing and the settings to evaluate that clothing were very limited
and that they were unable to meet the standards they had set for self-concept and body-image. The medical community does not know how to address the changed image of women post-mastectomy. This study verified the importance of clothing in relation to self-esteem post mastectomy and the need for this concept to be included as part of the post-surgery education process. Women felt strongly that they needed guidance in this area and that this clothing information was not being supplied by the medical community to assist in the post-surgery adjustment. However, this study was conducted in Canada and thus may not be representative of what occurs in the United States; it is unclear if discharge information in relation to clothing issues is generally not covered prior to discharge after breast cancer surgery or these participants in particular did not receive information. The results of this study needs verification of current educational trends in this country. However, this qualitative study has a wealth of rich text from her participants that document the clothing and shopping issues that women have post-mastectomy. This information was used to assist in the development of portions of the survey for this study in order to quantify the target market and develop key information for industry.

In 2005, Chiweshe, Boll, Lambert, Cardinale, and Wong used a mixed method approach to survey 26 post-mastectomy women and then interviewed 6 of these participants to determine clothing adjustments that would provide the style changes needed for physical comfort and attractiveness. Alterations on clothing were performed to fit 5 of these women. The women found that alterations could provide clothing satisfaction for comfort and fit by raising necklines, adding sleeve fullness, and creating a loose yet flattering fit to the general body silhouette. No information was provided on
exact designs that were created for this study; the sample size was small and was not representative of diverse demographics. Chiweshe et al., however, plan to expand their research to include a larger sample and greater diversity and test the significance of cultural differences and age-related issues.

**Summary of Previous Research Findings**

Post-mastectomy women appear to have consistent concerns with clothing that meet their need for fit, comfort, and appearance aesthetics. In addition to these deficiencies, there is a lack of ready-to-wear clothing that meets their requirements in specialty areas such as intimate garments, summer clothing including swimwear, and evening wear. The shopping experience is unpleasant as a result of undesirable environments, unprepared personnel, and limited clothing selection. The plethora of studies that are available on psychosocial concerns, body image concerns, and physiological concerns fail to adequately address clothing issues. The medical community acknowledges the areas that women need to address in garment selection post-surgery, such as concerns with lymphedema, but do not offer concrete suggestions regarding on how to address this difficult clothing problem. During the initial phase after surgery and during other treatment modalities, clothing issues are only vaguely addressed and especially not addressed with appearance aesthetics combining combined with post-surgery comfort issues. Women are unprepared for the difficulties that they are going will encounter.

Therefore, previous studies fail to consider the current number of women who are treated with breast conserving modalities and the larger number of women who are
seeking breast reconstruction. There is a lack of published results for specialized clothing adaptations that would provide the clothing industry with the amount of modifications needed for this target market as well as those revisions needed for women who have elected reconstruction. Prototypes created in these studies were not expounded upon, and there is no further documentation of any impact on clothing being offered in retail as a result of prototype development. Previous studies that incorporated the development of prototypes lacked a diverse sample population in terms of age, socioeconomic status, and documented consideration of reconstruction versus prosthesis. Clothing issues need to be re-evaluated with the changes in treatment modalities that result in a reconfiguration of scarring. Existing material is no longer current with fashion and was cited in later studies as a need to be addressed. Current trends in clothing and changing lifestyles have the potential to render different needs assessment for this target market along with differing design solutions. With the diverse population of post-mastectomy women, a reassessment of clothing based on this diverse population needs to refine the design criteria for future prototype development and forge a connection with industry for the production of adapted post-mastectomy apparel.

To fully understand the issues of clothing procurement for post-mastectomy women, one must consider the following issues:

1. What are the reactions of women who are post-mastectomy to current clothing on the market based on different demographics and breast cancer treatment options?
2. Which fitting room atmospherics are important when selecting clothing and the venue to purchase that clothing?
3. What educational information is important to equip women to manage their post-surgery appearance?

**Related Purposes of the Three Studies**

The three studies are independent in nature, but build on each other (see Figure 4). The groundwork of these studies gives a description of the characteristics and treatment options of post-mastectomy women. Study One looks at how the demographics and treatment options relate to satisfaction with current clothing on the retail market. From this base study, investigation proceeds to how the atmospherics of the retail fitting rooms affect the venue selection for clothing procurement. Finally, the third study looks at the depth of education that is necessary in clothing selection, clothing modifications to meet the very specialized requirements that they are experiencing.

*Figure 4. Related Purposes of the Three Studies*
Study One examined the demographics of post-mastectomy women, the extent of surgery and other treatments for breast cancer that they experienced, and how that related to satisfaction with clothing on the retail market. Data were obtained through online surveys, and variables of interest were used, which included age and amount of resources expended on clothing. Data were further explored to combine these demographics with type and extent of surgery and then related to satisfaction with clothing on the current retail market.

Study Two continued to work with the data about demographics and treatment paths and further looked at the actual procurement of clothing and which fitting room atmospherics were crucial to the selection of clothing and venue selection for purchasing clothing.

Study Three used the demographic findings from Study One, looking through the framework of the differing demographics and treatment paths to review hospital discharge information needed for women who are post-mastectomy. Education concerns addressed included assistance in clothing selection and modification as well as training in clothing issues to expect throughout the treatment process and post-surgery stages.

The queries posed in this amalgamated study were intended to enlighten as well as provide a guide for the apparel industry for clothing modification that is specifically designed on behalf of post-mastectomy women. Findings also facilitate the atmospheric preparation of the retail environment to augment the selection of appropriate garments for appearance management of this special needs population. In addition, these studies provide a guide for the formulation of educational materials to prepare the woman who is post-mastectomy in identifying the differing needs and potential difficulties in modifying
clothing throughout the treatment process as well as post treatment. Identification of the differing needs of the various demographics ameliorates the difficulties encountered by the apparel industry as it addresses the varying apparel modifications needed for this target market of women. Fitting room atmospherics that meet the needs of women who are post-mastectomy will give a marketing tool for retail establishments to garner support from this large population of women.

**Significance**

There are several reasons why this research may be significant. Breast cancer is the second most common cancer in women, with skin cancer first. Current statistics from the American Cancer Society cites 192,370 new cases of breast cancer in 2009 (“Cancer Facts & Figures,” 2011). There are currently 2.5 million breast cancer survivors in the United States (“Cancer Facts & Figures,” 2011), which is a large target market that is very displeased that they cannot wear the same overall styling of clothing that was worn pre-surgery. Defining the target market will assist industry in meeting these needs in a financially feasible manner.

The practical significance of this study for retailers is that fitting room atmospherics can affect time and money that this consumer spends in the store. A pleasant environment in the fitting room increases the time consumers are willing to spend in that area and that generally translates to more money spent (Donovan, Rossiter, Marcoolyn, & Nesdale, 1994). The decision to purchase most often occurs in the fitting room (Wilson, 2007). The store environment can be used as a tool for market
differentiation and can be an important marketing strategy to this 2.5 million target market of women (Turley & Milliman, 2000).

An interdisciplinary approach to nursing discharge planning includes relating apparel to the post-surgery adaptation of women who are post-mastectomy and including exploration of functional and aesthetic apparel issues. The concern for nurses is addressing whatever is integral to the recovery process of women who are post-mastectomy.

The value of this research closely aligns with the priorities of the American Cancer Society, which is dedicated to helping persons who face cancer. This agency provides services and education to women experiencing breast cancer. The results of these studies will inform the apparel industry in meeting needs of women who are post-mastectomy and assist retailing in providing an environment conducive for clothing selection that can adequately conceal scars and meet image enhancement needs. Furthermore, the results will assist nursing in providing appropriate discharge information to assist women along the path from initial clothing needs post-surgery to information on clothing engineering and manipulation as tools for image enhancement to speed their recovery to the best possible functional level.

References


CHAPTER II

CLOTHING PROCUREMENT ISSUES OF WOMEN WHO ARE POST-MASTECTOMY

Breast cancer is the most common cancer found among women after skin cancer, accounting for one out of four diagnosed cancers, and is the second leading cause of cancer deaths among women in the United States (“Cancer Facts & Figures,” 2011). Current American Cancer Society statistics estimated 209,070 new cases of invasive breast cancer for 2010 (“Cancer Facts & Figures,” 2011). As of January 2006, there were approximately 2.5 million women currently living with a history of breast cancer (“Cancer Facts & Figures,” 2011). Breast cancer history includes a unique treatment path that may include surgery, chemotherapy, radiotherapy, and treatment with hormones. These various treatment paths can leave the body noticeably changed, resulting in struggles with clothing fit, clothing comfort, and clothing-related aesthetic concerns as these women have resumed their day-to-day lives (Jackson, 2004; Wassner, 1982). The various roles, and stages of life in which these roles are being assumed, will influence classification of clothing and style features post-mastectomy women are seeking (Feather, Kaiser, & Rucker, 1988). In addition, how roles and state of life relate to clothing may differ for those of varying ages, ethnicities, and socioeconomic status (SES) (Kaiser, 1985).

The physical impact of different breast cancer treatments lead to different body image and appearance concerns for women (Price, 1990). Treatment for breast cancer
includes both breast conserving and non-conserving modalities. Breast conserving treatment includes lumpectomy (the breast lump along with some normal tissue around it is removed) and partial mastectomy (more of the breast tissue is removed around the breast lump), followed by radiation and possible chemotherapy with its accompanying hair loss. Non-breast conserving treatment includes simple mastectomy (total breast is removed but does not include the lymph nodes under the arm or the muscle tissue beneath the breast itself), modified radical mastectomy (the entire breast is removed along with some of the lymph nodes under the arm), and radical mastectomy (entire breast, lymph nodes and chest wall muscles under the breast are removed—a rare procedure) with possible radiation and/or chemotherapy (“Surgery for Breast Cancer,” 2009). Post-mastectomy, women who have experienced non-breast conserving treatment may elect to continue with breast reconstruction where surgery rebuilds the breast from body tissue to about the same size and shape as it was prior to surgery and entails either transplanting tissue from the abdomen or upper back to create a breast mound. The remaining body configuration will vary by the type of surgery and closure technique that was used (“Breast Reconstruction,” 2009). Accordingly, the garment fitting issues will vary according to the incision performed and extent of surgery (Wilkerson, 1977). In addition to surgical treatment, adjuvant therapies including chemotherapy, hormone treatments, and radiation therapy, are procedures used to treat breast cancer that leave perceptible, if not conspicuous, changes within the body, including lymphedema with resultant swelling of the arm, loss of body heat regulation, reduced mobility of upper limbs and torso, skin sensitivities, and early onset menopause (Golshan & Smith, 2006; Sammarco, 2001). These altered physical conditions can then create a struggle with fit, comfort, and
aesthetic concerns related to apparel post-surgery as women who are post-mastectomy try to resume activities of daily living (Jackson, 2004; Wassner, 1982).

**Body Image and Appearance Concerns**

Losing a breast through surgery can also impact the feminine psyche and body image (Penman, Bloom, Fotopoulous, & Cook, 1986). The combined influence of cancer and mastectomy produces a measurable psychosocial morbidity among women treated surgically for breast cancer that includes impaired body image and diminished femininity (Kraus, 1999). In the classic definition by Schindler (1935), body image is defined as the component of self-concept that involves the picture of one’s own body which we form in our minds and is the way our body appears to ourselves. Self-concept uses body image as one of a number of components such as role performance, appearance, and sexual attractiveness to create an overall image. Price (1990) expanded the body image concept to include body presentation, how the body is literally presented to the outside environment, incorporating the way we dress and groom. Clothing can drastically affect the way a body presentation changes as we attempt to create a body ideal for the public to visually consume (Kaiser, 1985). All individuals engage in some form of appearance management on a day-to-day basis. This can be especially important for women that are attempting to resume their daily lives after breast cancer treatment.

Strategies in the psychosocial adaptation to cancer vary, but Carver et al. (1998) found that while women may experience little control over the outcome of their breast cancer, they can turn efforts toward things for which they do have control, including their life and appearance. When women who have had breast cancer turn their efforts toward
appearance management, they feel better about themselves. According to Paek’s study in 2001, clothing that is attractive and appropriate can be used to transform the body appearance and regain self-esteem. Bredin’s study in 1999 indicated that the participants could cope better if they could keep up appearances and conceal with clothing how they were different.

**Appearance Management with Clothing**

Clothing is part of a much larger context of appearance (Kaiser, 1997). Clothing selections are influenced by how we want other people to see us (Chowdhary & Ryan, 2003; Kaiser, 1997). Clothing can be an instrument in the beautification of self and a source of positive feelings toward self (Kaiser, 1997). An attitude of self-worth can help be restored by careful selection of clothing that emphasizes what is positive and camouflage the less desirable features that detract from the person’s appearance (Chowdhary & Ryan, 2003; Horn, 1981). For people with physical hindrances, such as mastectomy, appearance management may want to conceal the physical consequences by emphasizing other aspects of the self, and by hiding the visible effects of breast surgery (Feather et al., 1988; Kaiser, 1997; Wilkerson, 1977).

The appearance of the form of one’s body can be altered through the use of clothing articles with emphasis on fit, configurations of garment parts (for example, necklines and sleeves), and even the hand of fabric to visually create or re-create a body form (Chowdhary & Ryan, 2003; Kaiser, 1985). Wardrobe engineering begins when the garment style is selected. The elements of design that include line and color combine to create the visual and structural fit of the garment. Line can lengthen (vertical), shorten
(horizontal), or shorten and widen (diagonal) and thus work with figure variations to
disguise irregularities that include the area of breast amputation (Rasband & Liechty, 2006; Wilkerson, 1977). Accordingly, the selection of sleeves, necklines, bodices, and
overall fit becomes an important consideration in appearance management (Rasband &
Liechty, 2006; Wilkerson, 1977). At the time style selection takes place, women who are
post-mastectomy do not want their choices limited by their surgical scarring as they select
configurations of garments to enhance their figure variants and manage appearances using
similar techniques employed pre-surgery (Jackson, 2004).

**Relevant Past Research Related to Apparel and Post-Mastectomy Women**

Feather, along with various co-authors, in a series of seven articles published from
1988 to 1989 (Feather, Kaiser, & Rucker, 1988, 1989a, 1989b; Feather & Wainstock,
1989a, 1989b; Feather, Wainstock, & Pitts, 1989; Feather, Wainstock, Remington, &
Ringenberg, 1988) based on surveys of over 600 women who were post-mastectomy,
found a significant positive relationship existed between clothing importance, appearance
satisfaction, and self-esteem. Feather, Kaiser, and Rucker (1989a), Paek (2001), and
Jackson (2004) all found that after medical issues, the most critical issue after surgery
was clothing, followed by social issues. In these three studies by Feather et al., Paek, and
Jackson, women reported wanting to appear symmetrical, look “reasonable,” and use
appearance alteration to camouflage their surgeries. Attributes of clothing considered
problematic, but still desired to wear, included designs with bust emphasis, bare
shoulders, and sleeveless garments. From these studies, it appears that women who are
post-mastectomy have consistent concerns with finding clothing that meets their need for
fit, comfort, and appearance aesthetics. In addition to these concerns, a lack of ready-to-wear clothing that meets their requirements in specialty areas such as intimate garments; summer clothing, including swimwear; and evening wear was also reported (Jackson, 2004).

From the review of literature, it is clear that studies have addressed clothing in relation to psychosocial concerns, body image concerns, and physiological concerns, but they fail to consider the current number of women who are treated with breast conserving modalities and the larger number of women who are seeking breast reconstruction. Although there is information available about the desire for appealing clothing in this population, there is a lack of published results for variations of modifications needed based on extent of surgery (breast conserving vs. non-breast conserving) as well as those revisions needed for women who have elected reconstruction. Several previous studies have incorporated developing prototype designs for women who are post-mastectomy, but there is no documentation of any impact of these prototype designs on clothing being offered in retail. With changes in treatment modalities that result in a reconfiguration of scarring, clothing issues need to be re-evaluated. Current trends in clothing, as well as differing employment opportunities, have the potential to render different needs for this target market along with differing design solutions. Given the fact that existing prototype designs have not impacted what is available in retail and that previous studies have been based on a non-representative sample of women (Bredin, 1999; Chiweshe, Boll, Lambert, Cardinale, & Wong, 2005; Jackson, 2004; Paek, 2001), a reassessment of clothing based on a diverse population is needed to refine the design criteria for future prototype
development and forge a connection with industry for the production of adapted post-mastectomy apparel.

**Research Questions**

To fully understand the issues of clothing procurement for post-mastectomy women, it is vital to understand the reactions of women who are post-mastectomy to current clothing on the market based on different demographics and breast cancer treatment options and how the demographics and treatment interventions affect the desires for procurement of clothing. Thus, the questions that were addressed in this study were: Do selected demographic characteristics predict clothing procurement issues of women who are post-mastectomy? and Does the breast cancer treatment path predict clothing procurement issues of women who are post-mastectomy? Based on the information gleaned from the literature review, three hypotheses were proposed:

*Hypothesis I:* Age will be a significant consideration when predicting clothing procurement issues of women who are post-mastectomy.

*Hypothesis II:* Finances dedicated to clothing purchases will be a significant consideration when predicting clothing procurement issues of women who are post-mastectomy.

*Hypothesis III:* Treatment path (breast conserving vs. non-breast conserving surgery; use of reconstruction) will be a significant consideration when predicting clothing procurement issues of women who are post-mastectomy.
Methodology

Questionnaire

This study was completed using an online survey. Because the literature review did not yield an existing instrument available to garner needed information, an original instrument was created. The Mastectomy Attitude Scale developed through the research of Heyl (1977) provided the theoretical framework for question development on the importance of clothing and self-esteem issues. Factors on Heyl’s survey that addressed feminine appearance showed high reliability using Pearson product–moment coefficients ($r = +.73$). The survey contained 26 questions that included four major sections: demographic information, medical background, clothing, and education (see Appendix A).

The survey was piloted with four women who were post-mastectomy, and assistance was obtained in wording changes to ensure face validity. Institutional Review Board (IRB) approval was obtained (see Appendix B) and the survey was posted online for 15 months beginning in April 2010. Women between the ages of 20 and 99 who had surgery for the treatment of breast cancer were eligible to participate in the study.

Procedures

After the survey was developed, IRB approval obtained, and pilot testing completed, flyers were distributed to appropriate physician offices and cancer centers in Michigan, social media groups, and breast cancer support groups. Flyers directed potential participants to the Path of Pink website that had a link to the online survey. Path
of Pink is a clearing house for breast cancer information and procurement of fashion needs. Follow-up phone calls were made to breast cancer support groups explaining the study and inviting participation. An incentive for women to participate in the survey was offered through a drawing for $200, $100, and $50 in cash.

Measures

The independent variables in the study included selected demographic variables and treatment path for breast cancer. Independent variables were based on questions 1, 4, 7, and 9 in the online survey (see Appendix A). Demographic variables included in the study were age and the amount of money spent on clothing. Age was dichotomized into 50 years of age and under or above 50 years of age. Fifty years of age was selected because of literature that has existed since the 1980s that states women over 50 years of age are a continually growing target market that needs to have their retail needs addressed through implemented growth strategies (Alsop, 1984; Philip, Haynes, & Helms, 1992). Money spent on clothing was dichotomized into under $500 and $500 or more spent on clothing annually. The Bureau of Labor Statistics figures cited an average of $573 for the amount of money per person spent annually on apparel and footwear for people in a middle income bracket (“How Much Do People Spend on Clothes,” 2009). This average amount was rounded to $500, since footwear is not relevant to this study, and dichotomized to under $500 (less than the average amount) and over $500 (more than the average amount) spent on apparel. Treatment path included extent of surgery (dichotomized into breast conserving or non-breast conserving) and use of reconstruction (reconstruction/no reconstruction) after mastectomy.
Dependent variables were based on questions 15 and 16 in the online survey. Outcome variables included desire for pre-surgery styling (yes/no), ability to procure clothing to conceal scars without adjusting (yes/no), need for adjustment of preferred styling (yes/no) and magnitude of adjustment needed for desired styles to conceal scars (categorized as: major—more than 1-2 inches of change, and minor—1-2 inches of change or less).

Analysis

Data from the survey were analyzed using SPSS, version 18.0. The descriptive analysis included generating frequencies of independent and dependent variables. Log linear regression was used to assess (a) if age is associated with issues of clothing procurement, (b) if amount of money spent on clothing is associated with procurement of clothing, (c) if having breast conserving or non-breast conserving surgery is associated with issues of clothing procurement, and (d) if having reconstructive breast surgery or no breast reconstructive surgery is associated with issues of clothing procurement. Log linear regression can be used to estimate the effect of more than one categorical predictor (independent variables) on an outcome or event occurring that is categorical in nature (dependent variable) (Field, 2005). Models were created for each of the outcome variables (desire for pre-surgery styling, ability to procure clothing to conceal scars without adjusting, need for adjustment of preferred styling and magnitude of adjustment needed) against the independent variables of age, money spent on clothing, and treatment path. Utilizing a generalized linear model in which the four-way interaction term among the four predictors was included (a saturated model), the response was modeled using
binomial distribution to examine associations between categorical variables. Where cells had inadequate expected cell sizes, Fisher’s exact test results were reported. The 0.05 level of significance was established a priori for statistical significance.

**Results**

Results from the survey are based on 87 participants. Table 1 includes the results of the sample frequencies. The study had 88.5% of participants reported as non-Hispanic white, 73.6% above 50 years of age, and 60.9% spending over $500 a year on clothing. Table 2 includes frequencies of outcome variables. Most participants (86.2%) preferred to wear the same style clothing as before surgery, and about half the participants were able to purchase some type of clothing to conceal scars without changing the clothing. Treatment path of participants included a total of 9.2% having breast conserving surgery (lumpectomy or partial mastectomy), 90.8% having non-breast conserving surgery (modified radical or radical mastectomy), and 44.8% having breast reconstruction.

**Findings**

Analysis was directed toward research questions with the intent of addressing if selected demographic characteristics of age and finances spent on clothing predict clothing procurement issues of women who are post-mastectomy. In addition, findings focused on the ability of treatment path to predict the procurement issues of women who are post-mastectomy. Overall, 86.2% of participants reported that they desired to wear the same styles of clothing as they wore pre-surgery. After utilizing log linear regression that included the four-way interaction term among the four predictors (a saturated model), the
responses were modeled using binomial distribution. Based on nested model deviance test (testing the multi-level model), the only effect that could be retained was a lower level interaction including only reconstruction (see Table 3). When residuals were checked, there were no outliers or influential points. With the retention of one predictor variable, further statistical analysis was done to measure the strength of association. Cramer’s V was then noted to be 0.34, a medium association.

Table 1

*Selected Characteristics of Study Population*

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<th>Characteristic</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age Range</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below 50 years</td>
<td>23</td>
<td>26.4</td>
</tr>
<tr>
<td>Above 50 years</td>
<td>64</td>
<td>73.6</td>
</tr>
<tr>
<td><strong>Clothing Expenditures</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Under $500</td>
<td>34</td>
<td>39.1</td>
</tr>
<tr>
<td>Over $500</td>
<td>53</td>
<td>60.9</td>
</tr>
<tr>
<td><strong>Treatment Path</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breast Conserving Surgery</td>
<td>7</td>
<td>9.2</td>
</tr>
<tr>
<td>Non-Breast Conserving Surgery</td>
<td>80</td>
<td>90.8</td>
</tr>
<tr>
<td>Reconstruction after Mastectomy</td>
<td>39</td>
<td>44.8</td>
</tr>
<tr>
<td>No Reconstruction after Mastectomy</td>
<td>48</td>
<td>55.2</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Hispanic White</td>
<td>77</td>
<td>88.5</td>
</tr>
<tr>
<td>Non-Hispanic Black or African American</td>
<td>5</td>
<td>5.7</td>
</tr>
<tr>
<td>Hispanic</td>
<td>4</td>
<td>4.6</td>
</tr>
<tr>
<td>American-Indian/Alaskan Native</td>
<td>1</td>
<td>1.1</td>
</tr>
</tbody>
</table>
Table 2

*Frequencies of Responses of Women Who Are Post-Mastectomy to Outcome Variables*

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>N (%)</th>
<th>N (%)</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Procurement of Garments</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Desire same styling as pre-surgery</td>
<td>75 (86.2)</td>
<td>12 (13.8)</td>
<td></td>
</tr>
<tr>
<td>Clothes available to purchase to conceal scars without changing I am happy with the fit without changing</td>
<td>40 (46.0)</td>
<td>47 (54.0)</td>
<td></td>
</tr>
<tr>
<td><strong>Procurement of Garments</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Styles I want to buy need to be altered to conceal scars</td>
<td>47 (54.0)</td>
<td>40 (46.0)</td>
<td></td>
</tr>
<tr>
<td><strong>Past Purchase of Garments</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Changes that need to occur on styles I want to buy to conceal scars are major/minor</td>
<td>20 (23.0)</td>
<td>38 (43.7)</td>
<td>29 (33.3)</td>
</tr>
</tbody>
</table>

Table 3

*Desire to Wear Same Styles as Pre-surgery by Reconstruction*

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Yes N (%)</th>
<th>No N (%)</th>
<th>X²</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desire to Wear Same Styles</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reconstruction</td>
<td>39 (100.0)</td>
<td>0 (0)</td>
<td>10.23</td>
<td>&lt; 0.01*</td>
</tr>
<tr>
<td>No Reconstruction</td>
<td>37 (77.1)</td>
<td>11 (22.9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Participants</td>
<td>67 (87.3)</td>
<td>11 (12.6)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. Phi Coefficient 0.3429; Contingency Coefficient 0.3244; Cramer’s V 0.3429
Odds Ratio 11.6
*Fisher’s exact test
In the entire sample, 46.0% of participants were able to buy clothes that concealed scars. Log linear regression was again used and the response was modeled using binomial distribution. Then based on the nested model deviance test, the simplest model included only two predictors: age and treatment. After checking the residuals, case number 43 was noted to be an outlier. After excluding case 43 (data were checked to be sure it was accurately represented in the data file), the model was repeated starting from the most complicated saturated model. The simplest model became one that included only treatment as a predictor (breast conserving vs. non-breast conserving surgery) and was significant ($p = 0.0298$, Fisher’s exact test) (see Table 4). When residuals were checked again, there were no outliers or influential points. With the retention of one predictor variable, further statistical analysis was done to measure the strength of association. Cramer’s V was then noted to be 0.34, a medium association. Frequencies did show more women under 50 years of age finding clothes that conceal scars available on the market than women over 50 years of age (39% of women under 50 years were not able to find clothes to purchase that concealed scars as opposed to 59% of women 50 years of age and older not being able to find clothes to conceal scars without altering them); however, this difference was not statistically significant ($p = 0.1461$, Fisher’s exact test).

Forty-seven percent of participants indicated that they needed to adjust styles that they preferred to wear in order for those styles to conceal their surgical scars. However, this was not significantly associated with the predictor variables of age, amount of money spent on clothing, or treatment path (breast conserving/non-breast conserving surgery and reconstruction/no reconstruction). Again, log linear regression was done and the response was modeled using binomial distribution. Based on a nested model deviance test, the
simplest model was one of a three-way interaction of predictors age, money, and treatment ($p = 0.034$). However, when residuals were checked with this model, case number 40 was an influential point and an outlier. When case 40 was removed and modeling was again started from the most complicated model, the simplest models included age and treatment ($p = 0.031$) as well as money and treatment ($p = 0.01$). However, when residuals were checked, case numbers 43 and 50 were found to both be influential points and outliers. With the exclusion of these two cases, the model was started again from the most complicated, and no predictors were found to be significantly associated with the need for adjustment of preferred styling.

Table 4

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Yes N (%)</th>
<th>No N (%)</th>
<th>$X^2$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Happy with Fit of Clothing on the Market—It Is Able to Conceal Scars by Treatment (Breast Conserving vs. Non-breast Conserving)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breast-Conserving Surgery</td>
<td>0 (0.0)</td>
<td>7 (100.0)</td>
<td>5.35(1)</td>
<td>&lt; 0.0298*</td>
</tr>
<tr>
<td>Non-Breast Conserving Surgery</td>
<td>39 (48.8)</td>
<td>41 (51.2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td>39 (44.8)</td>
<td>48 (55.1)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Phi Coefficient –0.2495; Contingency Coefficient 0.2420; Cramer’s V –0.2495
Odds Ratio 5.7
*Fisher’s Exact Test

When considering the amount of alteration needed, 43.7% of participants reported needing a minor amount of adjustment on clothing to conceal scars. For the 92% of participants who had non-breast conserving surgery, 45% needed minor changes to
clothing to conceal scars, and 22.5% needed major changes to clothing to conceal scars. For those who had breast reconstruction (which is 48.8% of women who had non-breast conserving surgery), 56.4% reported needed minor changes, whereas 12.8% needed major changes in clothing to conceal scars. Of those women who had breast conserving surgery, 28.5% reported needing minor adjustment to clothing for concealment of scars and 28.5% reported needing major adjustment for scar concealment. Sixty-eight percent of women who had non-breast conserving surgery needed minor adjustments for concealment of scars. Again, analysis was completed using log linear regression and the response was modeled using binomial distribution. Then, based on nested model deviance test, the simplest model was one with a three-way interaction of predictors age, money, and treatment \((p = 0.05)\). However, when residuals were checked with this model, case number 39 was an influential point and an outlier. With case number 39 excluded, the model was started from the most complicated model again. The simplest model was the same three-way interaction, but case numbers 43 and 50 were found to have influential points. When these two cases were further excluded, the model was repeated starting from the most complicated model again. This time, no predictors were found to be significantly associated with the response variable of magnitude of adjustment for preferred styling.

**Discussion**

Findings indicated the desire to wear the same pre-surgery styling has no relationship to age and money spent on clothing but was significantly associated with the use of reconstructive surgery. Thus, Hypotheses I and II were rejected since age and
finances were not significantly associated with clothing procurement issues. It was not surprising that reconstruction was strongly associated with the desire to wear pre-surgery styling, since women who have reconstruction attach more importance to clothing than women who do not have reconstruction (Feather et al., 1989; Schover, 1991). The ability to find clothing on the retail market that conceals scars was not significantly associated with age or money spent on clothing but was significantly associated with treatment path, specifically the use of breast conserving or non-breast conserving surgical paths. Thus, Hypothesis III was accepted, that treatment path would be a significant consideration when predicting clothing procurement issues of women who are post-mastectomy. This is consistent with potential placement of surgical incisions related to extent of surgery in each treatment path. Fifty-nine percent of women over 50 years of age reported not finding clothing that conceals scars. Although this was not found to be statistically significant compared to women less than 50 years of age (39% reported not finding clothing that conceals scars), this is a significant number of women that could be addressed by industry. Treatment path was not significantly associated with the need for alterations for desired styles. However, 45% of women over 50 and 39% of women 50 or younger cited only minor adjustments needed on ready-to-wear clothing to conceal scars, for instance, one to two inches of change in the neckline.

Minor changes to selected styles have the potential to be cost-effective and to meet the needs of a large target market of women. In general, access to fashion trends is available across retail to both high SES and low SES target markets, since fashion is produced for high target markets and quickly copied for mainstream fashion, including lower price points (considered a “trickle-down effect”). The interest in this study
expressed by design houses in New York should allow opportunities to implement design adaptation strategies for women who are post-mastectomy. The trickle-down effect from high-end fashion will give the opportunity for fashion access across target markets.

**Strengths and Limitations**

The strength of this study was in addressing a gap in the literature of assessment of clothing needs of women post-mastectomy by age, money spent on clothing, and treatment path, including consideration of scarring issues related to breast reconstruction. Industry has not recognized this target market and the need to refine the design criteria. The information in this study identified women who are post-mastectomy as a large target market whose needs for adapted versions of clothing are financially feasible to address.

Potential limitations of the study were that social media and use of an online survey may have limited the access to low SES and elderly populations. Since women were recruited through local cancer centers in Michigan, Tennessee, and Texas, there was not random selection of participants. White non-Hispanic women who are post-mastectomy were over-represented in this study. In addition, the smaller sample size limited the ability to conduct stratified analyses to examine specific subgroups in this population. The categorical nature of the response variables limited the analysis available for this study.

**Implications**

Breast cancer survivors are a large target market and should not be ignored by industry. There has been a lack of understanding for what this target market desires and
the amount of modification needed that could be easily addressed with same styling with minor, cost-effective modifications. The apparel industry must address the growing market of women over 50, and there is a large opportunity to specifically address the needs of this growing target market of post-mastectomy women (Moschis, 2003). Women over 50 are less satisfied with clothing available and this increasing population of women should not be ignored by industry. Women who are post-mastectomy have felt as if their choices in clothing are very limited and that they have been unable to meet the standards they had set for self-concept and body-image. Industry has the opportunity to address this need.

The practice implications from this study include disseminating the results to the apparel industry in order to address the potential minor clothing adaptations needed by breast cancer survivors to conceal post-surgery scars. Since this target market is 2.5 million strong (“Cancer Facts & Figures,” 2011), it is large enough to work with adjusted clothing and same styling as a cost-effective solution for industry to respond to this need. The growing market of women over 50 will have even more breast cancer survivors that desire trend-setting clothing that will conceal scars.

Future studies could be broadened to include a larger nationally representative sample. Once the general target market is defined with the parameters of change needed, examination of specific designs should be conducted with focus groups. Potential adaptation information for styles could be garnered and information continued to be related to industry in age-related target markets.
References


CHAPTER III

IMPORTANCE OF FITTING ROOM ATMOSPHERICS FOR WOMEN WHO ARE POST-MASTECTOMY: WHICH ATMOSPHERICS INFLUENCE SELECTION OF A RETAIL SETTING FOR CLOTHING PURCHASES

Serving the consumer effectively in the 21st century in a manner that translates into customer loyalty is essential for retailers to maintain excellent market performance. The construct of customer loyalty increased in prominence in the 1990s and continues to be critical (Ghosh, Tripathi, & Kumar, 2010; Parasuraman & Grewal, 2000). With consumer spending at a decline, it is even more important for retailers to continue to garner customer loyalty by responding to the demands of consumers (Ghosh et al., 2010). In order to solicit initial consumer support, department store retailers are attempting to implement unique environments to attract and retain patrons in order to drive profitability for the company (Amato-McCoy, 2007). Addressing target segments of consumers is crucial for differentiating products and bolstering the inclination to shop (Taylor & Cosenza, 2002). The fashion retail industry has a history of being youth-focused but is seeing the need to expand focus to generational markets (“Retail Clothing Business Plan,” 2011). Clothing retailers address different segments of the population through stores such as Gap, targeting a younger demographic, to Chico’s, focusing on the middle-aged woman. However, there is a growing population of patrons who are older and this segment of shoppers is expected to grow significantly. The sector that has emerged resulted from a surge of births that occurred between 1946 and 1964 and are termed baby
Some estimates predict that one in three persons will be over the age of 50 by the year 2020 (Kaufman-Scarborough, 1998). Males and females that are 50 and older control 60% of disposable income in North America (Underhill, 2010). The Gap retail chain estimates that $41 billion of apparel sales will be realized by boomer women, with $27 billion of that spending on purchases that are made for themselves (Merrick, 2005). The “face” of women in this large market, who are close to or over 50 years of age, includes Sarah Jessica Parker, Madeleine Albright, Anna Wintour, and Oprah Winfrey. These four women represent the diversity of women of appearance and apparel needs in this large target market (Turner, 2007). This market of women are interested in classic clothing, elegant clothing, as well as clothing that is trendy and innovative (Turner, 2007). These older women are not a one-size-fits-all and they shop at a vast array of retail establishments including department stores, discount chains, and high-end specialty shops (Underhill, 2010).

Included in these groups of women who are being targeted by the apparel industry is the population of women who are post-mastectomy. There are a total of 2.5 million women who are post-mastectomy, with 70% of the women over 50 years of age, approximately 23% between 40 and 50 years of age, and the remaining 7% younger than 40 years of age (“Cancer Facts & Figures,” 2011; Cornforth, 2009). These 2.5 million women have specific needs for clothing procurement (Jackson, 2004). Apparel consumer models need to be expanded in order to include the retail concerns of these 2.5 million women who are breast cancer survivors. One particularly important retail concern of women who are post-mastectomy is fitting room features that allow for selection of
appropriate clothing for scar concealment and image enhancement (helping women feel good about themselves and maintain their self-esteem).

The purpose of this study was to identify key features in retail store fitting rooms that are of concern to women who are post-mastectomy and are germane to the process of acquiring apparel that conceal scars. The focus of the research is the association between the treatment path of breast cancer women and the importance of fitting room features as it relates to retailer selection for the procurement of clothing. The research represented by this manuscript is exploratory in nature, recognizing the challenges of women who are post-mastectomy in their search to find a shopping environment that satisfactorily meets their needs. To fully comprehend the significance of clothing procurement issues for women who are post-mastectomy, it is vital to understand which attributes of the fitting room setting these women feel directly affect the selection of retail enterprises from which to purchase their clothing.

Since the decision to purchase apparel is more often than not made in the fitting room, retailers should find it important to understand the fitting room challenges faced by women who are post-mastectomy in the procurement of clothing. Based on concerns with fitting rooms expressed in a study by Jackson (2004), the research in this study focused on space that accommodates limited range of motion post-surgery, subdued lighting that dulls altered skin surfaces, mirror placement for adequate viewing of clothing from all angles, room temperature that meets thermo-comfort needs, privacy, and assistance from knowledgeable and sensitive staff.
Background and Significance

Breast cancer is the second most common cancer found among women, second only to skin cancer (“Cancer Facts & Figures,” 2011). Accounting for one out of four diagnosed cancers, breast cancer is the second leading cause of cancer deaths among women in the United States (“Cancer Facts & Figures,” 2011). Current American Cancer Society statistics estimated 209,070 new cases of invasive breast cancer for 2010 (“Cancer Facts & Figures,” 2011). As of January 2006, there were approximately 2.5 million women currently living with a history of breast cancer (“Cancer Facts & Figures,” 2011). This breast cancer history requires a unique treatment path that may include surgery, chemotherapy, radiotherapy, or treatment with hormones. These various treatment paths can leave the body noticeably changed, resulting in struggles with clothing fit, clothing comfort, and aesthetic concerns that are related to clothing as these women resume their day-to-day lives (Jackson, 2004; Wassner, 1982). The various roles, and stages of life in which these roles are assumed, influence the classification of clothing and diverse style features the post-mastectomy women is seeking (Feather, Kaiser, & Rucker, 1988; Kaiser, 1985).

The physical impact of different breast cancer treatments lead to a variety of body image and appearance concerns for women (Price, 1990). Treatment for breast cancer includes both breast conserving and non-conserving modalities. Breast conserving treatment includes lumpectomy (the breast lump along with some normal tissue around it is removed) and partial mastectomy (more of the breast tissue is removed around the breast lump), followed by radiation and possible chemotherapy with its accompanying
hair loss. Non-breast conserving treatment includes simple mastectomy (total breast is removed but does not include the lymph nodes under the arm or the muscle tissue beneath the breast itself), modified radical mastectomy (the entire breast is removed along with some of the lymph nodes under the arm), and radical mastectomy (the entire breast, lymph nodes and chest wall muscles under the breast are removed—a rare procedure) with possible radiation and/or chemotherapy ("Surgery for Breast Cancer," 2009). Post-mastectomy, women who have experienced non-breast conserving treatment may elect to continue with breast reconstruction surgery to rebuild the breast from body tissue. The breast mound is created to be approximately the same size and shape as it was prior to surgery. The surgery entails transplanting tissue from either the abdomen or upper back. The remaining body configuration will vary by the type of surgery and closure technique that is used ("Breast Reconstruction," 2009). Accordingly, the garment fitting issues will vary according to the incision performed and extent of surgery, first noted in a research study by Wilkerson (1977). In addition to surgical treatment for breast cancer, adjuvant therapies include chemotherapy, hormone treatments, and radiation therapy. These procedures used to treat breast cancer leave perceptible, if not conspicuous, changes within the body, including lymphedema with resultant swelling of the arm, loss of body heat regulation, reduced mobility of upper limbs and torso, skin sensitivities, and early onset menopause (Golshan & Smith, 2006; Sammarco, 2001). These altered physical conditions can then create a struggle with fit and comfort as well as aesthetic concerns related to apparel post-surgery as women who are post-mastectomy attempt to resume activities of daily living (Jackson, 2004; Wassner, 1982).
As women who have breast cancer encounter each regime of treatment, they face new and unique appearance issues to be addressed with clothing. In order to make the most of their appearance using apparel choices, they desire an aesthetically-pleasing approach to locating clothing that meets their various needs throughout the treatment process. As Jackson (2004) interviewed breast cancer survivors, areas of concern cited by one or more of the participants included concealment of scars, thermo-comfort needs that reflect fluctuating body temperatures, and working with altered skin surfaces that create a dulled effect on skin surfaces, establishing a need for subdued lighting. In addition, several survivors mentioned a need for sensitive, knowledgeable staff in meeting intimate apparel needs for their altered body silhouette. Limited range of motion was also an issue for one survivor who was struggling with lymphedema post-surgery; having had invasive surgery, she required ample space in the fitting room setting for donning and doffing of apparel. Strategic mirror placement in the fitting room where clothing can be evaluated privately was also cited as an important concern.

**Store Atmosphere**

The environment created by a store can influence a consumer’s decision to visit that store (Sharma & Stafford, 2000) and can guide the assumptions about the quality of merchandise from these environmental cues (Lam, 2001; Sharma & Stafford 2000; Zeithaml, 1988). In 1973, Kotler was the first to define and use the term *atmospherics*, which was defined as including the intentional control and structuring of environmental cues. Bitner (1992) expanded this concept to include whether a business succeeds or fails is based on atmospheric planning. The atmospherics of the store, such as the background
décor, can trigger a judgment by the consumer about quality of merchandise the store carries as well as the perceived fairness of the price of the merchandise (Babin, Chebat, & Michon, 2004). Ann Taylor stores are an example of keen attention to detail as they seek to create a home walk-in closet feel with their new store design. The new environment includes a large chandelier in the store entrance, 6 sources of light in the fitting rooms (with three types of bulbs for optimum complimentary effect), and trendy leather benches in the communal area of the fitting rooms—all to create a positive halo of trying on clothing at home (Holmes & Smith, 2011). A pleasant retail environment can be a pertinent marketing goal, since negative feelings that are experienced during shopping can abbreviate the trip and ultimately result in leaving the store without making a purchase (d’Astous, 2000). The store attributes relevant to the store selection process include the merchandise mix, the services offered, and the atmospherics of the store. Meeting the expectations of the shoppers will motivate them toward decisions relating to store patronage (Ghosh et al., 2010).

**Fitting Rooms**

Baker, in 1986, (Baker, Levy, & Grewal, 1992) developed a typology that divided the physical environment into three elements comprised of design factors, which are characteristics that the consumer can directly perceive; ambient factors, which are the background features that affect human senses but may not necessarily be consciously perceived; and social factors, which consist of people in the environment. Ambient factors for the fitting room would include temperature and cleanliness; design factors would include the space in the fitting room, general layout of the room itself and in
relation to the store in general; aesthetic features would include décor of the fitting room, lighting and mirror placement; and social factors would include sensitive personnel and space for family and friends to wait (Baker et al., 1992; d’Astous, 2000).

Retail dressing room experiences play a key role in the decision to purchase. Paco Underhill (2009), in his best-selling book Why We Buy: The Science of Shopping, details the importance of dressing room atmospherics. Underhill sees the fitting room space as more important than the floor space of the store, and that it is not a convenience for any consumer, but rather is a selling tool that exceeds the impact of displays, windows, or advertising. Customers who try on garments have a conversion-to-purchase rate of 67% as opposed to 10% for consumers who do not use the fitting rooms to try on garments prior to purchase (Holmes & Smith, 2011). One third of shopping time in an apparel store is spent in the fitting room (Holmes & Smith, 2011). It is in the dressing room that consumers assess their appearance along with the clothing item in relation to design color and texture, finally deciding whether or not they will make the purchase (Baumstarck & Park, 2010).

Poor atmospherics can result in lost sales due to its negative impact on the shopping experience (Baumstarck & Park, 2010). Many fitting rooms are small and ill-kept with a dreary look caused from discarded clothing; dirty, stained carpet; poor lighting; and ill-placed mirrors. In addition, the temperature is often uncomfortably chilly, making it difficult to try on intimate apparel (Underhill, 2009; Wilson, 2007a). The atmosphere of the retail space can have more influence than the product that is being considered for purchase (Summers & Hebert, 2001; Underhill, 2009). The time and money that a consumer spends in a store is related to the emotional response that is
induced by the environment of the store, and that includes the environment of the fitting rooms. If there is a positive response to the environment, then more time and money is spent in the store (Donovan, Rossiter, Marcoelyn, & Nesdale, 1994; Vieira, 2010).

Budget apparel shops, all the way to more upscale boutiques, are realizing that by improving the ambiance of their dressing rooms with better lighting and more upgraded elements, they can make or break their sales. However, some retailers, when trying to cut the costs of new construction or renovation, will scrutinize the fitting rooms to trim their budgets, failing to consider that the dressing room can make or break the sale factor (“Fitting Designs,” 1999; Underhill, 2009). Women want to feel good about themselves, so when they try on clothing, they desire a full view in the mirror and lighting that flatters and softens shadows. Fitting rooms need to echo what the shopper feels about the quality of the store and the merchandise offered (“Fitting Designs,” 1999; “Store Amenities/Fitting Rooms,” 2001; Underhill, 2009).

Wolford, an international clothing store with headquarters in Bregenz, Austria, specializes in a luxury clothing market. As of 2010, Wolford had 22 stores in the United States with a plan to expand to 45 (“How It All Began,” 2011). Wolford’s Manhattan store prototype offers fitting rooms with black-pigmented walls separating the dressing room area, floor-to-ceiling mirrors on four walls of each dressing room for maximum viewing of each apparel item, lighting that can be controlled by the shopper in the fitting room, and metallic gold drapes over the entry into the fitting room for a sensuous, provocative element (“Fitting Designs,” 1999). Christopher & Banks, a specialty women’s apparel retailer serving the baby boomer woman and her desire for style, gives detailed attention to their fitting room areas with what they call a hospitality area just outside the
fitting rooms where other family members or friends can wait and be comfortable. In this same area, they offer Internet access for checking online availability of other merchandise that the consumer may use either themselves or with the help of a retail associate (Wilson, 2009). All these features are used to reflect the image the company wants to project for the store and ways they want to enhance the shopping experience (Cheng, 2008; “Fitting Designs,” 1999). Gap retail chain stores want to create elements that encourage the shopper to spend more time in their stores, and they see fitting rooms as the center of that endeavor. When Gap designed their Forth & Towne Stores in 2005, they placed the fitting rooms in the center of the store to make a gathering place for women. The goal of this design was better customer service and an easier setting for obtaining opinions from the family or friends involved in the garment selection process. While Forth & Towne was a short-lived venture for Gap, they had positive reactions to their store atmospherics (Merrick, 2005).

**Lighting in fitting rooms.** Consumers who purchase apparel are concerned with color selection, and lighting has a great impact on the ability of the consumer to evaluate the purchase (“Shoppers Notice Lighting,” 2007). According to a study by Leo J. Shapiro & Associates, 12% of shoppers in apparel stores felt the light is too bright, 21% felt the light is too dim, and 35% complained about the color of items looking different at home than in the store (“Shoppers Notice Lighting,” 2007). In a lighting roundtable sponsored by *Chain Store Age*, fitting room lighting was a chief concern of fashion retailers participating in the discussion. Concerns expressed included color rendition, the right balance of light without heating up the space, and rendering the colors through light to appear natural. Techniques such as using lights with the right color index on the sides of
the mirrors was noted to create fewer shadows than overhead lighting (Amiel, 2007; “Shedding Light on Fitting Rooms,” 1998).

Lighting can directly affect the decision to purchase. The use of unflattering fluorescent lighting by itself can cause such a negative reaction to clothing brought into the fitting room that the consumer wonders why the garment was selected to try on (Amiel, 2007). The right lighting for a fitting room should be addressed first and foremost, yet everyone has a different viewpoint for what that lighting should be. Fitting rooms that are most successful in terms of lighting, with clothing colors beautifully rendered, are rooms that are equipped with warm fluorescent and white halogen lighting combination to create direct and ambient lighting (Amiel, 2007). Liz Claiborne developed a strategy that included incandescent lighting around the mirrors and fluorescent lighting overhead (“Shedding Light,” 1998).

Fitting rooms need to allow for daylight as well as lighting created in indoor scenarios. There are sources that have come a long way in providing lighting that mimics daylight color or indoor color. Lighting solutions are available such as the Salon fixture developed by Celebrity Lighting in Las Vegas, which has a flip switch available to the shopper to change lighting from indoor to outdoor and vice versa (Wilson, 2003). Consumers are thus allowed the opportunity of viewing clothing in the way it will be rendered in the settings in which it will be worn. This is especially important for the post-mastectomy woman who has altered skin surfaces that will be rendered very differently in daylight or indoor lighting settings.

**Mirror placement in fitting rooms.** When a customer decides to purchase an item, this conclusion is based on multiple factors that must be gathered and assessed
including style features, size, color, fit of the garment, and general overall appearance when the shopper tries on the garment in the fitting room in an attempt to see if the garment complements the shopper. Evaluation of fit and general appearance occurs in front of the fitting room mirror (Chu, Dallal, Walendowski & Begole, 2010; Wilson, 2007b).

Single mirrors are a common complaint because the consumer cannot analyze the fit of the garment from all the angles with which the wearer will be viewed (Osborn, 2000; Wilson, 2007b). Multiple mirrors that are placed for strategic multiple-angle viewing allow the shopper to properly analyze the garment. Multi-angle mirrors that are available are often located in communal areas where the shopper must leave the sanctity of the fitting room to assess the fit and appearance of the garment from all angles. For women who are post-mastectomy, multi-angled mirrors are necessities to assess scar concealment with their apparel selections. Some fitting rooms are void of any mirrors, which also requires the shopper to go to communal areas to assess the garment (Amiel, 2007; Dodes, 2007; Schwadel, 1988). Assessing scars is a very intimate need of the post-mastectomy woman requiring the privacy of the fitting room.

A 2007 study by Leo J. Shapiro & Associates and *Chain Store Age* suggested that adding more appropriate mirrors or a three-way mirror in the dressing room areas would make the shopping experience significantly more appealing (“The Perfect Fit,” 2007). In addition, proper mirror placement allows the shopper to quickly analyze potential purchases. This creates an environment that can match the time allotted for the shopping excursion, and the time-pressed consumer will have an increased likelihood of continued patronage of that retailer (Lindquist & Kaufman-Scarborough, 2004).
Shoppers also must contend with mirrors that have been altered in the way the reflection is executed, thereby rendering a different image than they will observe outside the store setting. Mirrors are sometimes given a color-cast to create a “healthy” look that no longer remains when viewed from mirrors in other settings. Another alteration is mirrors that have been engineered to give the consumer a more slender appearance (Amiel, 2007).

Macy’s has instituted what they are terming Magic Fitting Rooms in their flagship store in New York City. These rooms feature a mirror that is large scale and has an updated feature of multi-touch technology. Using the concept of “social retailing,” this technology allows the shopper to send an image of themselves to a friend using email or social networking sites in order to obtain an opinion from family or friends (“LBi Brings ‘Fitting Room Magic’ to Macy’s,” 2010; Wilson, 2007b). While targeted to younger retailers (Wilson, 2007b), this technology would allow women of any age to consult their tailors regarding necessary modifications, an often important consideration for the woman who is post-mastectomy.

**Privacy in fitting rooms.** A study completed in 2007 by Leo J. Shapiro & Associates found that 86% of women in their survey (of 813 consumers age 16 or older) preferred fitting rooms with doors and mirrors inside rather than outside the fitting room, to allow for a private rather than communal experience for apparel evaluation (“The Perfect Fit,” 2007). The fitting room experience can be humiliating when purchases such items as swimwear, and women prefer to evaluate these items in the privacy of the fitting room (d’Astous, 2000; Holmes & Smith, 2011; Schwadel, 1988). For the post-mastectomy woman, who is evaluating the concealment of scars and irregularity of
silhouette from breast cancer surgery, privacy in the fitting room influences her willingness to shop in a brick-and-mortar setting rather online or in apparel catalogs (Jackson, 2004).

**Temperature control in fitting rooms.** As shoppers remove garments to try on potential purchases, cold dressing rooms can translate into uncomfortable shoppers and potentially abbreviated visits to a retail establishment (Wilson, 2007a). In the opposite case, poorly selected lighting can heat the dressing room to a level that discourages the shopper from trying on apparel. Achieving a balance in temperature can be a challenge, but areas such as light selection, with heat radiation being a strong consideration, can facilitate a zone of comfort for apparel selection (“Shedding Light,” 1998). Dressing rooms that have either temperature control available to the consumer or a moderate climate are appealing to the woman who is experiencing difficulty with thermo-comfort due to treatment for cancer. This issue with thermo-comfort extends into other types of cancer as well where treatment has affected hormone regulation.

**Space.** In 2006, Kohl’s debuted what they considered to be an innovative store concept. The primary design objects in this concept centered on comfort, convenience, and style. One of the biggest changes that Kohl’s made in this store concept was their fitting rooms. Tastefully decorated, their fitting rooms featured comfortable and oversized rooms. The emphasis was on the accommodation of more than one person, senior citizens in wheelchairs, items such as strollers, and the limited range of motion needs of the post-mastectomy woman (Osborn, 2000; Troy, 2006; Wilson, 2007a). J.C. Penney included new lounge areas with flat screen televisions in their re-designs that accommodated waiting family or friends in attempt to add an element of fun to trying on clothing
(Wilson, 2009). When consumers are given more space in the fitting rooms, it makes the experience of trying on clothing more positive in the place where the final decision to purchase is made (Osborn, 2000).

**Sensitive staff.** Store atmospherics that are deemed positive can influence how consumers view the sales staff: a nicer environment appears to augment the credibility of the message from the sales associates (Sharma & Stafford, 2000). Research in retail shows that having appropriate staff work with consumers will enhance sales and directly impact revenue (Batchelor, 2001). Some retailers are preparing clerks to assist consumers in techniques for using clothing engineering to camouflage figure challenges, i.e., big thighs, bulging bellies, small bosoms, etc. (Holmes & Smith, 2011; Schwadel, 1988; Underhill, 2010). This training could also serve the post-mastectomy woman on intimate apparel selection as well as the concealment of scars.

**Store Patronage**

The bottom line for retail is sales (Turley & Milliman, 2000). Turley and Milliman (2000) reviewed 60 empirical studies in order to compare and contrast knowledge gained regarding atmospheric effects. Of the 60 studies, 28 examined how sales were affected by the atmosphere of the retail establishment, and 25 found a significant relationship between the customer’s purchasing behavior and the retail environment. Turley and Milliman concluded that there was enough evidence to clearly draw this conclusion—that atmospheric variables do affect the money that people spend. Previous research has shown that consumer preferences are influenced by the atmosphere of the store and will influence patronage of that store (Moye & Kincaid, 2003).
Post-Mastectomy Women and Fitting Room Atmospherics

Women who are post-mastectomy want attractive clothing that is well-cut and appropriate to their age group. This necessitates trying on the clothing to observe scar concealment and the image enhancement that they desire. Crucial to this process is the ability to evaluate clothing selections, typically done in the fitting room of retail establishments.

From the review of literature, studies have addressed store atmospherics, but they fail to consider niche markets of women who have specialized needs for clothing assessment. Breast cancer survivors with differing treatment paths that include both conserving and non-breast conserving treatment modalities have clothing assessment needs. Although information is available regarding the desire for appealing clothing in this population, there is a lack of published results for procurement of clothing issues related to specific atmospheric elements of the fitting room setting. Various atmospheric issues mentioned by one or more breast cancer survivors in a small qualitative study done by Jackson (2004) included the following concerns: (a) fitting rooms that are large enough to accommodate a limited range of motion post-surgery, (b) fitting rooms that are able to meet the need for thermo-comfort, (c) mirrors that allow for adequate viewing of clothing from all angles, (d) subdued lighting that can dull the effects of shadows that are on altered skin surfaces, and (e) privacy and assistance from staff that are sensitive and knowledgeable. Several previous studies (Baumstarck & Park, 2010; d’Astous, 2000; Lam, 2001; Sharma & Stafford, 2000; Summers & Hebert, 2001) have incorporated the importance of elements such as lighting and mirrors but have not included niche markets
such as women who are post-mastectomy. With changes in treatment modalities that result in a reconfiguration of scarring, clothing procurement issues need to be evaluated. Differing design solutions require the opportunity for careful evaluation in the fitting room where clothing is assessed for potential scar concealment and possible image enhancement.

Some specific foci that participants felt were important and needed to be evaluated when purchasing clothing can be seen in Table 5. Most of these evaluations, such as the evaluation of necklines, are accomplished in the fitting room. For example, 31.8% of participants require neckline and bustline adjustments. Evaluating the potential need for and feasibility of making those adjustments would occur in the fitting room. These foci give background when considering the emphasis of fitting room features.

**Research Questions**

To fully understand the issues of clothing procurement for post-mastectomy women, it is vital to understand the reactions of women who are post-mastectomy to current fitting room atmospherics and discern which fitting room atmospherics are important. Central to the concern for retail is which fitting room atmospherics affect the desire to shop at differing retail establishments for purchasing clothing. Thus, the following questions were addressed in this study:

1. Are selected attributes of the fitting room setting important in the selection of retail establishments where post-mastectomy women shop for clothing to conceal scars and enhance their image post-surgery based on treatment path?
2. Are selected attributes of the fitting room setting important in the selection of retail establishments where post-mastectomy women shop for clothing to conceal scars and enhance their image post-surgery based on age?

3. Are selected attributes of the fitting room setting important in the selection of retail establishments where post-mastectomy women shop for clothing to conceal scars and enhance their image post-surgery based on the amount of money spent on clothing?

Table 5

*What Are the Priorities for Education in Relation to Clothing Among Women Who Are Post-Mastectomy*

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Yes N (%)</th>
<th>No N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Areas Written Information Desired Post Surgery</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bras for Prosthesis</td>
<td>45 (51.7)</td>
<td>42 (48.3)</td>
</tr>
<tr>
<td>Information on Clothing Issues to Expect in Treatment Process</td>
<td>40 (46.0)</td>
<td>47 (54.0)</td>
</tr>
<tr>
<td>Fabric Selection for Thermal and Skin Comfort</td>
<td>37 (42.5)</td>
<td>50 (57.5)</td>
</tr>
<tr>
<td>Style Selection of Clothing</td>
<td>28 (32.2)</td>
<td>59 (67.8)</td>
</tr>
<tr>
<td>Tips on Alterations for Current Fashion Trends</td>
<td>47 (54.0)</td>
<td>40 (46.0)</td>
</tr>
<tr>
<td>Training on Clothing Adjustments for Fit</td>
<td>26 (29.9)</td>
<td>61 (70.1)</td>
</tr>
<tr>
<td>Information on Swimwear</td>
<td>56 (64.4)</td>
<td>31 (35.6)</td>
</tr>
<tr>
<td>Information on Eveningwear</td>
<td>20 (23.0)</td>
<td>67 (77.0)</td>
</tr>
<tr>
<td>Information on Nightwear</td>
<td>20 (23.0)</td>
<td>67 (77.0)</td>
</tr>
<tr>
<td>Information on less Known Sources to Purchase Garments to Accommodate Post-Surgery Needs</td>
<td>46 (52.9)</td>
<td>41 (47.1)</td>
</tr>
</tbody>
</table>
Selected attributes include: (a) space in the fitting room, (b) lighting in the fitting room, (c) mirror placement in the fitting room, (d) privacy in the fitting room, (e) temperature control in the fitting room, and (f) availability of sensitive and knowledgeable staff.

Based on the information gleaned from the literature review, three hypotheses were proposed:

_Hypothesis I:_ Age will be significantly associated with the importance of fitting room atmospherics (space, lighting, mirror placement, privacy, temperature, and knowledgeable sensitive staff) when women who are post-mastectomy select retail clothing stores to purchase clothing.

_Hypothesis II:_ Finances dedicated to clothing purchases will be significantly associated with the importance of fitting room atmospherics (space, lighting, mirror placement, privacy, temperature, and knowledgeable sensitive staff) when women who are post-mastectomy select retail clothing stores to purchase clothing.

_Hypothesis III:_ Treatment path (breast conserving vs. non-breast conserving surgery; use of reconstruction) will be significantly associated with the importance of fitting room atmospherics (space, lighting, mirror placement, privacy, temperature, and knowledgeable sensitive staff) when women who are post-mastectomy select retail clothing stores to purchase clothing.
Methodology

Data Collection

This study was completed using an online survey. Because the literature review did not yield an existing instrument available to garner needed information, an original instrument was created. The Mastectomy Attitude Scale developed through the research of Heyl (1977) provided the theoretical framework for question development on the importance of clothing and self-esteem issues. Factors on Heyl’s survey that addressed feminine appearance showed high reliability using Pearson product–moment coefficients ($r = +.73$). The survey contained 26 questions that included four major sections: demographic information, medical background, clothing, and education (see Appendix A).

The survey was piloted with four women who were post-mastectomy and assistance was obtained in wording changes to ensure face validity. Institutional Review Board (IRB) approval was obtained (see Appendix B) and the survey was posted online for 15 months beginning in April 2010. Women between the ages of 20 and 99 who had surgery for the treatment of breast cancer were eligible to participate in the study.

Procedures

After the survey was developed, IRB approval obtained, and pilot testing completed, flyers were distributed to appropriate physician offices and cancer centers in Michigan, social media groups, and breast cancer support groups. Flyers directed potential participants to the Path of Pink website that had a link to the online survey. Path
of Pink is a clearing house for breast cancer information and procurement of fashion needs. Follow-up phone calls were made to breast cancer support groups explaining the study and inviting participation. An incentive for women to participate in the survey was offered through a drawing for $200, $100, and $50 in cash.

Measures

The independent variables in the study included selected demographic variables and treatment path for breast cancer. Independent variables were based on questions 1, 4, 7, and 9 in the online survey (see Appendix A). Demographic variables included in the study were age and the amount of money spent on clothing. Age was dichotomized into 50 years of age and under or above 50 years of age. Fifty years of age was selected because of literature existing since the 1980s that states that women over 50 years of age are a continually growing target market that needs to have their retail needs addressed through implemented growth strategies (Alsop, 1984; Philip, Haynes, & Helm, 1992). Money spent on clothing was dichotomized into under $500 and $500 or more spent on clothing annually. The Bureau of Labor Statistics figures cited an average of $573 for the amount of money per person spent annually on apparel and footwear for people in a middle income bracket (“How Much Do People Spend on Clothes,” 2009). This average amount was rounded to $500, since footwear is not relevant to this study, and dichotomized to under $500 (less than the average amount) and over $500 (more than the average amount) spent on apparel. Treatment path included extent of surgery (dichotomized into breast conserving or non-breast conserving) and use of reconstruction (reconstruction/no reconstruction) after mastectomy.
Dependent variables were based on question 20 in the online survey. Dependent variables in the study included six atmospheric qualities of fitting rooms. Participants were asked to indicate (yes/no/unsure) if the following six qualities were important in the selection of a store from which to purchase clothing. These outcome variables included space in the fitting room, temperature in the fitting room, mirror placement in the fitting room, lighting in the fitting room, privacy in the fitting room, and availability of knowledgeable and sensitive staff in the fitting room area. Variables were coded as yes, important; no, not important; or unsure.

Analysis

Data from the survey were analyzed using SPSS, version 18.0. The descriptive analysis included generating frequencies of independent and dependent variables. Log linear regression was used to assess (a) if age is associated with whether each of the six fitting room attributes is important in store selection for clothing purchases, (b) if amount of money spent on clothing is associated with whether each of the six fitting room attributes is important in store selection for clothing purchases, (c) if having breast conserving or non-breast conserving surgery is associated with whether each of the six fitting room attributes is important in store selection for clothing purchases, and (d) if having reconstructive breast surgery or no breast reconstructive surgery is associated with whether each of the six fitting room attributes is important in store selection for clothing purchases. Log linear regression can be used to estimate the effect of more than one categorical predictor (independent variables) on an outcome or event occurring that is categorical in nature (dependent variable) (Field, 2005). Models were created for each of
the outcome variables (space, temperature, mirrors, lighting, privacy, knowledgeable sensitive staff—important yes/no/unsure) against the independent variables of age, money spent on clothing, and treatment path. Utilizing a generalized linear model in which the four-way interaction term among the four predictors was included (a saturated model), the response was modeled using binomial distribution to examine associations between categorical variables. Where cells had inadequate expected cell sizes, Fisher’s exact test results were reported. The 0.05 level of significance was established a priori for statistical significance.

Results

Eighty-seven individuals participated in the survey. Table 6 includes the results of the sample frequencies. The study had 88.5% of participants reported as non-Hispanic white, 73.6% above 50 years of age, and 60.9% spending over $500 a year on clothing. Treatment path of participants included a total of 9.2% having breast conserving surgery (lumpectomy or partial mastectomy), 90.8% having non-breast conserving surgery (modified radical or radical mastectomy), and 44.8% having breast reconstruction. Table 7 includes frequencies of outcome variables. Most participants (82%) considered a fitting room that ensured privacy important when selecting a store for clothing purchases, 74% indicated that mirror placement was an important consideration, 58% space, and 52% temperature.
Table 6

*Selected Characteristics of Study Population*

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age Range</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below 50 years</td>
<td>23</td>
<td>26.4</td>
</tr>
<tr>
<td>Above 50 years</td>
<td>64</td>
<td>73.6</td>
</tr>
<tr>
<td><strong>Clothing Expenditures</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Under $500</td>
<td>34</td>
<td>39.1</td>
</tr>
<tr>
<td>Over $500</td>
<td>53</td>
<td>60.9</td>
</tr>
<tr>
<td><strong>Treatment Path</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breast Conserving Surgery</td>
<td>7</td>
<td>9.2</td>
</tr>
<tr>
<td>Non-Breast Conserving Surgery</td>
<td>80</td>
<td>90.8</td>
</tr>
<tr>
<td>Reconstruction after Mastectomy</td>
<td>39</td>
<td>44.8</td>
</tr>
<tr>
<td>No Reconstruction after Mastectomy</td>
<td>48</td>
<td>55.2</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Hispanic White</td>
<td>77</td>
<td>88.5</td>
</tr>
<tr>
<td>Non-Hispanic Black or African American</td>
<td>5</td>
<td>5.7</td>
</tr>
<tr>
<td>Hispanic</td>
<td>4</td>
<td>4.6</td>
</tr>
<tr>
<td>American-Indian/Alaskan Native</td>
<td>1</td>
<td>1.1</td>
</tr>
</tbody>
</table>
Table 7

Frequencies of Responses of Women Who Are Post-Mastectomy to Fitting Room Atmospheric Outcome Variables—Which Variables Are Important when Selecting Stores for Clothing Purchases

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Yes N (%)</th>
<th>No N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atmospheric Characteristic of Fitting Room</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Space</td>
<td>50 (57.5)</td>
<td>37 (42.5)</td>
</tr>
<tr>
<td>Lighting</td>
<td>15 (17.2)</td>
<td>72 (82.8)</td>
</tr>
<tr>
<td>Temperature</td>
<td>45 (51.7)</td>
<td>42 (48.3)</td>
</tr>
<tr>
<td>Mirrors</td>
<td>65 (74.7)</td>
<td>22 (25.3)</td>
</tr>
<tr>
<td>Privacy</td>
<td>71 (81.6)</td>
<td>16 (18.4)</td>
</tr>
<tr>
<td>Assistance</td>
<td>33 (37.9)</td>
<td>54 (62.1)</td>
</tr>
</tbody>
</table>

Findings

Analysis was directed toward research questions with the intent of addressing if selected attributes of the fitting room setting directly affect the selection of retail establishments where post-mastectomy women shop for clothing to conceal scars and enhance their image post-surgery based on demographic characteristics of age and finances spent on clothing. Additionally, analysis will address if selected attributes of the fitting room setting directly affect the selection of retail establishments where post-mastectomy women shop for clothing to conceal scars and enhance their image post-surgery based on treatment path. Overall, 74.7% of participants reported that mirrors and mirror placement were important when selecting a retail clothing store for clothing selection. After utilizing log linear regression that included the four-way interaction term
among the four predictors (a saturated model), the responses were modeled using binomial distribution. Based on nested model deviance test (testing the multi-level model), only one predictor (treatment) was included and revealed that the only effect that could be retained was a lower level interaction of treatment only (see Table 8). Treatment was significantly associated with the outcome variable of mirror placement ($p = 0.043$, Fisher’s exact test). Furthermore participants that had non-breast conserving treatment (vs. breast conserving surgery) were 20% more likely to report that mirror placement was important when selecting a store (odds ratio .21 with a 95% CI of lower .045 and upper 1.064). When residuals were checked, there were no outliers or influential points. With the retention of one predictor variable, further statistical analysis was done to measure the strength of association. Cramer’s $V$ was then noted to be 0.217, a small association.

Table 8

*Treatment Path as a Predictor for Importance of Mirror Placement in the Selection of a Retail Clothing Store*

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Yes</th>
<th>No</th>
<th>$X^2$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$N$ (%)</td>
<td>$N$ (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Importance of Mirror Placement</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breast Conserving</td>
<td>3 (42.9)</td>
<td>4 (57.1)</td>
<td>5.2 (1)</td>
<td><strong>0.04</strong></td>
</tr>
<tr>
<td>Non-Breast Conserving</td>
<td>62 (77.5)</td>
<td>18 (22.5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td>65 (74.6)</td>
<td>22 (25.1)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. Phi Coefficient 0.249; Contingency Coefficient 0.249; Cramer’s $V$ 0.241 Odds Ratio 11.6*  
*Fisher’s exact test*
Eighty-one percent of participants indicted that the ability to evaluate clothing in a private environment was an important concern in store selection. However, this was not significantly associated with the predictor variables of age, amount of money spent on clothing, or treatment path (breast conserving/non-breast conserving surgery and reconstruction or no reconstruction). (See Appendix C for p values.) Again, analysis was done with log linear regression and the response was modeled using binomial distribution. There were no predictors that were found to be significantly associated with a desire for privacy while evaluating clothing. When residuals were checked, there were no outliers or influential points.

Fifty-seven percent of participants indicted that space allotted to fitting rooms was an important concern in store selection, 51.7% indicated that temperature of the fitting room was important, 37.9% desired assistance from a sensitive knowledgeable staff when selecting a clothing store, and 17.2% felt lighting was important when selecting a store. However, none of these outcome variables were significantly associated with the predictor variables of age, amount of money spent on clothing, or treatment path (breast conserving/non-breast conserving surgery and reconstruction or no reconstruction). (See Appendix C for p values.) Again, log linear regression was done for each of these variables with the most complicated linear model in which the four-way interaction term among the four predictors was included and the response was modeled using binomial distribution. There were no predictors that were found to be significantly associated with the response variables of space in the fitting rooms, temperature control, lighting in the fitting rooms, and the availability of a sensitive and knowledgeable staff. When residuals were checked, there were no outliers or influential points.
Thus, after predictors were analyzed against the six atmospheric outcome variables, only Hypothesis III could be partially accepted. Treatment path is significantly associated with store selection when mirror placement in the fitting room is considered.

**Discussion**

The largest number of participants (81.6%) indicated that being able to evaluate clothing in a private environment was an important atmospheric. However, findings did indicate that desire for privacy is not significantly associated with any of the predictor variables. Privacy not being associated with the predictor variables, age, money spent of clothing, or treatment path, was not remarkable when considering the need of all women who are post-mastectomy to evaluate their purchases in relation to scar concealment. After breast cancer surgery, surgical scars necessitate careful evaluation of necklines, armscyce, and any open areas of garments in relation to concealment of those scars (Jackson, 2004). The lack of significance to the predictor variables may relate to previous studies that have shown that women in general prefer a private rather than a communal setting for evaluating clothing, preferring doors on fitting rooms and mirrors inside the fitting room rather than a common area. A 2007 study by Shapiro & Associates, with 813 women 16 years of age and above participating, found privacy to be an important atmospheric to 86% of women (“The Perfect Fit,” 2007).

Strategic mirror placement in the fitting rooms was not significantly associated with age or money spent on clothing but was significantly associated with treatment path, specifically the use of breast conserving or non-breast conserving surgical paths. This finding is consistent with the need for women who are post-mastectomy to appraise
clothing in relation to scar concealment from multiple angles in the dressing room. Approximately 50% of women considered temperature and space to be important attributes of the fitting room that influenced their store selection. Although temperature and space were not significantly associated with the predictor variables, this is a noteworthy number of women to be considered when planning allocations for fitting room improvements. Obtaining assistance from knowledgeable and sensitive staff was important to approximately 40% of study participants. Again, this outcome was not statistically significant in relation to predictor variables of age, money spent on clothing, or treatment path. However, a staff that is knowledgeable and sensitive to the apparel needs of women who are post-mastectomy does influence a substantial quantity (38%) of women in this target market when they select stores for clothing purchases. Finally, a small percentage of women (17%) found lighting to be an important atmospheric when selecting a store to purchase clothing. This outcome variable was not significantly associated with predictor variables. While the lack of strategic lighting for women who are post mastectomy may not affect their patronage of a store directly, it does not negate the importance of lighting when the decision to purchase an individual clothing item is made. From Jackson’s study (2004) and comments added to the survey for this study, women who are post-mastectomy find lighting important for the decision to purchase but it is not necessarily influential in their decision where to shop for clothing. Whether women are in a budget shop or upscale boutique, lighting and décor of the fitting room will play a pivotal role in making or breaking the sale (“Fitting Designs,” 1999).
**Strengths and Limitations**

The strength of this study was in addressing a gap in the literature relating to apparel store fitting room atmospherics for a special needs population of women who are post-mastectomy. This study considered the reaction of this special needs population as a group in relation to atmospherics of the fitting rooms and assessed associations of age, amount of money spent on clothing, and treatment path including consideration of scarring issues related to breast reconstruction. The apparel retail industry has not recognized this target market and the need to address some specific needs in the fitting rooms. The information in this study identifies women who are post-mastectomy as a large target market whose needs for fitting room atmospheric attributes are feasible to address and considered a crucial factor in the decision to purchase (Underhill, 2009, 2010).

Potential limitations of the study were that social media and use of an online survey may have limited the access to low SES and elderly populations. Since women were recruited through local Cancer Centers in Michigan, Tennessee, and Texas, there was not random selection of participants. White non-Hispanic women who are post-mastectomy were over-represented in this study. In addition, the smaller sample size limited the ability to conduct stratified analyses to examine specific subgroups in this population. The categorical nature of the response variables limited the analysis available for this study.
Implications

The apparel retail clothing market recognizes the need to seek and retain loyalty in patronage from defined target markets of women (Ghosh et al., 2010). Breast cancer survivors are a sizeable target market of women worthy of consideration by the apparel retail clothing stores. Although this group of women has a vast range of ages, the largest sector included in this target market is women 50 years of age and older. As baby boomer women continue to increase the numbers in this age group shopping for apparel, the subset of women who are post-mastectomy will also increase ("Cancer Facts & Figures," 2011). Aging baby boomers have been cited by apparel retailers as a growing market that needs to be addressed (Moschis, 2003). As the retail clothing industry addresses niche markets such as aging baby boomers, there is a large opportunity to address the growing sector of women who are post-mastectomy.

The practice implications of this study include disseminating the results to the apparel retail market in order to address the atmospheric needs of the fitting rooms for women who are post-mastectomy. Strategically executed atmospherics in the fitting room would empower post-mastectomy women to make choices of apparel that enhance appearance and self-image. Since this entire market of women is 2.5 million strong, it is large enough to be addressed by retailers that are seeking to increase loyal patronage. Allocating funds to create fitting rooms that allow women who are post-mastectomy to evaluate clothing in privacy with well-placed mirrors has the potential to increase patronage by this target market of women. In addition to privacy and mirror placement, these women are interested in space for their post-surgery range of motion needs and
temperature that can be adjusted as they go through phases of treatment that render them uncomfortable with constant body temperature fluctuations.

Future studies could be broadened to include a larger nationally representative sample. A follow-up study could be done with a control group of women who have not had mastectomies and ascertain the importance of fitting room atmospherics in the selection of retail apparel stores. This group could be compared with the results of this study. Potential adjustments to fitting rooms could be evaluated, such as multiple mirror placements, to get specific adjustments that could benefit this specialized group of women. These adjustments could also be tested with consumers in general for maximum consumer benefit.

References


CHAPTER IV

POST-SURGICAL DISCHARGE INFORMATION DESIRED
BY CONTEMPORARY WOMEN WHO ARE POST-MASTECTOMY

Researchers, treatment teams, and survivors agree that appearance is one of the major concerns for women after breast surgery. Clothing is part of this larger context of appearance management for the breast cancer survivor (Jackson, 2004). At the same time as patients are being actively treated for breast cancer, incidental information is provided regarding clothing and comfort with clothing as part of the overall adjustment to the anticipated effects of treatment since body contour, skin conditions, and body functions are altered (Feather, Wainstock, & Pitts, 1989). While women who are post-mastectomy may feel well rehabilitated from their surgery, a sense of social isolation, awkwardness, and insecurity exists when it comes to wearing fashion (Feather, Wainstock, & Pitts, 1989; Quint, 1963). Addressing the apparel informational needs is an important segment of rehabilitation for women who are post-mastectomy to successfully cope with the experience of cancer. Although the 1988 study by Feather, Kaiser, and Rucker addressed educational needs of women who are post-mastectomy, the advent of breast-sparing procedures and increased use of reconstructive surgeries has translated into contemporary struggles with fit, comfort, and aesthetic concerns that need to be addressed in post-surgical education.
The purpose of this study was to establish an updated view of how women who are post-mastectomy, based on demographics and their unique path of treatment, desire education in relation to clothing issues and selection immediately post-surgery, throughout the treatment process and beyond the breast cancer treatment period. The study examined the association between the treatment path of breast cancer women and the discharge information needed to assist in clothing selection and modification. In addition, attention was given to the training in clothing-related issues for higher quality recovery that women who are post-mastectomy should expect throughout the treatment process and post-surgery stages, than provided currently. Based on concerns with clothing education issues expressed in a study by Jackson (2004), this study will address education in relation to the following 10 fashion-related issues: bras for prosthesis, clothing issues to expect throughout the treatment process, fabric selection, style selection, tips on alteration, training on clothing adjustments, less known sources for purchasing garments to accommodate post-surgery needs, and information on styling of swimwear, and information on styling of eveningwear, and information on styling of nightwear. The reported study is exploratory in nature and is designed to recognize the challenges of women who are post-mastectomy as they seek to respond to the postoperative physical changes with appearance management strategies.

To fully comprehend the involvedness of clothing education for women who are post-mastectomy, it is vital to understand three aspects: (a) what the priorities are for education in relation to clothing among post-mastectomy women; (b) how selected demographics are associated with preferences for educational information regarding bra selection, clothing issues to expect throughout the treatment process, fabric selection,
style selection, tips on alterations, training in fitting adjustments, less known sources to purchase garments to accommodate post-surgery needs, and information on specific clothing categories; and (c) how the breast cancer treatment path is associated with preferences for educational information regarding bra selection, clothing issues to expect throughout the treatment process, fabric selection, style selection, tips on alterations, training in fitting adjustments, less known sources to purchase garments to accommodate post-surgery needs, and information on specific clothing categories.

Providing image management strategies through apparel engineering to the woman who is post-mastectomy has been shown to alleviate concern and anxiety enhancing self-image (Feather, Kaiser & Rucker, 1988; West, 1993). Accordingly, healthcare professionals need to plan appropriate educational interventions for these women (Feather, Kaiser & Rucker, 1988; West, 1993). As post-mastectomy women attempt to resume their activities of daily living, they have aesthetic concerns that can be addressed by understanding and disseminating apparel information post-surgery.

**Background and Significance**

Breast cancer is the second most common malignant disease experienced by women in the United States and accounts for one out of four diagnosed cancers (“Cancer Facts & Figures,” 2011). Current American Cancer Society statistics estimate 209,070 new cases of invasive breast cancer for 2010 (“Cancer Facts & Figures,” 2011). Despite the fact that early detection of breast cancer contributes to less invasive surgical procedures and less invasive treatment, breast cancer survivors nevertheless must deal with many changes to the way their body looks and functions (Jackson, 2004; Wassner,
1982). As of January 2006, there were approximately 2.5 million women currently living with a history of breast cancer (“Cancer Facts & Figures,” 2011). The change in the way the body looks and functions creates a need for both symbolic and functional clothing performance.

For many women, the breast symbolizes womanhood, femininity, and motherhood, and the removal of a breast impacts the socio-emotional wholeness of the breast cancer survivor (Chowdhary, 2000). In an effort to become whole again, the woman who is post-mastectomy can use clothing to help her find a sense of completeness. Wicklund and Gollwitzer’s self-completion theory (as cited in Chowdhary & Ryan, 2003) contended that symbols are used by human beings to define themselves as they strive for a sense of completeness. Chowdhary and Ryan further explained how the four conditions of this theory can apply to using clothing for this sense of completeness:

1. A person must be dedicated to strive for a goal of self-definition. For example, the woman who is post-mastectomy wants to use clothing options to compensate for the loss she has experienced.

2. The symbols are available in the culture to allow congruence. For example, women who are post-mastectomy strive for the ideal figure, through the use of reconstruction or breast prosthesis to develop a sense of congruence and self-completion.

3. The person feels a sense of inadequacy. Thus, if the woman who is post-mastectomy is very conscious of appearance, the procedure may leave a sense of incompleteness and lessen her self-certainty.
4. A person can access at least one procedure of self-symbolizing (to see oneself within a context that offers sense of identification). For example, the woman can regain the pre-surgery breast size through the use of a prosthesis or breast reconstruction and then selecting clothing to represent her best self.

From a functional perspective, the various treatment paths can leave the body noticeably changed, resulting in struggles with clothing fit, clothing comfort, as well as aesthetic concerns that are related to clothing (Jackson, 2004; Wassner, 1982). The physical impact of different breast cancer treatments lead to a variety of body image and appearance concerns for women depending on the use of breast conserving versus non-conserving modalities used for treatment (Price, 1990). Breast conserving treatment includes lumpectomy, partial mastectomy followed by radiation and possible chemotherapy with its accompanying hair loss. Non-breast conserving treatment includes simple mastectomy, modified radical mastectomy and the rarely employed radical mastectomy with possible radiation and/or chemotherapy (“Surgery for Breast Cancer,” 2009). Post-mastectomy, women who have experienced non-breast conserving treatment may elect to continue with breast reconstruction surgery where an operation in which surgery rebuilds the breast from body tissue to approximately the same size and shape as it was prior to surgery. Body tissue used for reconstruction is transplanted from either the abdomen or upper back to create a breast mound. The remaining body configuration will vary by the type of surgery and closure technique that is used (“Breast Reconstruction,” 2009). Accordingly, the garment fitting issues will vary with the incision performed and extent of surgery (Chowdhary & Ryan, 2003; Feather, Kaiser, & Rucker, 1988; Wilkerson, 1977). In addition to surgical treatment, adjuvant therapies including
chemotherapy, hormone treatments, and radiation therapy are procedures used to treat breast cancer that leave perceptible, if not conspicuous, changes within the body, including lymphedema with resultant swelling of the arm, loss of body heat regulation, reduced mobility of upper limbs and torso, skin sensitivities, and early onset menopause (Golshan & Smith, 2006; Sammarco, 2001). These altered physical conditions are then what create the struggle with fit and comfort as well as the aesthetic concerns related to apparel post-surgery (Jackson, 2004; Wassner, 1982).

As women with breast cancer encounter each regime of treatment, they face new and unique appearance issues to be addressed with clothing. In order to address these appearance issues, apparel selection must include concealment of scars, thermo-comfort needs that reflect their fluctuating body temperatures, and working with altered skin surfaces that create a dulled effect on their skin surfaces (Jackson, 2004). In addition to concealing the physical consequences of breast cancer treatment, people with physical hindrances, such as mastectomy, use appearance management to emphasize other aspects of the self along with hiding the visible effects of breast surgery (Chowdhary & Ryan, 2003; Feather, Kaiser, & Rucker, 1988; Kaiser, 1997; Wilkerson, 1977).

The use of clothing articles can alter the appearance of the form of one’s body through the use of clothing articles with emphasis on fit, configurations of garment parts (for example necklines, sleeves), and even the hand of fabric to visually create or recreate a body form (Chowdhary & Ryan, 2003; Kaiser, 1985). Wardrobe engineering is inaugurated when the style of the garment is selected. The elements of design that include line and color combine to create the visual and structural fit of the garment. Line can lengthen (vertical), shorten (horizontal), or shorten and widen (diagonal) and thus
disguise irregularities of the body that include the area of breast amputation (Rasband & Liechty, 2006; Wilkerson, 1977). For that reason, the selection of style elements such as sleeves, necklines, bodices, and overall fit become important considerations in appearance management (Rasband & Liechty, 2006; Wilkerson, 1977).

Clothing can be a tool in the beautification of self and a source of positive feelings toward self (Kaiser, 1997). An attitude of self-worth can be restored by careful selection of clothing that emphasizes what is positive and camouflages the less desirable features that detract from the person’s appearance (Chowdhary & Ryan, 2003; Horn, 1981). The appropriate selection of clothing can help the woman who is post-mastectomy feel whole again (Chowdhary, 2002). Since the influence of apparel is significant, the education in relation to apparel for women who are post-mastectomy is essential to post-surgery recovery of self-esteem (Chowdhary & Ryan, 2003).

**Nurses as Educators**

Patient education has been seen as a nursing function from the earliest days of the profession (Gregor, 2001). For the last 35 years in nursing, patient teaching has been the subject of substantial discourse in the nursing profession with usage of descriptive terms such as *systematic*, *rational*, *well planned*, and *nursing controlled* (Gregor, 2001). Patient education is considered an important aspect of patient care and is related to patient satisfaction, healthcare provider performance, and clinical outcomes (Shuilain, Stuenkel, & Rodriguez, 2009; Zavala & Shaffer, 2011). Patients today are discharged from the hospital quickly. Hospitals are striving to have efficient utilization of their services with the shortest length of stay, which challenges healthcare professionals to provide
consistent high-quality care (Congdon, 1994; Suhonen & Leino-Kilpi, 2005). The reality of the healthcare system in the United States is that patients are often discharged before they have made a full recovery (Barber-Parker, 2002; Wyatt, Donze, & Beckrow, 2004). This means that there is essential knowledge and skill that the family and patient must have to resume care and prepare them for challenges faced in the home setting after discharge (Barber-Parker, 2002; Johansson et al., 2004; Quinlan, 2003). For the breast cancer patient, regardless of what type or phase the treatment is in, the expected outcome is optimal physical and psychosocial function (Knobf, 1985). There are not only physical concerns for patients with breast cancer, but psychosocial issues that they will face that relate to body image and appearance management (Feather, Wainstock, Remington, & Ringenberg, 1989; Wyatt et al., 2004). Self-concept is meshed with body image and is thus affected when any bodily changes occur (Knobf, 1985). Discharge instructions should provide effective strategies to patients that enhance their physical and psychological post-operative recovery (Lo, Stuenkel, & Rodriguez, 2009; VandenBorne, 1998). Effectual patient education at discharge that is holistic in nature is a challenge. Nurses must assess, care for, and prepare patients for discharge, all within a very compressed period of time (Ben-Morderchai, Herman, Kerzman, & Irony, 2010; Dunning, 2000; Foust, 2007; Krohn, 2008). Strategies that are used to prepare and teach discharge information are required to assure the quality and expediency of the information for patients after they leave the acute care setting (Rhudy, Holland, & Bowles, 2010; Suhonen & Leino-Kilpi, 2005). Discharge preparation literature reveals a consensus that the continuum of care from the acute care setting to the home is not
always easy and is often a challenge to patients (Santo, Purden, & Ranguay, 2008; Siders & Peterson, 1992).

To meet such a challenge, it is crucial that nurses be effective in patient teaching. Blumberg and Gentry (1991) outlined a systematic approach for educating cancer patients referencing and further developing a six-stage process for patient education published by the National Institutes of Health. This process incorporates patient needs and patient perceptions at key points in the process and includes the following stages:

1. Stage One of planning and strategy selection includes the point that the objectives and patient needs are defined.
2. Stage Two involves selecting channels and materials and includes using the conclusions from the first stage to select appropriate educational materials as well as methods to deliver those materials.
3. Stage Three consists of developing materials and pretesting includes using the materials identified in the second stage and further developing and pretesting those materials.
4. Stage Four consists of implementing the education plan by introducing the program of education developed to the patient and/or family members.
5. Stage Five involves assessing the effectiveness that entails an appraisal of the process, which is essential to any education system and is integral across more than one stage of the process.
6. Stage Six involves feedback to revise a program and includes gathering information in order to evaluate effectiveness of the educational program.

(Blumberg & Gentry, 1991)
This six-stage model for patient education emphasizes the need to first ascertain the objectives and patient needs when planning patient education. Since clothing engineering is such a crucial process to the woman who is post-mastectomy, importance needs to be given to the special clothing needs of this population. The strategy for looking at clothing for special needs was addressed by Chowdhary (2002) in her four-pronged education model. This model outlined the process for providing needed information and the path to garment acquisition when addressing special needs clothing. In this education model, Chowdhary defined four steps:

1. The first step is to identify that there is a special need. (For post-mastectomy women this would include clothing for scar concealment, lymphedema, and appearance management).

2. The second step is information acquisition, which would include printed material, audio-visual material, and live interaction. (For post-mastectomy women, this would include discharge instructions that are inclusive of garment apparel needs).

3. Step three would be to crystallize the process, which would include identifying necessary clothing features needed (for post-mastectomy women this would include clothing relevant to the treatment process and for ongoing appearance management) as well as assisting in conceptualizing the dress and body interaction.

4. The fourth step is the actual garment acquisition process. (For the post-mastectomy woman, this would include either garment creation, garment
selection in special catalogs, or buying from ready-to-wear and adapting the garment as needed.) (Chowdhary, 2011)

These four steps in the education model involve the assembling of relevant apparel information to meet the needs of breast cancer survivors who otherwise struggle to find necessary information to meet their clothing engineering needs (Cawley, Kostic, & Cappello, 1990; Jackson, 2004; Messerli, Garamendi, & Romano, 1980).

**Information Needs of Breast Cancer Patients**

Information is consistently important to cancer patients (West, 1993). Information has an empowering effect and helps cancer patients to take control of their recovery process when requisite information is made available. However, healthcare professionals’ perception of the informational needs of patients is not always accurate (Suhonen & Leino-Kilpi, 2005). In West’s (1993) study, the informational needs of women who are post-mastectomy were addressed and included diagnostic scenarios, investigative treatment, physical symptoms, family issues to expect, psychological sequelae, and financial concerns. None of the questions in the study addressed apparel concerns or how to address the apparel/self-esteem issues created by the treatment process. While the needs for information were highly significant in the areas of diagnosis, treatment, and investigative tests (West, 1993), breast cancer survivors in Jackson’s study expressed a desire for more information upon discharge about what to expect for clothing needs and appearance management throughout the treatment process (Jackson, 2004). Eyles, Skelly, and Schmuck (2003) found it was essential when developing patient education materials to involve patients in the process. Written information given at discharge can have a
major impact on the patients for whom it was created. Involving patients in the discharge process, including the development of teaching materials, was found to improve satisfaction, decrease anxiety, improve coping, and ease the adaptation of patients (Driscoll, 2000). Discharge information guides the patient through all of the transitions that occur after leaving the acute care setting (Santo et al., 2008). Women who are post-mastectomy need to be included in the process of developing discharge instructions that meet their contemporary apparel education needs. This ensures that all of the clothing challenges that are faced by women as they go through the treatment process are included and adequately addressed.

Some specific foci that participants felt were important and needed to be evaluated when purchasing clothing can be seen in Table 9. Also included in this table are potential areas that need adjustment after purchase. This table shows the breadth of considerations and adaptations needed by women who are post-mastectomy to make informed decisions when selecting clothing. These foci give background when considering the clothing educational needs of women who are post-mastectomy.

**Research Questions**

To fully understand the clothing education requirements for women who are post-mastectomy, it will be vital to understand how varying treatment paths that include breast conserving and non-breast conserving treatment paths affect their view of assistance needed in clothing selection and modification. Clothing transitions that breast cancer survivors view as important throughout the treatment process and post-surgery stages will be essential to address. Based on concerns with clothing education issues expressed in a
Table 9

*Frequencies of Responses for Consideration when Selecting Garments and Typical Adjustments Necessary to Garment Selections*

<table>
<thead>
<tr>
<th>Garment Considerations that Are Important</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current with Fashion</td>
<td>73</td>
<td>83.0</td>
</tr>
<tr>
<td>Care of Garment Is Important</td>
<td>78</td>
<td>88.6</td>
</tr>
<tr>
<td>Fabrication (feel of fabric)</td>
<td>84</td>
<td>95.5</td>
</tr>
<tr>
<td>Fit of Clothing (is it an issue if you have to alter it)</td>
<td>75</td>
<td>85.2</td>
</tr>
<tr>
<td>Sales Personnel Able to Show You How to Adjust Clothing</td>
<td>30</td>
<td>34.1</td>
</tr>
<tr>
<td>Personnel Trained in Post-surgery Selection</td>
<td>36</td>
<td>2.3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Post-Surgery Fit Issues</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Length Adjustment (to make hemline even)</td>
<td>2</td>
<td>14.8</td>
</tr>
<tr>
<td>Sleeve Adjustment (surgical side)</td>
<td>13</td>
<td>4.5</td>
</tr>
<tr>
<td>Post-surgical Waist Adjustment</td>
<td>4</td>
<td>4.5</td>
</tr>
<tr>
<td>Neckline Adjustment</td>
<td>28</td>
<td>31.8</td>
</tr>
<tr>
<td>Bustline Adjustment</td>
<td>28</td>
<td>31.8</td>
</tr>
<tr>
<td>Back of Garment Needs Adjustment</td>
<td>6</td>
<td>6.8</td>
</tr>
</tbody>
</table>

study by Jackson (2004) and Chowdhary’s (2002) four-step education model for special needs clothing education specific clothing concerns were addressed. The following areas of clothing concerns were cited by one or more participants in Jackson’s 2004 study: information on bras for prosthesis; clothing issues to expect throughout the treatment process; fabric selection; style selection; tips on alteration; training on clothing adjustments; less known sources for purchasing garments to accommodate post-surgery needs; and specific categories of clothing that included swimwear, eveningwear, and nightwear. Thus, the questions that were addressed in this study included the following:
1. What are the priorities for education in relation to clothing among women who are post-mastectomy?

2. Are selected demographics associated with preferences for educational information on clothing information listed above?

3. Is the breast cancer treatment path associated with preferences for educational information on clothing listed above?

Based on the information gleaned from the literature review, three hypotheses were proposed:

_Hypothesis I:_ Age will be a significant consideration when planning discharge information on clothing needs and post-surgery issues for women who are post-mastectomy.

_Hypothesis II:_ Finances dedicated to clothing purchases will be a significant consideration when planning discharge information on clothing needs and post-surgery issues for women who are post-mastectomy.

_Hypothesis III:_ Treatment path (breast conserving vs. non-breast conserving surgery; use of reconstruction) will be a significant consideration when planning discharge information on clothing needs and post-surgery issues for women who are post-mastectomy.
Methodology

Data Collection

This study was completed using an online survey. Because the literature review did not yield an existing instrument available to garner needed information, an original instrument was created. The Mastectomy Attitude Scale developed through the research of Heyl (1977) provided the theoretical framework for question development on the importance of clothing and self-esteem issues. Factors on Heyl’s survey that addressed feminine appearance showed high reliability using Pearson product–moment coefficients ($r = +.73$). The survey contained 26 questions that included four major sections: demographic information, medical background, clothing, and education (see Appendix A).

The survey was piloted with four women who were post-mastectomy and assistance was obtained in wording changes to ensure face validity. Institutional Review Board (IRB) approval was obtained (see Appendix B) and the survey was posted online for 15 months beginning in April 2010. Women between the ages of 20 and 99 who had surgery for the treatment of breast cancer were eligible to participate in the study.

Procedures

After the survey was developed, IRB approval obtained, and pilot testing completed, flyers were distributed to appropriate physician offices and cancer centers in Michigan, social media groups, and breast cancer support groups. Flyers directed potential participants to the Path of Pink website that had a link to the online survey. Path
of Pink is a clearing house for breast cancer information and procurement of fashion needs. Follow-up phone calls were made to breast cancer support groups explaining the study and inviting participation. An incentive for women to participate in the survey was offered through a drawing for $200, $100, and $50 in cash.

**Measures**

The independent variables in the study included selected demographic variables and treatment path for breast cancer. Independent variables were based on questions 1, 4, 7, and 9 in the online survey (see Appendix A). Demographic variables included in the study were age and the amount of money spent on clothing. Age was dichotomized into 50 years of age and under or above 50 years of age. Fifty years of age was selected because of literature existing since the 1980s that states that women over 50 years of age are a continually growing target market that needs to have their retail needs addressed through implemented growth strategies (Alsop, 1984; Philip, Haynes, & Helms, 1992). Money spent on clothing was dichotomized into under $500 and $500 or more spent on clothing. The Bureau of Labor Statistics figures cited an average of $573 for the amount of money per person spent annually on apparel and footwear for people in a middle income bracket (“How Much Do People Spend on Clothes,” 2009). This average amount was rounded to $500, since footwear is not relevant to this study, and dichotomized to under $500 (less than the average amount) and over $500 (more than the average amount) spent on apparel. Treatment path included extent of surgery (dichotomized into breast conserving or non-breast conserving) and use of reconstruction (reconstruction/no reconstruction) after mastectomy.
Dependent variables were based on questions 24, 25, and 26 in the online survey. Dependent variables in the study included desire for written information in 10 categories. Participants were given a list of 10 categories with instructions to put a check by areas on which they would desire to have written information. The 10 categories included bras for prosthesis, information on what clothing issues to expect throughout the treatment process, fabric selection for temperature and skin comfort, style selection of clothing, tips on available alterations for current fashion trends, training in clothing adjustments to make so that clothing fits better after mastectomy, information on swimwear, information on evening wear, information on nightwear, and information on less known sources for purchasing garments for post-surgery needs. Participants were also asked to indicate (yes/no) if they received information prior to surgery or upon discharge about clothing selection after their mastectomy, and (yes/no) if they received information from medical staff prior to surgery or upon discharge about clothing adjustment after mastectomy.

Analysis

Data from the survey were analyzed using SPSS, version 18.0. The descriptive analysis included generating frequencies of independent and dependent variables and which dependent variables were a priority for information on discharge from the hospital. Log linear regression was used to assess (a) if age is a significant consideration when planning discharge information on clothing needs and post-surgery issues for women who are post-mastectomy, (b) if finances dedicated to clothing purchases is a significant consideration when planning discharge information on clothing needs and post-surgery issues for women who are post-mastectomy, and (c) if treatment path (having breast
conserving or non-breast conserving surgery or use of breast reconstruction) is a significant consideration when planning discharge information on clothing needs and post-surgery issues for women who are post-mastectomy.

Log linear regression can be used to estimate the effect of more than one categorical predictor (independent variables) on an outcome or event occurring that is categorical in nature (dependent variable) (Field, 2005). Models were created for each of the outcome variables (bras for prosthesis, information on what clothing issues to expect throughout the treatment process, fabric selection for temperature and skin comfort, style selection of clothing, tips on available alterations for current fashion trends, training in clothing adjustments to make so that clothing fits better after mastectomy, information on swimwear, information on evening wear, information on nightwear, information on less known sources for purchasing garments for post-surgery needs) against the independent variables of age, money spent on clothing, and treatment path. Utilizing a generalized linear model in which the four-way interaction term among the four predictors was included (a saturated model), the response was modeled using binomial distribution to examine associations between categorical variables. Where cells had inadequate expected cell sizes, Fisher’s exact test results were reported. The 0.05 level of significance was established a priori for statistical significance.

Results

Results from the survey were based on 87 participants. Table 10 includes the results of the sample frequencies. The study had 88.5% of participants reported as non-Hispanic white, 73.6% above 50 years of age, and 60.9% spending over $500 a year on
clothing. Table 11 includes frequencies of outcome variables. Most participants (85.5%) did not receive any information from medical staff prior to surgery or at discharge on clothing selection after a mastectomy. Ninety percent of participants did not receive any information from the medical staff prior to surgery or at discharge that gave helpful hints about adjusting clothing for post-surgery wear. Information that was desired by 40% or more of

Table 10

*Selected Characteristics of Study Population*

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age Range</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below 50 years</td>
<td>23</td>
<td>26.4</td>
</tr>
<tr>
<td>Above 50 years</td>
<td>64</td>
<td>73.6</td>
</tr>
<tr>
<td><strong>Clothing Expenditures</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Under $500</td>
<td>34</td>
<td>39.1</td>
</tr>
<tr>
<td>Over $500</td>
<td>53</td>
<td>60.9</td>
</tr>
<tr>
<td><strong>Treatment Path</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breast Conserving Surgery</td>
<td>7</td>
<td>9.2</td>
</tr>
<tr>
<td>Non-Breast Conserving Surgery</td>
<td>80</td>
<td>90.8</td>
</tr>
<tr>
<td>Reconstruction after Mastectomy</td>
<td>39</td>
<td>44.8</td>
</tr>
<tr>
<td>No Reconstruction after Mastectomy</td>
<td>48</td>
<td>55.2</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Hispanic White</td>
<td>77</td>
<td>88.5</td>
</tr>
<tr>
<td>Non-Hispanic Black or African American</td>
<td>5</td>
<td>5.7</td>
</tr>
<tr>
<td>Hispanic</td>
<td>4</td>
<td>4.6</td>
</tr>
<tr>
<td>American-Indian/Alaskan Native</td>
<td>1</td>
<td>1.1</td>
</tr>
</tbody>
</table>
Table 11

What Are the Priorities for Education in Relation to Clothing Among Women Who Are Post-Mastectomy

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Yes N (%)</th>
<th>No N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Areas Written Information Desired Post Surgery</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bras for Prosthesis</td>
<td>45 (51.7)</td>
<td>42 (48.3)</td>
</tr>
<tr>
<td>Information on Clothing Issues to Expect in Treatment Process</td>
<td>40 (46.0)</td>
<td>47 (54.0)</td>
</tr>
<tr>
<td>Fabric Selection for Thermal and Skin Comfort</td>
<td>37 (42.5)</td>
<td>50 (57.5)</td>
</tr>
<tr>
<td>Style Selection of Clothing</td>
<td>28 (32.2)</td>
<td>59 (67.8)</td>
</tr>
<tr>
<td>Tips on Alterations for Current Fashion Trends</td>
<td>47 (54.0)</td>
<td>40 (46.0)</td>
</tr>
<tr>
<td>Training on Clothing Adjustments for Fit</td>
<td>26 (29.9)</td>
<td>61 (70.1)</td>
</tr>
<tr>
<td>Information on Swimwear</td>
<td>56 (64.4)</td>
<td>31 (35.6)</td>
</tr>
<tr>
<td>Information on Eveningwear</td>
<td>20 (23.0)</td>
<td>67 (77.0)</td>
</tr>
<tr>
<td>Information on Nightwear</td>
<td>20 (23.0)</td>
<td>67 (77.0)</td>
</tr>
<tr>
<td>Information on Less Known Sources to Purchase Garments to Accommodate Post-Surgery Needs</td>
<td>46 (52.9)</td>
<td>41 (47.1)</td>
</tr>
</tbody>
</table>

participants included the following categories: swimwear (64.4%), tips on alterations for current fashion trends (54%), information on less known sources to purchase garments to accommodate post-surgery needs (52.9%), information on bras for prosthesis (51.7%), information on clothing issues to expect throughout the treatment process (46%), and information of fabric selection in clothing for thermal comfort and skin sensitivity (42.5%). Information desired by less than 40% of participants included style selection of clothing (32.2%), information on clothing adjustments for fit after surgery (29.9%), and information on eveningwear and nightwear (23%).
Findings

Analysis was directed toward research questions with the intent of addressing if selected demographic characteristics of age and finances spent on clothing predict the preferences for educational information on clothing issues for women who are post-mastectomy. In addition, findings focused on the ability of treatment path to predict the preferences for information on clothing issues for this special needs population. For the responding participants, 14.5% of participants received information on clothing selection and 10% received information on adapting clothing prior to surgery or upon discharge from the hospital.

Overall, 51.7% of participants reported that they wanted information on bras to use with a breast prosthesis. After utilizing log linear regression that included the four-way interaction term among the four predictors (a saturated model), the responses were modeled using binomial distribution. Based on nested model deviance test (testing the multi-level model), only treatment and reconstruction were shown as significant predictors of desire for information. When residuals were checked, four cases were found to be possible influential points. When these four cases were excluded, the model was repeated from the most complicated model again. This time, the simplest model in which only one predictor (reconstruction) was included revealed that the only effect that could be retained was a lower level interaction of just reconstruction ($p = 0.007$, Fisher’s exact test) (see Table 12). With retention of one predictor variable, further statistical analysis was done to measure the strength of association. Cramer’s V was then noted to be 0.3068, a medium association. Participants with non-breast conserving surgery were 2.6 times
more likely to desire information on prosthetic bras (odds ratio 2.6; 95% CI upper 1.5 and lower 8.95).

Table 12

*Treatment Path as a Predictor for Desire for Educational Information on Clothing Issues after Breast Cancer Surgery*

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Yes</th>
<th>No</th>
<th>$X^2$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information on Prosthetic Bras</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reconstruction</td>
<td>15 (38.5)</td>
<td>24 (61.5)</td>
<td>7.62(1)</td>
<td>&lt;0.01*</td>
</tr>
<tr>
<td>No Reconstruction</td>
<td>30 (62.5)</td>
<td>18 (37.5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td>45 (51.7)</td>
<td>42 (48.1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Odds Ratio 2.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information on Issues to Expect During the Treatment Process</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breast Conserving</td>
<td>2 (28.6)</td>
<td>5 (71.4)</td>
<td>7.95</td>
<td>0.04**</td>
</tr>
<tr>
<td>Non-Breast Conserving</td>
<td>45 (56.3)</td>
<td>35 (43.7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td>47 (53.9)</td>
<td>40 (45.9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Odds Ratio 0.28</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Phi Coefficient 0.3344; Contingency Coefficient 0.3172; Cramer’s V 0.3344
**Phi Coefficient –0.3068; Contingency Coefficient 0.2933; Cramer’s V –0.3068

Fifty-four percent of the entire sample desired information on clothing issues to expect throughout the treatment process. Log linear regression was again used. The response was modeled using binomial distribution. Then, based on the nested model
deviance test, the simplest model included three-way interactions with the predictors of treatment and reconstruction retained. However, after residuals were checked and a possible outlier was excluded, the simplest model changed to include a linear model with a two-way interaction with treatment ($p = .009$, Fisher’s exact test) (see Table 12). With retention of one predictor variable, further statistical analysis was done to measure the strength of association. Cramer’s V was then noted to be 0.3068, a medium association. Participants with no reconstruction were 28% more likely to want information on clothing issues to expect (odds ratio .281; 95% CI upper 1.7 and lower 0.057).

Twenty-eight percent of participants were interested in information on style selection post-surgery prior to discharge. Analysis was started by again using log linear regression and the response was modeled using binomial distribution. Then based on nested model deviance test, the simplest model was a three-way interaction with age and treatment. When residuals were checked with this model, one case may have been influential. After excluding this case, the simplest model only had one predictor, treatment, but again three influential cases were noted. After rerunning the model starting from the most complicated model again, no predictors were found to be significantly associated with the response variable (see Appendix D).

Thirty-two percent of participants were interested in information on alterations post-surgery for current fashion trends prior to discharge, and 30% of participants desired information on general alterations that might be needed post-surgery prior to discharge from the hospital. Analysis was started by again using log linear regression and the response was then modeled for each of these outcome variables using binomial distribution. Then, based on nested model deviance, there were no significant associations
with the predictor variables of age, money spent on clothing, and treatment path with the desire for alterations of current fashion trends or general alterations to clothing that might be needed post-surgery (see Appendix D).

Sixty-four of the participants desired information prior to hospital discharge regarding swimwear. Twenty-three percent desired information on eveningwear and nightwear. Each of these outcome variables was analyzed using log linear regression. The response was then modeled for each of these outcome variables using binomial distribution. Swimwear had the simplest model with one predictor, but residuals had one influential point and when that case was removed, there were no significant associations with the predictor variables. Eveningwear had the simplest model with two predictors of age and money; however, when influential points of four cases were removed, only money was found to be significantly associated with the response variable ($p = 0.007$) (see Table 13). With the retention of one predictor variable, further statistical analysis was done to measure the strength of association. Cramer’s V was then noted to be 0.3344, a medium association. Participants who spent more money on clothing were 1.7 times more likely to want information on eveningwear (95% CI, upper 4.989 and lower .573). Nightwear had no significant associations with predictor variables.

Forty-three percent of participants desired information on fabric selection for thermal comfort and skin sensitivity post-surgery. Again, analysis was completed using log linear regression and the response was modeled using binomial distribution. Then based on nested model deviance test, the simplest model included age, money, and treatment. After checking residuals and removing influential points of two cases, there were no significant associations with predictor variables (see Appendix D).
Table 13

*Money Spent on Clothing as a Predictor for Desire for Educational Information on Clothing Issues after Breast Cancer Surgery*

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Yes N (%)</th>
<th>No N (%)</th>
<th>$X^2$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information on Eveningwear</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Under $500 Spent Annually on Clothing</td>
<td>6 (17.6)</td>
<td>28 (82.4)</td>
<td>8.83</td>
<td>&lt;0.01*</td>
</tr>
<tr>
<td>More than $500 Spent Annually on Clothing</td>
<td>14 (26.4)</td>
<td>39 (73.6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td>20 (23)</td>
<td>67 (76.9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Odds Ratio 1.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information on Less Known Sources for Purchasing Post-Mastectomy Clothing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Under $500 Spent Annually on Clothing</td>
<td>14 (41.2)</td>
<td>20 (58.8)</td>
<td>5.35</td>
<td>&lt;0.025**</td>
</tr>
<tr>
<td>More than $500 Spent Annually on Clothing</td>
<td>32 (60.4)</td>
<td>21 (39.6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td>46 (52.7)</td>
<td>41 (47)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Odds Ratio 2.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Phi Coefficient 0.3344; Contingency Coefficient 0.3172; Cramer’s V 0.3344
**Phi Coefficient –0.3068; Contingency Coefficient 0.2933; Cramer’s V –0.3068

Fifty-three percent of participants desired information post-surgery prior to discharge on less known sources for purchasing garments to accommodate post-surgery needs. Analysis was again completed by using log linear regression and the response was modeled using binomial distribution. Then based on nested model deviance test, the simplest model included one predictor, treatment. When residuals were checked with this
model, one case was found to be influential, and only one predictor, money, was significantly associated with the outcome variable of sources for purchasing garments \((p = 0.0252)\) (see Table 13). With the retention of one predictor variable, further statistical analysis was done to measure the strength of association. Cramer’s V was then noted to be 0.2554, a small association. Participants who spent more than $500 per year on clothing were 2.2 times more likely to want less known sources for purchasing garments (95% CI, upper 4.1 and lower 1.15).

Age was not found to be a significant predictor of the educational outcomes. Thus, Hypothesis I—Age will be a significant consideration when planning discharge information on clothing needs and post-surgery issues for women who are post-mastectomy—was rejected. Money was found to have a significant association with two outcome variables, information on eveningwear and sources for post-mastectomy clothing. Thus, Hypothesis II—Finances dedicated to clothing purchases will be a significant consideration when planning discharge information on clothing needs and post-surgery issues for women who are post-mastectomy—was partially accepted. Treatment path was significantly associated with one outcome variable of information on bras for prosthesis and clothing issues to expect throughout the treatment process. Thus, Hypothesis III—Treatment path (breast conserving vs. non-breast conserving surgery; use of reconstruction) will be a significant consideration when planning discharge information on clothing needs and post-surgery issues for women who are post-mastectomy—was partially accepted.
Discussion

Findings indicated that a large percentage of participants did not receive any information upon discharge from the hospital about clothing selection (85.5%) or clothing adjustment (90%) after breast cancer surgery. When considering the emphases of Table 11 that include necessary adjustments needed on clothing purchases, as well as concerns with clothing features and selections, it is not surprising that women desire more information on clothing and clothing alteration prior to discharge post breast cancer surgery. Since clothing is outside the medical realm, clothing issues may not be considered important by the treatment team and may not be adequately addressed (Jackson, 2004). Shubert and Lionberger’s (1995) model of healing addresses the need for nurses to create a caring attitude toward the client—getting to know and share what is important to growth and self-actualization. Chowdhary (2011) expanded this application to the post-mastectomy survivor. With the loss of a breast, there is a need for a positive support system and help for individual adjustment. And clothing strategies are part of that individual adjustment. Approaches cited by Chowdhary include acquiring knowledge through information seeking and using all available resources to create a better image through the use of creative and reflective design and working with medical professionals. Although most participants in this study did not receive information on clothing and related issues, they were interested in reflective design approaches becoming part of discharge information from the hospital on areas such as swimwear, alterations tips for current fashion trends, sources to purchase post-mastectomy clothing, bras for prosthesis, clothing issues to expect in the treatment process, fabric selection for thermal comfort,
style selection, adjustments to help clothing fit post-surgery, and information on eveningwear and nightwear.

Most areas of information were not associated with the predictor variables of age, money spent on clothing, and specific treatment path. Desire for information in these areas (outcome variables in this study) was not associated with age. Information on bras for prosthesis was associated with use of reconstruction. This is not surprising since women go through a series of surgeries for breast reconstruction and will have differing needs for bras and temporary prosthetic bras during the surgical treatment regime. Receiving discharge information about issues to expect throughout the treatment process was significantly associated with treatment path. Whether women have breast conserving or non-conserving surgery, there are scarring issues, clothing issues with adjuvant therapies such as chemotherapy and radiation therapy that need apparel adjustments to accommodate scarring and side effects of treatment (Feather, Kaiser, & Rucker, 1988; Messerli et al., 1980).

Money spent on clothing was significantly associated with the desire for information on eveningwear. This was not surprising when considering the category of clothing, a more specialized category of clothing that would not be associated with primary activities of daily living. Money spent on clothing was also associated with the desire for more information on less known sources to purchase clothing.

**Strengths and Limitations**

The strength of this study was in addressing an educational gap perceived by women who are post-mastectomy (Jackson, 2004). Anecdotally women have stated that
they would like to get more education from the medical staff and feel it is not being addressed adequately by the medical arena (Jackson, 2004). The information in this study identifies informational needs, desired at hospital discharge, by women who are post-mastectomy. Most of the educational information cited in this study is regardless of age, money spent on clothing, or treatment path experienced by the women who is post-mastectomy. The informational needs are feasible to address by the medical community and are instrumental in women meeting their appearance needs post-surgery. The treatment path of women will affect the desire for selected education material and should be considered when developing material. Women may view educational materials differently based on the financial priority that clothing is given.

Potential limitations of the study were that social media and use of an online survey may have limited the access to low SES and elderly populations. Since women were recruited through local cancer centers in Michigan, Tennessee, and Texas, there was not random selection of participants. White non-Hispanic women who are post-mastectomy were over-represented in this study. In addition, the smaller sample size limited the ability to conduct stratified analyses to examine specific subgroups in this population. The categorical nature of the response variables limited the analysis available for this study.

**Implications**

Hospital discharge instructions need to provide effective strategies for patients to enhance their physical and psychological post-operative recovery (VandenBorne, 1998). The preparation of discharge information needs to assure that there is quality and
expediency for patients when they leave the acute care setting. For women who are post-mastectomy, planning strategic selection of material needs to (a) include appearance needs, (b) include selection of appropriate materials from the patient perspective, (c) include material that has been pre-tested with women who are post mastectomy to ensure the learning objectives of the patient are being met, and (d) include evaluation of effectiveness with patients.

Development of materials needs to consider Chowdhary’s four-step educational model for special needs clothing, which, for the post-mastectomy woman, includes considering the need for scar concealment, issues with lymphedema, and appearance management. Discharge instructions that are inclusive of apparel needs for these specialized concerns should include a variety of venues such as printed materials, audio-visual, and live interaction. Finally, any discharge materials need to make sure the client knows how to obtain and adapt needed garments for vital appearance management, empowering the cancer patient to take control of her recovery process.

Future studies could be broadened to include a larger nationally representative sample. Follow-up studies could include addressing what is included in hospital discharge instructions in relation to clothing and focus group reactions to prepared discharge instructions on the 10 topics desired in this study.

References


CHAPTER V

CONCLUSION

The aim of this three-paper format dissertation was to examine three topics germane to the clothing requirements, clothing acquisition, and clothing adaptation needs of women who are post-mastectomy. Paper one used a quantitative analysis of designated question responses from an online survey that addressed contemporary clothing issues for women who have experienced some form of breast surgery in the treatment of breast cancer. Log linear regression models were estimated to determine how selected demographics and treatment path for breast cancer were associated with clothing procurement concerns for women who are post-mastectomy.

Paper two was also based on a quantitative analysis of additional questions from the same online survey used in paper one. Paper two similarly used log linear regression models to estimate how venue selection for procuring clothing was associated with selected demographics and treatment path of women who are post-mastectomy. Specifically, paper two examined the importance of brick-and-mortar atmospherics as it relates to the characteristics of the fitting room. These atmospheric characteristics were explored as they related to the selection of a retail store for clothing purchases.

Paper three used quantitative analysis of more questions to focus on the clothing educational needs of women who are post-mastectomy. Looking through the framework of differing demographics and treatment paths, paper three also used log linear regression
models to estimate the desire for discharge information needed regarding clothing selection and modification, as well as information concerning potential clothing issues to expect throughout the treatment process and post-surgery stages.

This final chapter is a summary of the major findings of the three papers and the implication of these findings for current practice and future research.

**Summary of Study Findings**

**Paper One**

Women who are post-mastectomy feel their choices in clothing are limited and they have been unable to meet the standards they have set for self-concept and body-image through the use of clothing engineering (Jackson, 2004). Breast cancer survivors are a large target market of women who have experienced a lack of understanding for what they desire to wear and the amount of modification that is needed for successful procurement of desired styling of clothing. There are 2.5 million women who are breast cancer survivors (“Cancer Facts & Figures,” 2011), and paper one study results show that the majority of these women desire to wear the same pre-surgery styling (86%) with minor adaptations (43%) to conceal scars. Analysis of survey responses showed that age and amount of money spent on clothing were not associated with the desire to wear the same pre-surgery style of clothing or the ability to purchase clothing that conceals scars. The growing market of women over 50 will need to be addressed by industry, and there is a large opportunity to specifically address the needs of this growing target market of post-mastectomy women (Moschis, 2003). Women under 50 in the study reported more
success finding clothing that conceal scars and fit their post-surgery contour. (Women who were below 50 were 3 times more likely to find styles they desired to wear as opposed to women over 50). Since 43% of women cited needing minor changes to clothing, these changes have the potential to be cost-effective for industry to implement a design adaptation strategy for this large target market of women. Finding garments that meet clothing engineering needs of women who are post-mastectomy will enhance their ability to ameliorate the physical differences as a result of breast cancer surgery. Appropriate clothing selection and modification will enhance their post-operative recovery both physically and psychologically.

**Paper Two**

As baby boomer women continue to increase in number, so will the women who are post-mastectomy (“Cancer Facts & Figures,” 2011). As the retail clothing industry attempts to address niche markets, there is a large opportunity to address this sector of women that are post-mastectomy. Breast cancer survivors are a sizeable target market that has the need to carefully evaluate clothing purchases to meet specific appearance requirements such as scar concealment. Fitting room atmospherics that include space, temperature, mirror placement, lighting, privacy, and a sensitive and knowledgeable staff are all attributes of the fitting room that influence the decision to purchase (Underhill, 2010; Wilson, 2007) for a majority of women (Underhill, 2010; Wilson, 2009). This study revealed that these attributes not only influence the decision to purchase, but also influence the selection of a given retail clothing establishment. The percentage of women
who found each attribute important in selection were: privacy, 82%; mirror placement, 75%; space, 57%; temperature, 52%; assistance from staff, 38%; and lighting, 17%.

The practice implications of this study include disseminating the results to the apparel retail industry in order to address the atmospherics of the dressing room that would empower post-mastectomy women to make choices of apparel that enhance appearance and self-image. A collaborative effort by medical staff, the apparel industry, and retail industry could afford women who are post-mastectomy optimal recovery from a devastating event. There is an opportunity for market differentiation by industry working with medical personnel for optimum design and evaluation of that design in a comfortable fitting room setting. A comfortable fitting room setting, which enhances the opportunity for women who are post-mastectomy, could also enhance opportunities for other scar-related surgeries and cancer patients who experience some of the same side effects and image management issues. Since this entire market of breast cancer survivors includes 2.5 million women (“Cancer Facts & Figures,” 2011), it is large enough to be addressed by retailers that are seeking to increase loyal patronage.

**Paper Three**

Overall, women who are post-mastectomy have post-surgery educational needs upon discharge from the hospital that includes information on clothing procurement, clothing adaptation, and post-surgery clothing issues. This study found that women desire information on bras for prosthesis (52%); clothing issues to expect throughout the treatment process (46%); fabric selection for thermal and skin comfort (43%); style selection (32%); tips on alteration of current fashion (54%); training on clothing
adjustment for fit (30%); sources for purchasing garments (53%); and information on styling of swimwear (64%), eveningwear (23%), and nightwear (23%).

Although clothing strategies are an essential aspect of individual adjustment post-mastectomy, 85 to 90% of women did not receive any discharge information on clothing selection and clothing adjustment. Most of the informational needs that women have post-mastectomy were not associated with age, money spent on clothing, or treatment path.

This study points to the need to provide effective clothing strategies for women in order to enhance their post-operative recovery both physically and psychologically. Whatever the treatment path of the breast cancer survivor, there are scarring issues, clothing issues, and treatments issues that create need for adjusted apparel to accommodate scarring and side effects of treatment (Feather, Kaiser, & Rucker, 1988; Messerli, Garamendi, & Romano, 1980).

**Study Limitations**

Potential limitations of all three studies were the use of the online survey. Social media and use of an online survey may have limited the access to low SES and elderly populations. Since women were recruited through local cancer centers in Michigan, Tennessee, and Texas, there was not random selection of participants. White non-Hispanic women who are post-mastectomy were over-represented in all of the studies. In addition, the smaller sample size limited the ability to conduct stratified analyses to examine specific subgroups in this population. Breast conserving surgery is not currently selected by the majority of women to treat breast cancer due to the increase risk of
reoccurrence ("Cancer Facts & Figures," 2011; "Surgery for Breast Cancer," 2009), making it difficult to have adequate numbers in the cells for analysis. The categorical nature of the response variables limited the analysis available for this study. All three papers would have been stronger if it had been possible to have more participants that had elected to use breast conserving treatment.

**Future Research**

Future studies could be broadened to include a larger nationally representative sample. While an online survey approach gave the opportunity for a diverse representation, it was necessary to contact physician offices and cancer organizations to obtain participation in the study. This contact was limited by geographical convenience for known contacts in a three-state area of Michigan, Tennessee, and Texas. This study, as well as previous studies cited in this paper, did not represent a broad ethnic representation. A stratified sample may be necessary in order to include diverse ethnicity, which would require a much larger sample.

Once the general target market of women who are post-mastectomy is defined with the parameters of change needed, examination of specific designs should be conducted with focus groups.

Designs could be evaluated by diverse age groups from differing SES and ethnic backgrounds. Potential adaptation information for styles could be garnered and information continued to be related to industry in age-related target markets.

Maintaining contact with industry and consulting with industry about the specific adaptations needed by post-mastectomy women as well as maintaining an open ongoing
dialog will be important. Through this relationship, concerns can be disseminated and support can be garnered for apparel that meets the adaptive needs of this specialized group of women.

Fitting room atmospherics are important to women who are post-mastectomy and to women in general. A follow-up study could be done with a control group of women who have not had mastectomies and ascertain the importance of fitting room atmospherics in the selection of retail apparel stores. This group could be compared with the results of this study. Potential adjustments to fitting rooms could be evaluated, such as multiple mirror placements, to get specific adjustments that could benefit this specialized group of women. These adjustments could also be tested with consumers in general for maximum consumer benefit.

Hospital discharge instructions are important to a full physical and psychological recovery of post-mastectomy women. Follow-up studies could include addressing what is included in hospital discharge instructions in relation to clothing and focus group reactions to prepare discharge instructions on the 10 topics desired in this study.

References


Appendix A

Post-Mastectomy Survey
Part I. Demographic Information

1. What is your age_________

2. What is your racial/ethnic origin (check all that apply)?
   - □ Non-Hispanic White
   - □ Non-Hispanic Black or African American
   - □ Hispanic
   - □ American Indian/Alaskan Native
   - □ Asian/Pacific Islander
   - □ Other

3. What is your household income per year?
   - □ Under $25,000
   - □ $25,000-49,999
   - □ $50,000-$100,000
   - □ Above $100,000

4. What would you estimate that you spend on clothes, for yourself, on a yearly basis?
   - □ Under $500
   - □ $500-$1,200
   - □ Over $1,200

Part II. Medical Information

5. How long ago did you have your first (or only) mastectomy?
   - □ Less than one year
   - □ 1-5 years
   - □ Over 5 years

6. Have you had more than one mastectomy? □ Yes □ No
   If yes, when did you have the second surgery?
   - □ Less than 1 year ago
   - □ 1-5 years
   - □ Over 5 years

7. What type of mastectomy or surgery(s) did you have (check all that apply)?
   - □ Lumpectomy (tumor is removed and a little bit of breast tissue)
   - □ Partial Mastectomy (part of the breast is removed that contains the tumor and some of the normal breast around it)
   - □ Simple/Total Mastectomy (removal of the breast, with skin and nipple, but no lymph nodes under your arm)
   - □ Modified Radical Mastectomy (removal all of the breast tissue and lymph nodes under the arm on the affected side)
   - □ Radical Mastectomy (removal all of the breast tissue and underlying muscles and lymph nodes under arm on the affected side)
8. Location(s) of surgery
   □ Right side only
   □ Left side only
   □ Left and Right Side

9. Have you had breast reconstruction surgery? □Yes □ No
   a. If yes, when did you have reconstruction surgery?
      □ Less than 1 year ago
      □ 1-5 years
      □ Greater than 5 years

   b. If no, do you plan to have reconstruction surgery? □Yes □ No

10. Do you currently use a breast prosthesis? □Yes □No

11. Did you have Radiation therapy? □Yes □ No

12. Did you have chemotherapy? □Yes □ No

13. Are you currently or have you ever in the past experienced any of the following problems related to breast cancer surgery, radiation, or chemotherapy that changed your clothing purchases? (Please check all that apply)
   
   **Surgery problems**
   □ Skin tenderness
   □ Pain in chest area that remained after healing from your surgery
   □ Difficulty maintaining posture due to loss of weight in your chest from breast removal
   □ Numbness in affected arm and/or chest area
   □ Swelling of affected arm
   □ Some loss of movement of arm on affected side

   **Radiation problems**
   □ Discoloration
   □ Spider veins
   □ Tattoos
   □ Scars from burning
   □ Sensitivity of radiated skin to sun (UV rays)

   **Chemotherapy/hormone therapy problems**
   □ Weight gain
   □ Swelling of extremities, particularly hands
   □ Hot flashes
14. Do you currently use a lymphedema sleeve (sleeve to control swelling in arm):
□ Yes □ No

Part III. Clothing
15. Since your mastectomy which of the following statements are true for you (check all that apply)
□ Yes □ No I would like to wear all of the same styles I wore before my surgery
□ Yes □ No I am happy with the fit of the clothes that are available to buy – (I wear them without pinning or sewing them to make them conceal my scars and fit the changes in my body)
□ Yes □ No Since having my surgery, the styles I would like to buy need to have changes in order for me to wear them (I need to pin them or sew them to make them conceal my scars and fit changes in my body)
□ Yes □ No I like to shop in retail stores where I can try on the clothing so I can see how it looks and how it conceals my scars and fits me
□ Yes □ No I enjoy the convenience of buying in catalogs and do not buy many clothes at retail stores in my community or region where I live because I prefer to shop from catalogs
□ Yes □ No I enjoy the convenience of buying clothes online and do not buy many clothes at the retail stores in my community or region where I live because I prefer to shop online
□ Yes □ No I shop online because I cannot find clothes that conceal my scars and fit the changes in my body in retail stores since my surgery
□ Yes □ No I shop in catalogs because I cannot find clothes that conceal my scars and fit the changes in my body retail stores since my surgery

16. In order to wear some of the styles that you desire to wear since your surgery, how much change would have to occur to the garments for you to wear them? A large amount of changes would need to be made in order to wear those styles (i.e. the clothes would need to be remade to conceal my scars) or are the changes very minor (for example, the neck needs to be raised 1-2 inches)
□ Major changes (the necklines or armhole would have to be changed a lot)
□ Minor changes (I can easily have them changed to conceal my scars)

17. In the year BEFORE your mastectomy, what percent of clothing did you purchase from the following sources (check any that apply and indicate the approximate percent of YOUR clothes you purchased there)?
□ Store ___%
□ Catalog___%
□ At a discount store (i.e. Target, K Mart, Meijer)___%
□ Online Sources ___%
□ Other (please specify) ____________________________
18. In the latest year SINCE your mastectomy, what percent of clothing do you purchase from the following sources (check any that apply and indicate the approximate percent of clothes you purchase there)?
   □ Store ___%
   □ Catalog ___%
   □ At a discount store (i.e. Target, K Mart, Meijer) ___%
   □ Online sources ___%
   □ Other (please specify) _____________________________________________

19. If you are not purchasing clothes at the same place, why have you changed your shopping destination? (check all that apply)
   □ Mirrors and lighting in the dressing rooms
   □ Personnel
   □ Clothing selection works better for me since surgery
   □ Cost of clothing
   □ Other (please specify) _____________________________________________

20. How important would each of the following be in your selection of a store from which to purchase your clothing? (think of how you feel since you had your mastectomy about these issues and check the response that indicates how important it is)

   Space in the fitting rooms:
   □ Yes this is important
   □ No, this is not important
   □ Unsure

   Fitting room temperature
   □ Yes this is important
   □ No, this is not important
   □ Unsure

   Mirrors placed to view all angles (so you can see if it covers areas)
   □ Yes this is important
   □ No, this is not important
   □ Unsure

   Subdued lighting to dull effects of shadows on altered skin surfaces
   □ Yes this is important
   □ No, this is not important
   □ Unsure

   Assistance from sensitive and knowledgeable staff in fitting room area
   □ Yes this is important
   □ No, this is not important
   □ Unsure

   Privacy in the fitting room area
   □ Yes this is important
   □ No, this is not important
   □ Unsure
21. For each item listed below indicate how important it is to you when you select clothes to purchase (check the response that indicates how important it is)

- How well the garment is designed (how stylish is it, is it current with fashion)
  - Yes this is important
  - No, this is not important
  - Unsure

- Care of garment (wash vs. dry clean)
  - Yes this is important
  - No, this is not important
  - Unsure

- How the fabric feels when I wear it
  - Yes this is important
  - No, this is not important
  - Unsure

- How the clothes fit (am I going to have to pin areas or have someone sew it differently for me)
  - Yes this is important
  - No, this is not important
  - Unsure

- Sales personnel helpfulness (the personnel help show you how the garment can be adjusted)
  - Yes this is important
  - No, this is not important
  - Unsure

- Sales personnel training (personnel have been trained to help with clothing selection and garment adjustments for women who have had surgery or difficulty finding clothing that fits)
  - Yes this is important
  - No, this is not important
  - Unsure

Other (Please specify) ____________________________

22. When purchasing a garment what are the important factors for you in terms of what kind of fabric the garment is made from?

- Current fashion trends
  - Yes this is important
  - No, this is not important
  - Unsure

- Ease of care (wash or dry clean)
  - Yes this is important
  - No, this is not important
  - Unsure
Comfortable (I like the way it feels on my skin)
- Yes this is important
- No, this is not important
- Unsure

Ease of dressing (the fabric stretches a little when I put it on)
- Yes this is important
- No, this is not important
- Unsure

Attractiveness when worn
- Yes this is important
- No, this is not important
- Unsure

Limited choice on the market (I have to buy what works rather than fabric I like)
- Yes this is important
- No, this is not important
- Unsure

Warmth
- Yes this is important
- No, this is not important
- Unsure

Other (please specify) ________________________

23. Since your mastectomy, when you have purchased clothing, have you had to alter the clothes to conceal scars or fit changes in your body (pinning or sewing it differently)

- Yes  - No

   a. If yes, at what area or areas are they changed (check all that apply)

   - Length (So you change the length of your tops or dresses to make them even)
   - Sleeve (Change them so they are not tight around your arm)
   - Waistline (Change waist so it is not too tight)
   - Bustline (Do you have to adjust for wrinkles or gaps on your garment the side where you had breast surgery)
   - Neckline (Do you have to adjust for wrinkles or gaps or scars that are visible where you had breast surgery)
   - Back (Do you have to adjust or wrinkles or gaps or scars that are visible)
   - Other (please specify) ____________________________

Part IV. Education

24. Did you receive any information from the medical staff prior to surgery or at discharge about clothing selection after your mastectomy?

- Yes  - No

25. Did you receive any information from the medical staff prior to surgery or at discharge that gave helpful hints about adjusting your clothing after your mastectomy?

- Yes  - No
26. What areas would you desire to have written information to assist you? (check all that apply)

- Bras for your prosthesis
- Information on what clothing issues to expect throughout the treatment process
- Fabric selection of temperature comfort and to help skin that is tender to the touch
- Style selection of clothing
- Tips on available alterations for current fashion trends
- Training in clothing adjustments to make so that clothing fits better
- Information on swimwear
- Information on evening wear
- Information on nightwear
- Information on less known sources for purchasing garments to accommodate post-surgery needs
- Other ___________________________________________
Appendix B

Human Subjects Institutional Review Board
Letter of Approval
Date: April 13, 2010

To: Kieran Fogarty, Principal Investigator
    Carol Beard, Student Investigator for dissertation

From: Amy Naugle, Ph.D., Chair

Re: HSIRB Project Number: 10-04-04

This letter will serve as confirmation that your research project titled “Clothing Issues of Contemporary Post-Mastectomy Women” has been approved under the exempt category of review by the Human Subjects Institutional Review Board. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the application.

Please note that you may only conduct this research exactly in the form it was approved. You must seek specific board approval for any changes in this project. You must also seek reapproval if the project extends beyond the termination date noted below. In addition if there are any unanticipated adverse reactions or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSIRB for consultation.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: April 13, 2011
Appendix C

Tables that Include Non-significant Results – Chapter III
Table C-1

*Is Space Important in Store Selection for Clothing Purchases Post-Mastectomy Based on Predictor Variables*

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>$X^2$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Treatment Path</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breast Conserving Surgery</td>
<td>2 (33.3)</td>
<td>4 (66.7)</td>
<td>2.601 (1)</td>
<td>0.113*</td>
</tr>
<tr>
<td>Non-Breast Conserving Surgery</td>
<td>48 (59.3)</td>
<td>33 (40.7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reconstruction after Mastectomy</td>
<td>24 (66.7)</td>
<td>12 (33.3)</td>
<td>0.478 (1)</td>
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<tr>
<td>No Reconstruction after Mastectomy</td>
<td>26 (55.3)</td>
<td>21 (44.7)</td>
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<td></td>
</tr>
<tr>
<td><strong>Age Range</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below 50 years</td>
<td>14 (60.8)</td>
<td>9 (39.2)</td>
<td>0.148 (1)</td>
<td>0.447</td>
</tr>
<tr>
<td>Above 50 years</td>
<td>36 (60.0)</td>
<td>24 (40.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Clothing Expenditures</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Under $500</td>
<td>21 (63.6)</td>
<td>12 (36.4)</td>
<td>0.421 (1)</td>
<td>0.336</td>
</tr>
<tr>
<td>Over $500</td>
<td>29 (58.0)</td>
<td>21 (42.0)</td>
<td></td>
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</tr>
</tbody>
</table>

* Fisher's Exact Test

Table C-2

*Is Temperature Important in Store Selection for Clothing Purchases Post-Mastectomy Based on Predictor Variables*

<table>
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<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>$X^2$</th>
<th>$p$</th>
</tr>
</thead>
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<tr>
<td><strong>Treatment Path</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breast Conserving Surgery</td>
<td>2 (33.3)</td>
<td>4 (66.7)</td>
<td>1.634 (1)</td>
<td>0.189*</td>
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<tr>
<td>Non-Breast Conserving Surgery</td>
<td>43 (58.9)</td>
<td>30 (41.1)</td>
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<td></td>
</tr>
<tr>
<td>Reconstruction after Mastectomy</td>
<td>23 (67.6)</td>
<td>11 (32.4)</td>
<td>1.488 (1)</td>
<td>0.158</td>
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<tr>
<td>No Reconstruction after Mastectomy</td>
<td>22 (48.9)</td>
<td>23 (51.1)</td>
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<td></td>
</tr>
<tr>
<td><strong>Age Range</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below 50 years</td>
<td>10 (45.5)</td>
<td>12 (54.5)</td>
<td>0.851 (1)</td>
<td>0.248</td>
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<tr>
<td>Above 50 years</td>
<td>35 (61.4)</td>
<td>22 (38.6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Clothing Expenditures</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Under $500</td>
<td>17 (53.1)</td>
<td>15 (46.9)</td>
<td>0.066 (1)</td>
<td>0.485</td>
</tr>
<tr>
<td>Over $500</td>
<td>28 (59.6)</td>
<td>19 (40.4)</td>
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</tr>
</tbody>
</table>

* Fisher's Exact Test
### Table C-3

**Is Mirror Placement Important in Store Selection for Clothing Purchases Post-Mastectomy Based on Predictor Variables**

<table>
<thead>
<tr>
<th>Treatment Path</th>
<th>Yes (%)</th>
<th>No (%)</th>
<th>$X^2$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breast Conserving Surgery</td>
<td>3 (42.9)</td>
<td>4 (57.1)</td>
<td>4.089 (1)</td>
<td>0.043*</td>
</tr>
<tr>
<td>Non-Breast Conserving Surgery</td>
<td>62 (80.5)</td>
<td>15 (19.5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reconstruction after Mastectomy</td>
<td>31 (86.1)</td>
<td>5 (13.9)</td>
<td>0.853 (1)</td>
<td>0.251*</td>
</tr>
<tr>
<td>No Reconstruction after</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mastectomy</td>
<td>34 (70.8)</td>
<td>14 (29.2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age Range</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below 50 years</td>
<td>18 (78.3)</td>
<td>5 (21.7)</td>
<td>0.208 (1)</td>
<td>0.439*</td>
</tr>
<tr>
<td>Above 50 years</td>
<td>47 (77.1)</td>
<td>14 (22.9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clothing Expenditures</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Under $500</td>
<td>26 (78.8)</td>
<td>7 (21.2)</td>
<td>0.091 (1)</td>
<td>0.484</td>
</tr>
<tr>
<td>Over $500</td>
<td>39 (76.5)</td>
<td>12 (23.5)</td>
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</tbody>
</table>

* Fisher's Exact Test

### Table C-4

**Is Lighting Important in Store Selection for Clothing Purchases Post-Mastectomy Based on Predictor Variables**

<table>
<thead>
<tr>
<th>Treatment Path</th>
<th>Yes (%)</th>
<th>No (%)</th>
<th>$X^2$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breast Conserving Surgery</td>
<td>1 (16.7)</td>
<td>5 (83.3)</td>
<td>0.142 (1)</td>
<td>0.932*</td>
</tr>
<tr>
<td>Non-Breast Conserving Surgery</td>
<td>14 (19.2)</td>
<td>59 (80.8)</td>
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<td></td>
</tr>
<tr>
<td>Reconstruction after Mastectomy</td>
<td>8 (24.2)</td>
<td>25 (75.8)</td>
<td>1.290 (1)</td>
<td>0.525</td>
</tr>
<tr>
<td>No Reconstruction after</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mastectomy</td>
<td>7 (15.2)</td>
<td>39 (84.8)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age Range</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below 50 years</td>
<td>5 (23.8)</td>
<td>16 (76.2)</td>
<td>0.769 (1)</td>
<td>0.681</td>
</tr>
<tr>
<td>Above 50 years</td>
<td>10 (17.2)</td>
<td>48 (82.8)</td>
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<td></td>
</tr>
<tr>
<td>Clothing Expenditures</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Under $500</td>
<td>6 (18.7)</td>
<td>26 (81.3)</td>
<td>0.651 (1)</td>
<td>0.722</td>
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<td>9 (19.1)</td>
<td>38 (80.9)</td>
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</tbody>
</table>

* Fisher's Exact Test
### Table C-5

*Is Privacy Important in Store Selection for Clothing Purchases Post-Mastectomy Based on Predictor Variables*

<table>
<thead>
<tr>
<th>Treatment Path</th>
<th>Yes</th>
<th>No</th>
<th>$X^2$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breast Conserving Surgery</td>
<td>4 (57.1)</td>
<td>3 (43.9)</td>
<td>4.38</td>
<td>0.071*</td>
</tr>
<tr>
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<td>67 (87.0)</td>
<td>10 (13.0)</td>
<td>2.1</td>
<td>0.42</td>
</tr>
<tr>
<td>Reconstruction after Mastectomy</td>
<td>33 (24.2)</td>
<td>5 (75.8)</td>
<td>0.28</td>
<td>0.412*</td>
</tr>
<tr>
<td>No Reconstruction after Mastectomy</td>
<td>38 (82.6)</td>
<td>8 (17.4)</td>
<td>0.09</td>
<td>0.51</td>
</tr>
<tr>
<td>Age Range</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below 50 years</td>
<td>19 (82.6)</td>
<td>4 (17.4)</td>
<td>0.09</td>
<td>0.501*</td>
</tr>
<tr>
<td>Above 50 years</td>
<td>52 (85.2)</td>
<td>9 (14.8)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clothing Expenditures</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Under $500</td>
<td>26 (78.8)</td>
<td>7 (21.2)</td>
<td>1.37</td>
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<td>45 (88.2)</td>
<td>6 (11.8)</td>
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</table>

* Fisher's Exact Test

### Table C-6

*Is Knowledgeable Sensitive Staff Important in Store Selection for Clothing Purchases Post-Mastectomy Based on Predictor Variables*

<table>
<thead>
<tr>
<th>Treatment Path</th>
<th>Yes</th>
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<th>$X^2$</th>
<th>$p$</th>
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<tr>
<td>Breast Conserving Surgery</td>
<td>1 (16.7)</td>
<td>5 (83.3)</td>
<td>1.80</td>
<td>0.176*</td>
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<td>32 (43.2)</td>
<td>42 (56.8)</td>
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<tr>
<td>Reconstruction after Mastectomy</td>
<td>15 (46.9)</td>
<td>17 (53.1)</td>
<td>0.08</td>
<td>0.551</td>
</tr>
<tr>
<td>No Reconstruction after Mastectomy</td>
<td>18 (37.5)</td>
<td>30 (62.5)</td>
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</tr>
<tr>
<td>Age Range</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below 50 years</td>
<td>10 (47.6)</td>
<td>11 (52.4)</td>
<td>0.41</td>
<td>0.346</td>
</tr>
<tr>
<td>Above 50 years</td>
<td>23 (39.0)</td>
<td>36 (61.0)</td>
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</tr>
<tr>
<td>Clothing Expenditures</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Under $500</td>
<td>13 (41.9)</td>
<td>18 (58.1)</td>
<td>0.02</td>
<td>0.57</td>
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<tr>
<td>Over $500</td>
<td>20 (40.8)</td>
<td>29 (59.2)</td>
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</table>

* Fisher's Exact Test
Appendix D

Tables that Include Non-significant Results – Chapter IV
### Table D-1

**Importance of Information on Bras Before Hospital Discharge**

<table>
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<th>Treatment Path</th>
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<th>(X^2)</th>
<th>(p)</th>
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</thead>
<tbody>
<tr>
<td>Breast Conserving Surgery</td>
<td>1(14.3)</td>
<td>6 (85.7)</td>
<td>1.204 (1)</td>
<td>0.4568*</td>
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<tr>
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<td>44 (55.0)</td>
<td>36 (45.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reconstruction after Mastectomy</td>
<td>15 (38.5)</td>
<td>24 (61.5)</td>
<td>7.624 (1)</td>
<td>0.007</td>
</tr>
<tr>
<td>No Reconstruction after Mastectomy</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mastectomy</td>
<td>30 (62.5)</td>
<td>18 (37.5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age Range</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below 50 years</td>
<td>9 (39.1)</td>
<td>14 (60.9)</td>
<td>3.008 (1)</td>
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</tr>
<tr>
<td>Above 50 years</td>
<td>36 (56.2)</td>
<td>28 (43.8)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clothing Expenditures</td>
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<td></td>
<td></td>
<td></td>
</tr>
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<td>Under $500</td>
<td>21 (61.8)</td>
<td>13 (38.2)</td>
<td>1.426 (1)</td>
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<td>Over $500</td>
<td>24 (45.3)</td>
<td>29 (54.7)</td>
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</table>

* Fisher’s Exact Test

### Table D-2

**Importance of Information on Clothing Issues to Expect Throughout the Treatment Process Before Hospital Discharge**

<table>
<thead>
<tr>
<th>Treatment Path</th>
<th>Yes</th>
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<th>(p)</th>
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<td>Breast Conserving Surgery</td>
<td>2 (28.6)</td>
<td>5 (71.4)</td>
<td>7.62 (1)</td>
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<tr>
<td>Non-Breast Conserving Surgery</td>
<td>45 (56.2)</td>
<td>35 (43.8)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reconstruction after Mastectomy</td>
<td>15 (38.5)</td>
<td>24 (61.5)</td>
<td>0.277 (1)</td>
<td>0.598</td>
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<td>25 (52.1)</td>
<td>23 (47.9)</td>
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<td>Age Range</td>
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<td>Below 50 years</td>
<td>10 (43.5)</td>
<td>13 (56.5)</td>
<td>1.400 (1)</td>
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<td>Above 50 years</td>
<td>37 (57.8)</td>
<td>27 (42.2)</td>
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<td>Clothing Expenditures</td>
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<tr>
<td>Under $500</td>
<td>14 (41.2)</td>
<td>20 (58.8)</td>
<td>3.708 (1)</td>
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<td>33 (62.3)</td>
<td>20 (37.7)</td>
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* Fisher's Exact Test
Table D-3

*Importance of Information on Fabric Before Hospital Discharge*

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<th>No</th>
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<tr>
<td>Breast Conserving Surgery</td>
<td>4 (57.1)</td>
<td>3 (42.9)</td>
<td>0.065 (1)</td>
<td>0.452*</td>
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<td>Non-Breast Conserving Surgery</td>
<td>33 (41.2)</td>
<td>47 (58.8)</td>
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<td>Reconstruction after Mastectomy</td>
<td>19 (48.7)</td>
<td>20 (51.3)</td>
<td>1.11 (1)</td>
<td>0.383</td>
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<td>18 (37.6)</td>
<td>30 (62.5)</td>
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<td>Age Range</td>
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<td>Below 50 years</td>
<td>10 (43.5)</td>
<td>13 (56.5)</td>
<td>0.012 (1)</td>
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<td>27 (42.2)</td>
<td>37 (57.8)</td>
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<td>Under $500</td>
<td>12 (35.3)</td>
<td>22 (64.7)</td>
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<td>25 (67.6)</td>
<td>12 (32.4)</td>
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* Fisher's Exact Test

Table D-4

*Importance of Information on Clothing Styles Before Hospital Discharge*

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<td>4 (57.1)</td>
<td>3 (42.9)</td>
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<td>0.822*</td>
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<td>24 (30.0)</td>
<td>56 (70.0)</td>
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<td>12 (30.8)</td>
<td>27 (69.2)</td>
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<td>0.141</td>
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<td>No Reconstruction after Mastectomy</td>
<td>16 (33.3)</td>
<td>32 (66.7)</td>
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<td>Age Range</td>
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<td>Below 50 years</td>
<td>8 (34.8)</td>
<td>15 (65.2)</td>
<td>0.096 (1)</td>
<td>0.755</td>
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<td>20 (31.3)</td>
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* Fisher's Exact Test
Table D-5

*Importance of Information on Alterations for Current Fashion Trends Before Hospital Discharge*

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<th>Treatment Path</th>
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<th>( p )</th>
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<tbody>
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<td>5</td>
<td>0.046 (1)</td>
<td>1.000*</td>
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<td>Breast Conserving Surgery</td>
<td>26</td>
<td>54</td>
<td></td>
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<tr>
<td>Non-Breast Conserving Surgery</td>
<td>32.5</td>
<td>67.5</td>
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<tr>
<td>Reconstruction after Mastectomy</td>
<td>10</td>
<td>29</td>
<td>1.39 (1)</td>
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<th>( p )</th>
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<tr>
<td>Below 50 years</td>
<td>19</td>
<td>4</td>
<td>0.096 (1)</td>
<td>0.797*</td>
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<td>52</td>
<td>9</td>
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<th>( p )</th>
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<td>Under $500</td>
<td>7</td>
<td>27</td>
<td>3.438 (1)</td>
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* Fisher's Exact Test

Table D-6

*Importance of Information on General Alterations for Fit Before Hospital Discharge*

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<td>Breast Conserving Surgery</td>
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<td>6</td>
<td>0.884 (1)</td>
<td>0.669*</td>
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<td>Breast Conserving Surgery</td>
<td>25</td>
<td>55</td>
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<tr>
<td>Non-Breast Conserving Surgery</td>
<td>31.2</td>
<td>68.8</td>
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<td>Reconstruction after Mastectomy</td>
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<td>31</td>
<td>2.963 (1)</td>
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<td>30</td>
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<th>No</th>
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<th>( p )</th>
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<tr>
<td>Below 50 years</td>
<td>10</td>
<td>11</td>
<td>0.215 (1)</td>
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<td>Above 50 years</td>
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<td>36</td>
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<th>No</th>
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<th>( p )</th>
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<td>Under $500</td>
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<td>18</td>
<td>1.075 (1)</td>
<td>0.299</td>
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<td>Over $500</td>
<td>20</td>
<td>29</td>
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* Fisher's Exact Test
Table D-7

_Importance of Information on Swimwear Before Hospital Discharge_

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<td><strong>Treatment Path</strong></td>
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<td>Breast Conserving Surgery</td>
<td>2 (28.6)</td>
<td>5 (71.4)</td>
<td>4.253 (1)</td>
<td>0.092*</td>
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<td>54 (67.5)</td>
<td>26 (32.5)</td>
<td>(1) 0.092*</td>
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<td>Reconstruction after Mastectomy</td>
<td>25 (64.1)</td>
<td>14 (35.9)</td>
<td>0.002 (1)</td>
<td>0.963</td>
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<tr>
<td>No Reconstruction after Mastectomy</td>
<td>31 (64.6)</td>
<td>17 (35.4)</td>
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<td><strong>Age Range</strong></td>
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<td>Below 50 years</td>
<td>16 (69.6)</td>
<td>7 (30.4)</td>
<td>0.368 (1)</td>
<td>0.544</td>
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<td>Above 50 years</td>
<td>40 (62.5)</td>
<td>24 (37.5)</td>
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<td><strong>Clothing Expenditures</strong></td>
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<tr>
<td>Under $500</td>
<td>19 (55.9)</td>
<td>15 (44.1)</td>
<td>1.752 (1)</td>
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<td>37 (69.8)</td>
<td>16 (30.2)</td>
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* Fisher's Exact Test

Table D-8

_Importance of Information on Eveningwear Before Hospital Discharge_

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<tr>
<td><strong>Treatment Path</strong></td>
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<tr>
<td>Breast Conserving Surgery</td>
<td>2 (28.6)</td>
<td>5 (71.4)</td>
<td>0.671 (1)</td>
<td>1.00*</td>
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<td>Non-Breast Conserving Surgery</td>
<td>18 (22.5)</td>
<td>62 (77.5)</td>
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<td>Reconstruction after Mastectomy</td>
<td>10 (25.6)</td>
<td>29 (74.4)</td>
<td>0.726 (1)</td>
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<td>10 (20.8)</td>
<td>38 (79.2)</td>
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<td><strong>Age Range</strong></td>
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<td>Below 50 years</td>
<td>9 (39.1)</td>
<td>14 (60.9)</td>
<td>1.616 (1)</td>
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<td>11 (17.2)</td>
<td>53 (82.8)</td>
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<td>Under $500</td>
<td>6 (17.6)</td>
<td>28 (82.4)</td>
<td>8.834 (1)</td>
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<td>14 (26.4)</td>
<td>39 (73.6)</td>
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* Fisher's Exact Test
### Table D-9

**Importance of Information on Nightwear Before Hospital Discharge**

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<td>Breast Conserving Surgery</td>
<td>1 (14.3)</td>
<td>6 (85.7)</td>
<td>0.326 (1)</td>
<td>1.00*</td>
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<tr>
<td>Non-Breast Conserving Surgery</td>
<td>19 (23.8)</td>
<td>61 (76.2)</td>
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<tr>
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<td>9 (23.1)</td>
<td>30 (76.9)</td>
<td>0.003 (1)</td>
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<td>11 (22.9)</td>
<td>37 (77.1)</td>
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<tr>
<td>Mastectomy</td>
<td>6 (26.1)</td>
<td>17 (73.9)</td>
<td>0.169</td>
<td>0.68</td>
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<td>Below 50 years</td>
<td>14 (21.9)</td>
<td>50 (78.1)</td>
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<tr>
<td>Above 50 years</td>
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<tr>
<td>Clothing Expenditures</td>
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<tr>
<td>Under $500</td>
<td>5 (14.7)</td>
<td>29 (85.3)</td>
<td>2.163 (1)</td>
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<td>38 (71.7)</td>
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* Fisher's Exact Test

### Table D-10

**Importance of Information on Sources for Less Known Adaptive Clothing Before Hospital Discharge**

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<td>Breast Conserving Surgery</td>
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<td>6 (85.7)</td>
<td>2.493 (1)</td>
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<td>45 (56.2)</td>
<td>35 (43.8)</td>
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<td>19 (48.7)</td>
<td>20 (51.3)</td>
<td>1.140 (1)</td>
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<td>27 (56.2)</td>
<td>21 (43.8)</td>
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<tr>
<td>Mastectomy</td>
<td>10 (43.5)</td>
<td>13 (56.5)</td>
<td>1.647 (1)</td>
<td>0.199</td>
</tr>
<tr>
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</tr>
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<td>Below 50 years</td>
<td>36 (56.2)</td>
<td>28 (43.8)</td>
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* Fisher's Exact Test