

Exploration of the link between Breast Cancer and Body Image, Quality of Life
and Body Appreciation

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Abstract

Aim: The present study aimed to explore the link between breast cancer and body appreciation, quality of life and body appreciation. **Method:** Women (N = 89) who received surgery were placed into five groups, single or double mastectomy, single or double mastectomy with breast reconstruction or breast conservation. Groups were compared with a control group (N = 89) for scores on three questionnaires, quality of life, body image after breast cancer, body appreciation scale. **Results:** Results revealed Lower psychological and physical wellbeing but higher body appreciation were experienced by the breast cancer group compared to the control group; Single/double mastectomy with breast reconstruction or breast conservation were associated with higher body satisfaction; time since diagnosis displayed lower body appearance concerns and higher body satisfaction; Treatment type demonstrated higher physical, psychological wellbeing, higher levels of social concern, lower levels of distress and fear; and age was the strongest predictor of quality of life for women after breast cancer. **Conclusion:** This research provides useful information to the health sector to try to improve psychological/physical wellbeing and long term quality of life for women. More research needs to be carried out on the effects of age on quality of life after breast cancer.

Keywords: breast cancer, quality of life, body appreciation, body image,

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Cancer can have an extensive impact on physical, psychological, and emotional aspects of one's life as survivors try to deal with the disease. As the number of people diagnosed with cancer grows so does the need for up to date services that cater to the needs of the individual. Cancer, one of the biggest killers in the modern world after heart disease (World Health Organisation, 2014) affects men, women, children, infants and in some cases unborn babies. The National Cancer Institute's (2015) definition of cancer which depicts cancer as a disease affecting the processes of dividing and repairing bodily cells, resulting in abnormal cells which in turn split, divide and multiply without control leading to the invasion of other tissue areas in the body. Abnormal cells can be transported or carried around the body through the bloodstream or within the lymph nodes or the lymph systems (National Cancer Institute, 2015; Padera, Meijer, & Munn, 2016; Fawcett, & Drew, 2017). The most common cancer to affect women is breast cancer which affects milk ducts, glands and the surrounding breast tissue (National Cancer Institute, 2015). Breast cancer can have a dramatic impact on aspects of life such as the varying levels of quality of life women experience while they have breast cancer or after they have experienced breast cancer, large changes can occur in the way they view their body in terms of their body image and body appreciation especially after enduring breast cancer surgery. This research study will focus on the exploration of the link between breast cancer and body image, quality of life and body appreciation.

Breast cancer can be caused by many different aspects of life such as genetic influences that account for the structural or disruption of the normal process of cell division and renewal present in the breast tissue, milk ducts and glands. However, certain structural changes and disturbances can occur due to genetic influences from blood relations usually biological mothers or fathers who pass genes such as BRCA1 and BRCA2 to their children in some cases increasing the risk of developing breast cancer cells by 55- 65%. (Balmain, Gray, & Ponder, 2003; Balmain, Llacuachaqui, Lubinski, Lynch, Armel, Neuhausen, Ghadirian, Sun, & Narod, 2013; Kreso & Dick, 2014; Ellberg, Jernström, Broberg, Borg, & Olsson, 2015; Vos, Oosterwijk, Aalfs, Rookus, Adank, van der Hout, van Asperen, Gómez Garcia, Mensenkamp, Jager, Mourits, de Bock, & Ausems, 2016).

Global Breast Cancer Statistics

Breast cancer statistics are increasing dramatically, although quite a substantial amount of available cancer statistical data recorded consists of data from the United States and the United Kingdom and Europe (Ferlay, Steliarova-Foucher, Lortet-Tieulent, Rosso, Coebergh, Comber, Forman, & Bray, 2013). There is a limited amount of global statistical information available in relation to cancer sufferers. The number of women diagnosed with breast cancer is increasing dramatically every year. Statistics show an increase of 20% in diagnoses of new breast cancer cases from 2008-2012 resulting in a 14% rise in mortality leading to the figure of 20% of all women diagnosed with breast cancer dying in the first-year rates on a global scale (Ferlay, Soerjomataram, Ervik, Dikshit, Eser, Mathers, Rebelo, Parkin, Forman, Bray, 2013). The National Cancer Institute (2016) most recent estimation after analysing statistics from each country worldwide in the previous year 2013, predicted breast cancer diagnoses in the range of 1.38 million women were diagnosed with breast cancer making up 25% of all new cancer cases diagnosed in the same year (Ferlay, Héry, Autier, & Sankaranarayanan, 2013).

Irish Breast Cancer Statistics

Breast cancer rates are expected to increase by an extra 1, 151, 300 cases by the year 2030 (Coleman, Quaresma, Berrino, Lutz, De Angelis, Capocaccia, Baili, Rachet, Gatta, Hakulien, Sant, Weir, Elwood, Tsukuma, Koifman, Azevedo e Silva, Francisci, Santaguilani, Verdecchia, & Micheli, 2008; Ferlay et al., 2013). Breast cancer instances in Irish women have also increased in recent years due to an aging population, statistics analysed by the National Cancer Registry Ireland from 1994-2010 have seen a sizable increase of 4% every year in the number of breast cancer incidences in Ireland throughout a period of sixteen years. Leading on average to the probability of every 1 in 9 women developing breast cancer in Ireland throughout their life (National Cancer Registry Ireland, 2016). Most recent data collected in 2012 by the National Cancer Registry Ireland (2016) and the Irish Cancer Society (2012) display figures at 2, 899 new cases diagnosed every year, leading to 18.4% of all cancer related deaths in Ireland (National Cancer Registry Ireland, 2016; Irish Cancer Society, 2012). The most recent estimations of future breast cancer diagnosis in Ireland in the coming years have been

projected as far as 2040, during this time new diagnosable breast cancer cases will have risen from 2, 899 in 2012 by 36% in 2025 to 5000 and by 63% in 2040 to 7000 in 2040 (National Cancer Registry Ireland, 2016).

Financial Cost of Breast Cancer

In most cases, the cost of cancer affects the individual on a personal level and on a financial level which can be seen as being highly stressful to cancer sufferers and their families. Past research by the Irish cancer society (2015) estimate on average the extra financial cost to a woman or her family while experiencing breast cancer or after breast cancer regarding cost of drugs, treatments, therapies, hospital stays, day care for children and so forth can be anywhere between €863 and €1, 200 a month (Luengo-Fernandez, Leal, Gray, & Sullivan, 2013). Placing a considerable amount of financial risk upon cancer suffer, leading to 12 to 62% of cancer sufferers experiencing financial debt as a direct result of breast cancer treatments, drugs and therapies (Zafar, Peppercorn, Schrag, Taylor, Goetzinger, Zhong, & Abernethy, 2013) therefore, forcing 55% of cancer sufferers to take money from their savings accounts for the future to help pay for treatments and drugs (National Cancer Registry Ireland, 2016; Irish Cancer Society, 2015).

Detection of Breast Cancer

Detection of early breast cancer cases has risen in the last number of years due to services such as the mammogram and clinical breast checks (García-Fernández, Barco, Fraile, Lain, Carmona, Gonzalez, Passarrodona, Giménez, & García-Font, 2016). Both Mammograms which involve an x-ray of the breast tissue to investigate the health of the breast and clinical breast checks where the clinician examines breast tissue looking for abnormalities in the breast have proven to be an effective method of early breast cancer detection for women who avail of the services (Heinävaara, Sarkeala, & Anttila, 2016; Johns, Coleman, Swerdlow, & Moss, 2016; Coldman, Phillips, Wilson, Decker, Chiarelli, Brisson, Zhang, Payne, Doyle, 2014).

Treatment Options

Women experiencing breast cancer have certain treatment options depending on the severity and stage of their breast cancer such as chemotherapy or radiation. Both

options have side effects for the cancer suffer as both chemotherapy drugs and radiation help to eliminate cancer cells. However, healthy cells are also being damaged in the process that is unavoidable leading to reduced immune system functioning, fatigue, hair loss, nausea, vomiting, problems with fertility (Litiere, Werutsky, Fentiman, Rutgers, Christiaens, Van Limbergen, Baaijens, Bogaerts, Bartelink, 2012; Irish Cancer Society, 2012). Since the introduction of screening services such as the mammogram into Ireland in 2001 mortality statistics have decreased by 2% every year since 1994, leading to a larger number of women (increasing from 20% to 33%) in 2012 getting diagnosed with stage one breast cancer resulting in more women surviving breast cancer (National Cancer Registry Ireland, 2015). Treatment paths such as surgery, radiation and chemotherapy all increase chances of survival for women with breast cancer by 90% in the following five years after any form of treatment, however, depending on the success of the treatment and the progression of years living survival rates decrease to 83% to 78% (Burstein, Prestrud, Seidenfeld, Anderson, Buchholz, Davidson, Gelmon, Giordano, Hudis, Malin, Mamounas, Rowden, Solky, Sowers, Stearns, Winer, Somerfield, Griggs, 2010).

Furthermore, breast cancer that has spread into the surrounding tissues or lymph nodes reduce survival rates significantly, however, survival rates greatly vary after treatment ranging from 78% to 24% (Berry, Cronin, Plevritis, Fryback, Clarke, Zelen, Mandelblatt, Yakovlev, Dik, Habbema, & Feuer, 2005; Jatoi, & Proschan, 2005). Irish survival rates have increased from the first recorded statistical information 1999-2012 survival rates have increased from 72% to 82% in thirteen years, leading to more women living at least five years after diagnosis (Stewart, Wild, & International Agency for Research on Cancer, 2014; Allemani, Weir, Carreira, Harewood, Spika, Wang, Bannon, Ahn, Johnson, Bonaventure, Stiller, Azevedo e Silva, Chen, Ogunbiyi, Rachet, Soeberg, You, Matsuda, Bielska-Lasota, Storm, Tucker, Coleman, & Marcos-Gragera, 2015).

Surgical Treatment Options

Women may require surgery to eliminate or lessen the degree of cancerous cells present in the body. Surgery undertaken by women experiencing breast cancer include mastectomy's, breast conservation surgery (BCS) or lumpectomy and breast

reconstruction (Irish Cancer Society, 2012; National Cancer Institute, 2015). Depending on the amount of cancer cells, specific area of the cancer cells and the size of the breast cancer tumour women may require a mastectomy which involves the removal of the whole tissue within the breast and the surrounding areas (Miller, Siegel, Lin, Mariotto, Kramer, Rowland, Stein, Alteri, & Jemal, 2016). The number of women who require a mastectomy has increased in recent years from a small 5% of women receiving a mastectomy in 1999 which has grown considerable to 30% of women receiving a mastectomy in 2011 (Kummerow, Du, Penson, Shyr, Hooks, 2015).

However, there are five different types of mastectomy procedures women can avail of (1) Simple/ Total mastectomy surgery involves taking the entire breast tissue away by means of surgery, while leaving the surrounding tissues and lymph nodes intact (Kummerow et al., 2015). (2) Modified radical mastectomy surgery leads to the removal of both breasts including tissue in the breasts and any lymph nodes present in the breast tissues or the surrounding areas in order to try to avoid the spread of cancerous cells to elsewhere in the body (Parker, Peterson, Bedrosian, Crosby, Shen, Black, Babiera, Kuerer, Ying, Dong, & Cantor, 2016). (3) Radical mastectomy surgery requires the removal of the entire breast along with the muscles in the lower chest located under the breast tissue (National Cancer Institute, 2015). (4) Partial Mastectomy surgery involves taking away areas of the breast tissue that has been affected by cancerous cells and some of the surrounding tissues (Gupta, King, Korzeniowski, Wallace, & Mackillop, 2016), and (5) Nipple sparing mastectomy surgery which includes taking away all tissue in the breast, while leaving the nipple in the centre of the breast intact (Murphy & Sacchini, 2016; Salibian, Harness, & Mowlds, 2017).

Breast conservation surgery otherwise known as a lumpectomy removes part of the cancerous cells or tumour in the breast and part of the surrounding tissue in the breast area leaving the remaining tissue untouched. The amount of breast tissue surgically removed depends on the size and the location of the tumour (National Cancer Institute, 2016; Irish Cancer Society, 2012). On the other hand, breast reconstruction is carried out directly, months or years after surgery whichever option the woman decides on after before the beginning of the surgery process. There are two types of breast reconstruction surgery, implant reconstruction which involves a silicone implant being

placed under the skin to replicate the appearance of normal breasts and the autologous implant which includes taking tissue mainly of fat or muscle from one area of the body (back, thigh or stomach) to create an implant that in many cases last longer and pose less problems in the future, creating a 92% approval rate in survivors who have had breast reconstruction (Groen, Negenborn, Twisk, Ket, Mullender, & Smit, 2016; Alborno, Matros, Lee, Hudis, Pusic, Elkin, Bach, Cordeiro, & Morrow, 2015; Pyfer, Chatterjee, Chen, Nigriny, Czerniecki, Tchou, & Fisher, 2016).

Effects of Breast Cancer

Breast cancer can have damaging effects on one's perceptions, attitudes, beliefs and thoughts relative to themselves (Mens, & Scheier, 2015; Przewdziecki, Sherman, Baillie, Taylor, Foley & Stalgis-Bilinski, 2013) this relates to the proposed research question for this study which focuses on the link between breast cancer and body image, quality of life and body appreciation. Breast cancer surgery has a substantial impact on a woman's body image and appreciation as physical bodily changes can be slight or dramatic often resulting in dissatisfaction, self-blame, anxiety and depression (Antoni, Jacobs, Bouchard, Lechner, Jutagir, Gudenkauf, Blomberg, Glück, & Carver, 2017; Brunault, Champagne, Huguette, Suzanne, Senon, Body, Rusch, Magnin, Voyer, Réveillère, & Camus, 2015; Suppli, Johansen, Christensen, Kessing, Kroman, & Dalton, 2014; Cvetković, & Cvetković, 2017; Falk Dahl, Reinertsen, Nesvold, Fosså, & Dahl, 2010; Eltahir et al. 2013; Bellino et al., 2011). Body image can be defined as an individual's attitude or belief towards their health functioning, physical appearance and sexuality (Cohen, Mabjish, & Zidan, 2011; Falk Dahl et al. 2010; Sabiston, Rusticus, Brunet, McDonough, Hadd, Hubble, & Crocker, 2010).

Researchers have found the type of surgical treatment received influences the degree of impact on a woman's body image and appreciation, for example, women who have received breast reconstruction after a single or double mastectomy displayed a 95 % higher body image, were more satisfied with their appearance, displayed a positive body appreciation level continuing six months after surgery than those women who received a double or single mastectomy (Al-Ghazal, Sully, Fallowfield, & Blamey, 2000; Eltahir, Werners, Dreise, van Emmichoven, Jansen, Werker, & de Bock, 2013; Fingeret, Nipomnick, Guindani, Baumann, Hanasono & Crosby, 2014; McGaughey,

2006; Grogan & Mehan, 2016). Studies estimate 51% of breast cancer survivors who have undergone a single or double mastectomy without a mastectomy have displayed significant differences in body image compared to those women who have received breast reconstruction, breast conservation, or a lumpectomy. Women who received a single or double mastectomy without a breast reconstruction experience a considerably lower level of body image and body appreciation (McGaughey, 2006; Lehmann, Hagedoorn, & Tuinman, 2015). In many cases, leading women to hold negative attitudes towards their bodies and themselves, for example, “I am no longer a woman” (Nasser, 2007), “I do not like anything about my body” (Brunet, Sabiston & Burke, 2013) and “I feel less sexually desirable” (Nasser, 2007; Helms, O’Hea, & Corso, 2008).

On the other hand, a small handful of studies have reported older breast cancer survivors displaying a positive body image and body appreciation after any type of surgical treatment (Lehmann et al. 2015; Fallbjörk, Rasmussen, Karlsson, & Salander, 2013; Brunet et al. 2013; Tiggemann & McCourt, 2013), suggesting the positive relationship may be due to appreciation to one’s body as it has survived throughout their traumatic experience of breast cancer treatment, surgery and recovery (Esmaili, Saiidi, Majd, & Esmaili, 2010; Rezaei, Elyasi, Janbabai, Moosazadeh & Hamzehgardeshi, 2016). Previous research around the area body image and body appreciation have been investigated using, three scales, the Body Image After Breast Cancer Questionnaire (BIBCQ) developed by Baxter, (1998) and the Body Appreciation Scale (BAS) developed by Avalos, Tylka, & Wood-Barcalow, (2005). These questionnaires asked questions such as “Are you comfortable in your body”, “I respect my body” & “I avoid going clothes shopping” (Avalos et al., 2005; Baxter, 1998; Satinsky, Reece, Dennis, Sanders, & Bardzell, 2012).

Quality of life is very important to everyone. Quality of life focuses on aspects of one’s life such as life satisfaction, psychological, physical, emotional, social, spiritual health and well-being (Brunault, 2015; Selim, Rogers, Fleishman, Qian, Fincke, Rothendler, & Kazis, 2009; Barcaccia, Esposito, Matarese, Bertolaso, Elvira & De Marinis, 2013). Previous research demonstrated women who have experienced breast cancer display a lower quality of life than healthy women of the same age, factors impacting quality of life suggesting certain factors have a considerable negative impact

of quality of life such as body mass index (BMI), low levels of social support, presenting high levels of self-blame, psychological distress, depression, fatigue, and anxiety as issues that greatly impact and decrease quality of life for women who have experienced breast cancer (Fobair, Stewart, Chang, D'Onofrio, Banks & Bloom, 2006; Scott & Kayser 2009; DiSipio, Rye, Newman & Hayes, 2013; Brunault et al., 2015; Razdan, Patel, Jewell, & McCarthy, 2016; Brandberg, Sandelin, Erikson, Jurell, Liljegren, Lindblom, Lindén, von Wachenfeldt, Wickman & Arver, 2008; Chen, Cano, Klassen, King, McCarthy, Cordeiro, Morrow & Pusic, 2010; Bloom et al., 2004; Kroenke, Kwan, Neugut, Ergas, Wright, Caan, Hershman & Kushi, 2013). Lower quality of life has also been linked to a poorer body image and body appreciation and fear of reoccurrence of breast cancer (Koch, Bertram, Eberle, Holleczeck, Schmid-Höpfner, Waldmann, Zeissig, Brenner & Arndt, 2014; Begovic-Juhant, Chmielewski, Iwuagwu & Chapman, 2012).

Previous research has suggested the longer the amount of time since diagnosis occurred and age at time of diagnosis is associated with higher levels of quality of life, higher levels of acceptance to changes in the body caused by breast cancer, sexuality, less self-blame and anger (Härtl, Engel, Herschbach, Reinecker, Sommer & Friese, 2010; Champion, Wagner, Monahan, Daggy, Smith, Cohee, Ziner, Haase, Miller, Pradhan & Unverzagt, 2014; Gudenkauf, Antoni, Stagl, Lechner, Jutagir, Bouchard, Blomberg, Glück, Derhagopian, Giron, & Avisar, 2015; Ozkan, Mentis, Ozturk & Soyuer, 2014). Women who received breast reconstruction or breast conservation surgery displayed a higher quality of life than those women who received either a single or double mastectomy (Fobair et al. 2006; Baucom, Porter, Kirby, Gremore & Keefe, 2006; Razdan et al., 2016), therefore, in some cases it has been suggested leading to a low body image resulting in a depleted quality of life (Bolte, & Zebrack, 2008; Maiorino, Chiodini, Bellastella, Giugliano & Esposito, 2016).

However, other studies have found women who received breast reconstruction along with either a single or double mastectomy displayed a similar quality of life than those women who received breast conservation surgery (Fang, Shu & Chang, 2013; Fang, Balneaves & Shu, 2010). Studies report breast reconstruction surgery assist breast cancer survivors to feel whole, feminine and restore their sexuality to a certain degree as

it has been suggested women relate their breasts with their sexuality in turn heightening their quality of life (Pinell-White, Duggal, Metcalfe, Sackeyfio, Hart & Losken, 2015; Matthews, Carroll, Renshaw, Turner, Park, Skillman, McCarthy & Grunfeld, 2017; Razdan et al. 2016). Despite, the advantageous benefits to receiving breast reconstruction or breast conservation surgery, studies report a small number of women have trouble accepting their new breasts as it has been suggested because of changes to the breasts they may feel ugly, flowed or unnatural (Abu-Nab & Grunfeld, 2007; Fang et al. 2010).

Peripheral factors such as sexual problems, support networks such as spouse/partner, immediate and external family, friends have a big impact quality of life for a breast cancer survivor. Sexual problems with a spouse or partner are reported quite often in research around breast cancer survivors, studies have found 83% of women experience sexual dysfunction (problems experienced throughout sexual activity) (Maiorino et al. 2016), 51% of women report problems with desire and arousal resulting in distress experienced for three or more years after surgery (Aerts, Christiaens, Enzlin, Neven & Amant, 2014; Boquiren, Esplen, Wong, Toner, Warner & Malik, 2016; Raggio, Butryn, Arigo, Mikorski & Palmer, 2014).

External networks of social support are extremely important in the recovery process, research has found having a supportive spouse or partner reduces the levels of morality, adjustment problems experienced, help to increase acceptance and become more comfortable with their changed body appearance, become more comfortable heightened levels of quality of life and decreased levels of depression and anxiety (Kroenke, Quesenberry, Kwan, Sweeney, Castillo & Caan, 2013; Hasson-Ohayon, Goldzweig, Braun & Galinsky, 2010; Leung, Pachana & McLaughlin, 2014; Drageset, Lindstrøm, Giske & Underlid, 2015). Social networks are important for all women as friends help to reduce levels of psychological distress felt, encourages self-compassion, self-esteem, optimism, survivors exhibit better outlook after surgery, higher levels of physical and mental health (Hasson-Ohayon et al. 2010; Kroenke et al., 2013; Hughes, Jaremka, Alfano, Glaser, Povoski, Lipari, Agnese, Farrar, Yee, Carson & Malarkey, 2014; Hasson-Ohayon, Tuval-Mashiach, Goldzweig, Levi, Pizem & Kaufman, 2016; Neff, 2016). Extended family networks provide emotional support, help to deal with

psychological distress of surgery and feel more comfortable opening up to female family members, therefore, improving quality of life (Jutagir et al., 2016; Spatuzzi, Vespa, Lorenzi, Miccinesi, Ricciuti, Cifarelli, Susi, Fabrizio, Ferrari, Ottaviani & Giulietti, 2016).

Research carried out in recent years on quality of life after experiencing breast cancer has been assessed using the Quality of Life/Breast Cancer Scale (QoL/BCS) developed by Ferrell, Grant, Hassey-Dow, (1995). This scale has been used in many research studies, it accesses four areas physical, psychological, social, and spiritual well-being. It asks such questions such as “How good is your quality of life” and “How satisfying is your life” (Ferrell et al., 1995). Previous research has shown the devastating effects any type of cancer can have on the body and support systems, research helps to illuminate the problems in the areas, of financial cost of treatments and drugs, actions that heighten the risk of cancer development, survival rates and damages caused to the suffers view of their body image, body appreciation and quality of life after breast cancer.

Research around breast cancer is invaluable in that every research study expands and modifies the research pool of knowledge and gain a deeper understanding about breast cancer to improve services and cater for women who are active in treatment, survivors and future individuals. A vast amount of research has been carried out on the physical effects of breast cancer, however, more research needs to be done on the psychological impacts of breast cancer. Research around breast cancer helps to create interventions, support groups and psychological services for women after experiencing breast cancer. Extremely limited research papers focus on all three all three variables (body appreciation, body image and quality of life) together or have compared results against that of a healthy control group. The research aim of this present study is to examine, the link between breast cancer, body image, quality of life and body appreciation using two samples (1) breast cancer group of women aged 30-65 who have received surgery because of breast cancer, (2) healthy control group of women aged 30-65 and five hypotheses. (1) The healthy control group will score higher on the Quality of Life (QoL) and Body Appreciation Scale (BAS) than the women who have experienced breast cancer. (2) There will be a significant relationship between treatment

type and body image, quality of life and body appreciation score for women after breast cancer. (3) Women who have had breast reconstruction or breast conservation will have a higher body image score than those women who did not get breast reconstruction or breast conservation. (4) Time since diagnosis will be associated with higher body appreciation and body image scores in the breast cancer group. (5) Demographics (age, children, BMI, relationship status (Married/ Partner, Single), body appreciation scores and body image subscales (vulnerability, arm concerns, body concerns, body stigma, transparency, limitations) will predict higher levels of Quality of Life (QoL) for women after breast cancer.

Method

Participants

Participants in the present research study consisted of an opportunistic sample of 200 women. Data from 22 participants had to be excluded due to incomplete questionnaires. Therefore, 178 women were included in the present study. A control group consisting of 89 healthy women from Cavan, Leitrim, Sligo, Dublin, Offaly, Galway, Clare and Donegal. A breast cancer group consisting of 89 women from Greystones, Enniscorthy, Wicklow, Galway and Mayo breast cancer support centres who had received one of four surgeries (single mastectomy, double mastectomy, single mastectomy with breast reconstruction, double mastectomy with breast reconstruction or breast conservation) because of breast cancer to receive the optimal overview of women who have received breast cancer related surgery. Breast cancer subgroups (1) single mastectomy consisted of 22 participants, (2) double mastectomy consisted of 18 participants, (3) single mastectomy with breast reconstruction consisted of 20 participants, (4) double mastectomy with breast reconstruction consisted of 16 participants, (5) breast conservation consisted of 13 participants. Participants ranged in ages from 30-65, ($M = 49.61$, $SD = 9.30$) the median age was 53. Both the breast cancer group and the healthy control group displayed a mean of 1.50. Cronbach's Alpha for the current sample is ($\alpha = .8$).

Measures/Materials

Four measures were used in the present research study (1) Demographic factors and treatment type (2) Body Appreciation Scale (BAS), (3) Quality of Life Questionnaire/Breast Cancer version (QoL/BC), (4) Body Image after Breast Cancer questionnaire (BIBCQ).

(1) Information on demographic factors (age, relationship status (Married/ Partner, Single), children, height and weight) and type of treatment received were collected using a mailed questionnaire.

(2) Body Appreciation Scale (BAS) developed by Tylka, Wood-Barcalow and Avalos (2005) is a self-report scale of measure consisting of 13 items related to positive body image measuring the amount of appreciation one has for their body by examining

areas such as acceptance, respect, favourable options towards themselves. The body appreciation scale is a 5 item Likert scale ranging from 1 (never) to 5 (always), with high scores being associated with a higher level of body appreciation. A total score can be achieved by adding all the scores, a score close to the maximum of 65 indicates a high body appreciation. The scale contains questions such as “I have a positive attitude towards my body” and “I do not allow unrealistically thin images of women presented in the media to affect my attitudes towards my body” (Tylka et al., 2005). This scale has been widely used in breast cancer research and displays a Cronbach’s Alpha of .94 indicating a high level of internal consistency and reliability (Swami, 2008; 2009; Tylka, & Wood-Barcalow, 2015; Marta-Simões, Mendes, Oliveira, Trindade & Ferreira, 2016). (See Appendix, E).

(3) Quality of Life Questionnaire/Breast Cancer version (QoL/BC) developed by Ferrell, Grant Hassey-Dow (1995) is a self-report scale containing 46 items related to four major subscales (physical wellbeing, psychological wellbeing, social concerns and spiritual wellbeing) and two minor subscales (distress and fear). This measure is a 10 item Likert scale ranging from 0 (no problem, no fear, no distress, not at all important) and 10 (severe problem, very distressing, extreme fear, very important). The scale contains questions such as “How much concern do you have for your daughter(s) or close female relatives regarding breast cancer?” and “Has your illness or treatment caused changes in your self-concept (the way you see yourself)?” (Ferrell, Grant Hassey-Dow, 1995). This questionnaire displays a moderate internal consistency and reliability with a Cronbach’s Alpha of .70 (Mollica, Nemeth, Newman, Mueller & Sterba, 2014; Sawyer, 2014). Several questions were to be recoded, for example, the participant circled 4 as the answer of an item, (4-10 = 6) the answer is recorded as six. Items to be recoded are: 1-7, 9, 10, 17-29, 31, 33-39 & 43. (See Appendix, C &D)

(4) Body Image after Breast Cancer Questionnaire (BIBCQ) developed by Baxter, Goodwin, Mcleod, Dion, Devins, Bombardier (2006) is a 5 item Likert self-report measure consisting of 53 questions, responses ranging from 1 (Strongly Disagree/ Never/ Almost Never) to 5 (Strongly Agree/ Always/ Almost Always). This measure consists of six subscales vulnerability (feelings of susceptibility of the body to cancer and illnesses), transparency (concerns about obviousness of cancer related changes to

appearance), body stigma (feelings of a need to keep the body hidden), arm concerns (concerns for arm symptoms and appearance), body concerns (satisfaction with body appearance and shape), limitations (feelings about competence and ability). Each subscale containing questions such as “I try to hide my body” (Body Stigma) and “I have problems concentrating” (Limitations). Cronbach Alpha for this measure is reported as .90 displaying high internal consistency and reliability (Baxter, Goodwin, Mcleod, Dion, Devins, Bombardier, 2006; Zhang, Zhu, Tang, Chen, Wang, Yang & Li, 2014). (See Appendix, A & B).

Design

The present research study used a non-experimental, cross-sectional, quantitative research design. The key independent variable in the present research was breast cancer with five subdivisions, single, double mastectomy, single, double mastectomy with breast reconstruction and breast conservation. Key dependent variables were body appreciation, quality of life subscales (physical, psychological, (distress, fear), social and spiritual), body image subscales (vulnerability, limitations, arm concerns, body concerns, body stigma and transparency) and demographic variables (age, children, relationship status and BMI).

Procedure

Each breast cancer support centre received 20 posted questionnaires with an information letter and consent form attached for participants after letters of permission and confirmation from the board of directors from each breast cancer support centre were received stating they were giving their permission to carry out the study in their breast cancer support centre and that they had the appropriate staff members, for example, psychologists or counsellors in the event a participant may become distressed. Participants were asked to complete the three questionnaires taking on average 7-10 minutes to complete after the information letter was explained and questions answered. Participants were instructed to answer each questionnaire to the best of their ability in an honest and meaningful manner. The participants were informed they could stop the completion of the questionnaires at any time. After approx. four weeks, the completed questionnaires from all breast cancer support group were posted back to the researcher.

Participants in the breast cancer group were placed into five groups depending on treatment type received (1) single mastectomy, (2) double mastectomy, (3) single mastectomy with breast reconstruction, (4) double mastectomy with breast reconstruction, (5) breast conservation. Subscales from both the quality of life questionnaire and body image after breast questionnaire were removed as questions contained in the subscales were not applicable to a healthy population. The minor subscales of distress and fear in quality of life were removed as they were directly related to how fearful one was of cancer reoccurrence and how distressful one found their treatment. Body image subscales of arm concerns, vulnerability, body stigma and transparency were removed from the questionnaire as they were directly related to cancer experiences, susceptibility of the body to cancer, changes to body and arm appearance after cancer surgery.

Several questions were reworded to be considered suitable to the healthy population and to suit the time frame of the last two years, for example, “How difficult is it for you to cope today as a result of your treatment” was reworded to “How difficult has it been for you to cope over the last two years”. Helpline numbers were provided in the information letter in the event any participants experienced emotional distress as a result of questions contained in the questionnaires. Each breast cancer support centre was asked to state they had the relevant individuals such as therapists, psychotherapists or psychologists present to deal with any support issues. Participants were debriefed after completing the questionnaires, participants were told why the research was carried out and the part they played in the research study.

Data Analysis

Data was analysed using two Independent Sample T-tests, two Pearson Product-Moment Coefficients and one Hierarchical multiple regression analysis. Hypothesis 1 was examined using an Independent Samples T-test to compare scores from the body appreciation scale and the quality of life questionnaire subscales of physical wellbeing, psychological wellbeing (fear and distress), social wellbeing and spiritual wellbeing between the healthy control group and the breast cancer group. Hypothesis 2 was investigated using a Pearson Product-Moment Coefficient to examine the relationship between the type of surgical treatment received and body image, quality of life

subscales physical, psychological (distress or fear), social, spiritual wellbeing, body image subscales (body stigma, vulnerability, transparency, body concerns, arm concerns, limitations) and body appreciation.

Hypothesis 3 was tested using an Independent Samples T-test to compare scores from the body image subscales of body stigma, limitations, body concerns, transparency, arm concerns and vulnerability of women who had received a single or double mastectomy with breast reconstruction or breast conservation and women who had received a single or double mastectomy without reconstruction. Hypothesis 4 was investigated using a Pearson Product-Moment Coefficient to examine the relationship between time since diagnosis and higher body image and body appreciation scores for women in the breast cancer group. A Hierarchical multiple regression was performed to examine hypothesis 5 to investigate the ability of demographic factors (children, relationship status (Married/ Partner, Single), body mass index (BMI), age) to predict higher levels of quality of life for women after breast cancer after controlling for the body appreciation scale and body image subscales (body concern, limitations, transparency, arm concerns, vulnerability, body stigma).

Results

Descriptive statistics

Descriptive statistics display frequencies for demographic variables for both the control group and breast cancer group.

Table 1. Frequencies for the current sample of the healthy control group and breast cancer survivors for each demographic variable relationship status, children, body mass index (N = 178)

Variable	Frequency	Valid Percentage
Group		
Healthy Control Group	89	50.0
Breast Cancer Survivor	89	50.0
Relationship Status		
Married/Partner	112	62.9
Single	66	37.1
Children		
Yes	113	63.5
No	65	36.5
Body Mass Index (BMI)		
Under 19	6	3.4
20-24	52	32.6
25-35	90	50.6
30+	30	16.9
Age		
30-35	13	7.30
36-41	27	14.6
42-47	36	20.2
48-53	43	24.2
54-59	27	15.2
60+	32	18

Descriptive statistics displaying mean (M), 95 % confidence intervals, standard error mean (SE), standard deviation (SD), median and range for body appreciation scale, treatment and when diagnosed, children, relationship, age, quality of life subscale and body image subscale (N=178).

Table 2. Descriptive statistics for the body appreciation scale, treatment and when diagnosed, children, relationship, age, quality of life subscales, body image subscales, treatment and when diagnosed for both groups. (N=178).

Variables	Breast Cancer Group				Control Group				
	Mean (95% CI)	SE	M	SD	Mean (95% CI)	SE	M	SD	
Treatment	2.78 (2.48- 3.07)	.15	3.00	1.39	--	--	--	--	--
Diagnosed	3.04 (2.84- 3.25)	.10	3.00	.95	--	--	--	--	--
Children	2.75 (2.26- 3.25)	.25	2.00	2.34	1.82 (1.36- 2.28)	.23	1.00	2.19	
Rel	.66 (.56 - .76)	.05	1.00	.47	.64 (0.54 - 0.75)	.05	1.00	.48	
Age	54.16 (52.55-55.76)	.80	53.50	7.65	45.16 (44.88-45.00)	.93	45.00	8.86	
Body App	49.58 (48.15-51.02)	.72	50.00	6.80	48.56 (46.72-50.40)	.92	38.00	8.70	
Quality of life									
Ph.Wel	48.73 (46.47-50.99)	1.13	48	10.73	57.98 (55.21-60.75)	1.39	60	13.15	
Psy.Wel	63.36 (60.27-66.45)	1.55	63	14.66	67.74 (64.54-70.95)	1.61	67	15.22	
Distress	36.69 (34.52-38.85)	1.09	36	10.29	--	--	--	--	--
Fear	26.16 (24.16-28.15)	1.00	27	9.46	--	--	--	--	--
Social	49.67 (46.94-52.40)	1.37	51	12.96	57.47 (54.33-60.61)	1.58	59	14.89	
Spiritual	41.96 (39.73-44.18)	.72	50	6.80	42.45 (40.91-43.98)	.77	43	7.29	
Body Image									
Vul	31.76 (30.41-33.12)	.68	31	6.44	--	--	--	--	--
Tra	12.54 (11.77-13.31)	.39	12	3.67	--	--	--	--	--
BS	61.06 (59.88-62.23)	.59	61	5.58	--	--	--	--	--
BC	20.22 (19.53-20.92)	.35	20	3.31	--	--	--	--	--
AC	12.75 (11.90-13.61)	.68	31	6.44	--	--	--	--	--
Lim	21.89 (21.25- 22.52)	.32	22	3.02	16.17 (15.95-16.39)	.11	38	1.08	

Note. Relt = Relationship; Body App = Body Appreciation; Ph. Wel = Physical Wellbeing; Psy. Wel = Psychological Wellbeing; Vul= Vulnerability; Tra= Transparency; BS = Body Stigma; BC = Body Concern; AC = Arm Concerns; Lim= Limitations.

Descriptive statistics displayed no significant difference in ages between the breast cancer group ($M = 54.16$, $SD = 7.65$) and the healthy control group ($M = 45.16$, $SD = 8.81$), therefore, enabling both groups to be compared against each other when applicable.

Independent Samples T-test

Table 3. Group differences for breast cancer group and healthy control group for body appreciation and quality of life subscales.

Variable	Group	<i>N</i>	<i>M</i>	<i>SD</i>	<i>t</i>
Body App	Breast Cancer	89	49.58	6.81	.872
	Control	89	48.56	8.72	
Quality of Life					
Physical	Breast Cancer	89	48.73	10.73	-5.14*
	Control	89	57.98	13.14	
Psychological	Breast Cancer	89	63.36	14.66	-1.96*
	Control	89	67.74	15.21	
Distress	Breast Cancer	89	36.69	10.25	-4.03
	Control	--	--	--	
Fear	Breast Cancer	89	21.09	26.16	9.46
	Control	89	--	--	
Social	Breast Cancer	89	49.67	12.96	-3.73
	Control	89	57.47	14.89	
Spiritual	Breast Cancer	89	41.96	10.55	-.364
	Control	89	42.45	7.28	

Note. Body App = Body Appreciation; Statistical significance: * $p < .05$

An independent samples T-test was conducted for hypothesis 1 to compare scores from the body appreciation scale and the quality of life questionnaire subscales of physical wellbeing, psychological wellbeing (fear and distress), social wellbeing and spiritual wellbeing between the healthy control group and the breast cancer group. Results demonstrate a significant difference in quality of life subscales

physical and psychological scores between both the healthy control group and the breast cancer group, $t(169.20) = -5.14$, $p = .001$, with the healthy control group ($M = 57.98$, $SD = 13.15$) scoring higher than those in the breast cancer group ($M = 48.73$, $SD = 10.73$) in the physical wellbeing subscale. The breast cancer group ($M = 63.36$, $SD = 14.66$) scored lower on the psychological wellbeing subscale than the healthy control group ($M = 67.74$, $SD = 15.22$). The magnitude in the differences of means (mean difference = -4.38 , 95% CI: -12.80 to -5.70) was large (Cohen's $d = .9$). Results indicated no significant difference between the breast cancer group and the healthy control group, $t(166.2) = .872$, $p = .38$, with the control group ($M = 48.56$, $SD = 8.72$) scoring lower in the body appreciation scale than the breast cancer group ($M = 49.58$, $SD = 6.81$). The magnitude in the differences of means (mean difference = $.872$, 95% CI: -1.29 to -3.34) was small (Cohen's $d = .2$).

Table 4. Group differences for single or double mastectomy without reconstruction and single or double mastectomy with reconstruction or breast conservation for body image subscales.

Variable	Group	N	M	SD	t
Body Image Questionnaire					
Body Stigma	SM/DM	49	60.20	5.81	-1.68
	SM/DM/BR/BC	39	62.21	5.19	
Limitations	SM/DM	49	22.27	3.15	1.54
	SM/DM/BR/BC	39	21.28	2.71	
Body Concerns	SM/DM	49	20.63	3.30	1.28
	SM/DM/BR/BC	39	19.73	3.36	
Transparency	SM/DM	49	12.86	3.67	.903
	SM/DM/BR/BC	39	12.15	4.19	
Arm Concerns	SM/DM	49	21.09	4.09	6.68*
	SM/DM/BR/BC	39	10.18	2.10	
Vulnerability	SM/DM	49	31.41	6.62	-.516
	SM/DM/BR/BC	39	32.13	6.34	

Note. SM = Single Mastectomy; DM = Double Mastectomy; SM/BR = Single Mastectomy with Breast Reconstruction; DM/BR = Double Mastectomy with Breast Reconstruction; BC = Breast Reconstruction; Statistical significance: * $p < .05$

An independent samples T test was carried out for hypothesis 3 to compare scores from the body image subscales of body stigma, limitations, body concerns, transparency, arm concerns and vulnerability of women who had received a single or double mastectomy with breast reconstruction or breast conservation and women who had received a single or double mastectomy without reconstruction. Results demonstrate there was a significant difference in the quality of life subscale arm concerns between both groups, $t(74.65) = 6.68$, $p = .001$, with women who received a

single or double mastectomy with breast reconstruction or breast conservation ($M = 14.69$, $SD = 4.09$) scoring higher on the arm concerns subscale than those women who received a single or double mastectomy without a breast reconstruction ($M = 10.18$, $SD = 2.10$). The magnitude of differences of means (mean difference = 4.51, 95% CI: 3.17 to 5.86) was very large (Cohen's $d = 2.7$).

Correlations

Table 5. Correlations between treatment type and quality of life subscales and body image subscales (N = 89)

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 Tre. Ty	1	.43												
2 Ph. Well	.19	1	.48											
3 Ps. Well	.07	.25*	1	.32										
4 Distress	.16	.18	.05	1	.63									
5 Fear	.10	.05	-.04	.26*	1	.49								
6 Soc. Con	-.02	.42**	.36**	.36**	.17	1	.45							
7 Spt. Well	-.09	.16	.30**	.16	-.09	.27**	1	.52						
8 Body Stig	-.19	.13	-.90	.03	.02	.01**	-.01	1	.20					
9 Limitat	.07	.05	.05	.07	.14	.07	.10	.23*	1	.64				
10 Bod Con	.08	.09	.17	.09	.03	.19	-.03	-.37**	-.07	1	.05			
11 Arm Con	.45**	-.04	.27*	.12	.08	.02	.01	-.30**	.03	-.01	1	.67		
12 Vuln	-.15	.13	-.19	-.06	.01	-.02	.04	.48**	.29**	-.32**	.23*	1	.59	
13 Transp	.11	.14	.14	.09	.14	.04	.30**	.28**	.38**	-.21*	.04	.26*	1	.75
14 BAS	-.34	.12	.42**	.13	.15	.20*	.26*	-.04	.10	.03	.14	-.11	.06	1
Means	2.78	48.73	63.36	36.69	26.16	49.67	41.96	61.06	21.89	20.22	12.75	31.76	12.54	49.58
SD	1.38	10.73	14.66	10.29	9.46	12.96	10.55	5.58	3.02	3.32	4.05	6.44	3.67	6.80
Range	4	57	103	48	47	56	52	34	27	15	16	17	33	16

Note. Phy. Well = Physical Wellbeing; Psy. Well = Psychological Wellbeing; Soc Con = Social Concerns; Spt Well = Spiritual Wellbeing; Body Stig = Body Stigma; Limitat = Limitations; Body Con = Body Concerns; Arm Con = Arm Concerns Vuln = Vulnerability; Transp = Transparency; BAS = Body Appreciation Scale; SD = Standard Deviation; Cronbach's Alpha highlighted in bold numbering; Statistical significance: * $p < 0.05$; ** $p < 0.01$

Hypothesis 2 was tested using a Pearson Product-Moment Coefficient to examine the relationship between the type of surgical treatment received and body image, quality of life subscales physical, psychological (distress or fear), social, spiritual wellbeing, body image subscales (body stigma, vulnerability, transparency, body concerns, arm concerns, limitations) and body appreciation. Spearman's Rho was carried out as the preliminary analysis revealed non-normally distributed data, analysis demonstrated a weak to moderate, positive relationship between treatment type and quality of life subscales physical wellbeing, psychological wellbeing, distress, fear and the body image questionnaire subscales limitations, body concerns, arm concerns and transparency.

Therefore, this indicated the type of surgical treatment received is associated with higher levels of physical and psychological wellbeing, lower levels of fear and distress experienced and can be linked to higher confidence in competence (limitations), satisfaction with arm appearance (arm concerns), body shape (body concerns) and lower levels of concern in relation to cancer related appearance changes (transparency). However, analysis revealed a weak to moderate, negative relationship between treatment type and the body appreciation scale, quality of life subscales social concerns, spiritual wellbeing and body image questionnaire subscales body stigma and vulnerability. This indicates type of treatment received is associated with lower levels of spiritual wellbeing, body appreciation, higher levels of feelings of susceptibility to cancer (vulnerability), hiding one's body (body stigma) and higher levels of social concern.

Table 6. Descriptive statistics, reliability and correlations for time since diagnosis and body image and body appreciation scores. (N = 89)

Variables	1	2	3	4	5	6	7	8
1. Time Sin	1	.52						
2. Body Stig	-.02	1	.20					
3. Limitat	-.17	.23	1	.64				
4. Body Con	.10	-.37**	-.07	1	.05			
5. Arm Con	.03	-.30**	.47**	-.01	1	.67		
6. Vuln	-.07	.48**	.29**	-.32**	-.23*	1	.59	
7. Transp	-.02	.28**	.38**	-.21*	.04	.26*	1	.75
8. BAS	-.02	-.04	.10	.03	.14	-.11	.06	1
9. Means	8.25	61.08	21.89	20.22	12.75	31.76	12.54	49.58
10. SD	5.26	5.58	3.02	3.32	4.05	6.44	3.67	6.81
Range	21	34	27	15	16	17	33	16

Note. Time Sin = Time Since; Body Stig = Body Stigma; Limitat = Limitations; Body Con = Body Concerns; Arm Con = Arm Concerns Vuln = Vulnerability; Transp = Transparency; BAS = Body Appreciation Scale; SD = Standard Deviation; Cronbach's Alpha highlighted in bold; Statistical significance: * $p < 0.05$; ** $p < 0.01$

Hypothesis 4 was tested using a Pearson Product-Moment Coefficient to examine the relationship between time since diagnosis and higher body image and body appreciation scores for women in the breast cancer group. Spearman's Rho was carried out as preliminary analysis revealed non-normally distributed data, analysis demonstrated a weak positive relationship between time since diagnosis and body image subscales of body concern and arm concerns. Indicating time since diagnosis is associated with a lower level of concern for bodily appearance and shape of arms (arm

concern) and a higher level of body satisfaction (body concern). Results demonstrated a negative relationship between time since diagnosis and body appreciation and subscales of body image of body stigma, limitations, transparency and vulnerability. This indicates time since diagnosis is associated with lower levels of body appreciation, feelings of competence (limitations), higher levels of feelings of suitability to cancer, bodily illness, higher levels of concealment of the body and lower levels of acceptance to cancer related changes to appearance.

Hierarchical Multiple Regression

Table 7. Hierarchical Regression Model of Quality of Life

	<i>R</i>	<i>R</i> ²	<i>R</i> ² Change	<i>B</i>	<i>SE</i>	β	<i>t</i>
Step 1	.30	.09					
Age				1.42	.56	.27**	2.52
Children				13.54	10.05	.14	1.35
Body Mass Index				2.70	5.30	.05	.51
Relationship Status				-2.67	9.19	-.03	-.29
Step 2	.53**	.28*	.19**				
Age				1.77	.53	.33***	3.31
Children				9.55	9.50	.10	1.00
Body Mass Index				-.74	5.21	-.01	-.14
Relationship				.18	8.64	.002	.02
Body Stigma				1.46	.91	.20	1.60
Limitations				1.18	1.55	.08	.76
Body Concerns				3.78	1.38	.31**	2.73
Arm Concerns				2.38	1.06	.24**	2.23
Vulnerability				-.13	.73	-.02	-.17
Transparency				2.54	1.25	.23*	.23
Body Appreciation				2.02	.59	.37***	3.45

Note. Statistical Significance: * $p < .05$; ** $p < .01$; *** $p < .001$

Hierarchical multiple regression was preformed to examine hypothesis 5 to investigate the ability of demographic factors (children, relationship status Married/Partner, Single), body mass index (BMI), age) to predict higher levels of quality of life for women after breast cancer after controlling for the body appreciation scale and body image subscales (body concern, limitations, transparency, arm concerns, vulnerability, body stigma). Preliminary analysis was carried out to ensure no violation of linearity, homoscedasticity and normality occurred. Correlations existing between

predictor variables are displayed in Table. 7. All correlations displayed a weak to moderate relationship ranging between $r = .05$ to $-.46$, Predictor variables were correlated with quality of life except for six variables children, body mass index (BMI), relationship status (Married/Partner, Single), body stigma (feelings of a need to keep the body hidden), limitations (feelings about competence and ability) and vulnerability (feelings of susceptibility of the body to cancer and illnesses) indicating the data was suitable for the multiple linear regression analysis.

Hierarchical multiple regression step 1 included four predictor variables, demographic variables (children, age, BMI, relationship status). Results demonstrate a non-statistically significant model $F(4, 84) = 2.07$, $p < .09$, explaining 9% of variance in quality of life displayed in Table. 7. Body image subscales of limitations, body concerns, arm concerns, body stigma, vulnerability, transparency and total body appreciation were entered in step 2 displaying total variance explained by the model as 37.4% $F(11, 77) = 4.22$, $p < .001$. Entering body image subscales of body stigma, limitations, body concerns, arm concerns, vulnerability, transparency and total body appreciation explained an additional 28.6% variance for quality of life, after controlling for age, children, body mass index (BMI) and relationship status (R^2 Change = .28; $F(7, 77) = 5.05$; $p = .00$). Overall, five Predictor Variables (body appreciation, body concerns, arm concerns, transparency, age) uniquely predicted higher levels of quality of life, furthermore, children, body mass index (BMI), relationship, body stigma, limitations and vulnerability did not uniquely predict higher levels of quality of life. Age was found to have the strongest effect on quality of life.

Discussion

The purpose of the present study was to explore the link between breast cancer and body image, quality of life and body appreciation. The present research study consisted of 5 main hypotheses, (1) The healthy control group will score higher on the Quality of Life (QoL) and Body Appreciation Scale (BAS) than the women who have experienced breast cancer. (2) There will be a significant relationship between treatment type and body image, quality of life and body appreciation score for women after breast cancer. (3) Women who have had breast reconstruction or breast conservation will have a higher body image score than those women who did not get breast reconstruction or breast conservation. (4) Time since diagnosis will be associated with higher body appreciation and body image scores in the breast cancer group. (5) Demographics (age, children, BMI, relationship status), body appreciation scores and body image subscales (vulnerability, arm concerns, body concerns, body stigma, transparency, limitations) will predict higher levels of Quality of Life (QoL) for women after breast cancer.

Results demonstrate healthy women have a higher quality of life than those women who have experience breast cancer is in correlation with previous research stating healthy women display a higher quality of life and women who have experienced breast cancer display lower levels of quality of life due age at diagnosis, presenting high levels of self-blame and psychological distress which has a negative impact on quality of life (Scott & Kayser 2009; Brunault et al., 2015; Razdan et al., 2016; Brandberg et al., 2008; Chen et al., 2010; Bloom et al., 2004; Kroenke et al., 2013). Indicating the hypothesis was partly supported. However, an unexpected result displays women who have experienced breast cancer demonstrating higher levels of psychological wellbeing, body esteem, lower levels of body surveillance and body shame than healthy women.

However, findings from the present study reveal lower quality of life is associated with higher body appreciation, this finding conflicts with previous findings which suggest lower levels of quality of life are associated with lower levels of body appreciation (Koch et al., 2014; Begovic-Juhant et al., 2012). Studies suggest this result

may be related to women who have experienced breast cancer developing an appreciation that their body has survived throughout their traumatic experience of breast cancer treatment, surgery, recovery and they have a strong support system to help them to accept and become conformable with their changed body (Esmaili et al., 2010; Rezaei et al., 2016; Kroenke et al., 2013; Hasson-Ohayon, Goldzweig, Braun & Galinsky, 2010; Leung et al., 2014) and helps to encourage self-compassion (Neff, 2016) self-esteem and optimism which are associated with body appreciation (Drageset et al., 2015; Hughes et al., 2014; Tylka et al., 2015).

Previous research has demonstrated the type of treatment received impacts quality of life and body image which is in parallel with findings from hypothesis 2 and has been supported, treatment type has been associated with higher levels of quality of life, acceptance and satisfaction with appearance (Fobair et al., 2006; Baucom et al., 2006; Razdan et al., 2016). However, findings from the present study contradict previous research studies stating type of treatment received is associated with higher body appreciation, although, certain types of treatment such as double mastectomy with breast reconstruction is associated with higher levels of body appreciation and acceptance (Kroenke et al., 2013; Hasson-Ohayon, Goldzweig, Braun & Galinsky, 2010; Leung et al., 2014; Drageset et al., 2015), however, the present research study reveals the type of treatment received has a negative relationship with body appreciation which contradicts the current research that treatment type is associated with a higher body appreciation for women after breast cancer.

Past research demonstrates women who received a single mastectomy or a double mastectomy with breast reconstruction displayed lower levels of satisfaction with the appearance of their body after breast cancer surgery, this finding oppose current research findings as the general result of previous studies display higher levels of satisfaction with appearance after receiving a single mastectomy or a double mastectomy (Fobair et al., 2006; Baucom et al., 2006; Razdan et al., 2016; Pinell-White et al., 2015; Matthews et al., 2017; Fang et al., 2013; Fang et al., 2010).

Previous research has revealed the period of time since a diagnosis of breast cancer can have a positive impact on body appreciation, self-acceptance (Fobair et al., 2006; Fallbjörk et al., 2013), it has been suggested the longer the amount of time since diagnosis the higher aspects of life are such as quality of life, higher levels of acceptance to changes in the body caused by breast cancer, sexuality, less self-blame and anger (Gudenkauf et al., 2015; Ozkan et al., 2014). However, results from the present study reveal time since diagnosis is associated with lower levels of acceptance to changes in appearance resulting from cancer, lower levels of body appreciation and higher levels of body concealment and body appearance concerns. Research suggests time since diagnosis is associated with lower levels of body image and body appreciation due to high levels of body image disturbance and body dissatisfaction after breast cancer surgery (Sherman, Woon, French & Elder, 2016; Przewdziecki et al., 2013; Raggio et al., 2014).

Researchers in the past hold the view that variables such as having children, being in a stable and loving relationship and exhibiting a lower body mass index (BMI) can greatly increase one's levels of quality of life acting as protective factors for quality of life (DiSipio et al., 2013; Brandberg et al., 2008; Chen et al., 2010; Jagsi, Li, Morrow, Janz, Alderman, Graff, Hamilton, Katz & Hawley, 2015). However, findings deduce being in a stable relationship, having children or a lower body mass index are unable to significantly predict higher levels of quality of life coming in conflict with research studies suggesting certain factors such as these have a protective or buffering relationship with quality of life. Age at the time of diagnosis and high levels of body appreciation have been found by previous researchers to have a strong predictive effect on quality of life, it has been suggested older women display higher levels of optimism, body satisfaction and appreciation leading to reduced concerns regarding body appearance therefore focusing on aspects that lead to higher levels of quality of life (Tiggemann et al., 2013; Rezaei et al., 2016).

Limitations

There were some limitations involved in this study, although quality of life has been defined using four major subscales (physical wellbeing, psychological wellbeing, social wellbeing and spiritual wellbeing) and two minor subscales (distress and fear) there are many other aspects to take into account that may affect quality of life after breast cancer such as financial distress, disruption and distress caused to normal family functioning, which can impact quality of life that have not been significantly taken into account on the quality of life questionnaire.

Also, the study failed to take into account the difference in culture which may have an impact on certain areas from both the quality of life questionnaire around the subscales social concerns and spiritual wellbeing. In eastern and middle eastern cultures women prefer solitude to help them to cope after breast cancer whereas western cultures provide women with large amounts of support to help her cope after breast cancer. Spiritual wellbeing fails to account for many different types of religions which each have different practices and ways of dealing with difficult life experiences involves. The lack of diversity in this questionnaire may be due to the fact that it was developed in America who may classify different aspects as being more important than others, for example, social support may be more important in a western society than it is in a middle eastern culture. It would have been beneficial to the present research study to have used a quality of life questionnaire that was more inclusive to all cultures as Ireland is such a culturally diverse country, leading to the results of the study not demonstrating a true general overview of the Irish breast cancer population in the areas of quality of life, body image and body appreciation after breast cancer.

Demographic factors requesting the age, height and weight of the participant to calculate body mass index (BMI) resulted in some women failing to fill in their age or weight. It would have been advantageous to the present research study to request BMI as it may not have been as intrusive. Questions contained in both quality of life subscales physical wellbeing, social concerns, body image subscales of body stigma and

transparency some women considered to be invasive to their personal privacy and refused to answer questions included in these subscales. This may have been attributed to the fact that women were asked to complete the questionnaires after a support group meeting, the presence of others may have influenced their decision not to complete the questions. Another limitation of the present research study included when participants instructed to complete the questionnaires by only answering what is on the page, a small number of women failed to answer questions. They proceeded to write notes as to why they were unable to complete the particular question, for example, a question presented in the quality of life subscale physical wellbeing (Rate your overall physical health from 0 (extremely poor) to 10 (excellent), some participants failed to answer the question as they wrote a list of why their health was poor. Although, the sample size was considerable it was extremely difficult to gather participants as support centres do not have a substantial number of women attending their centres in smaller rural places. It would have been of benefit to the present research study if hospitals or larger support centres had been approached to make the collection process of data easier.

Strengths

A number of strengths are associated with the present research study as it covers three important topics according to previous research studies never been investigated together. Results from this study will help place research into a new pool of breast cancer research to help to improve long term quality of life for women after breast cancer. The three measures used displayed high internal consistency and reliability therefore building reliable and valid foundations for the present research study. Results from the present research study are useful and beneficial to the breast cancer community and can be somewhat generalized to the breast cancer population of Ireland. Variables analysed in the present research study are important daily challenges women who have experienced breast cancer face and overcome, for example, body concerns, psychological wellbeing, sufficient social support, therefore, information obtained on variables such as these will be useful to present and future breast cancer survivors.

Implications

The present research study has many implications in relation to areas such as clinical settings. Clinicians working in the area of breast cancer diagnosis may benefit from the knowledge that age has a big impact on quality of life and suggest screening for breast cancer should be lowered from the age of 50 to 30 as a considerable number of women are being diagnosed with breast cancer in their early thirties. The earlier breast cancer is diagnosed the higher the chance of survival, more treatment options, higher success rates for treatment and long-term quality of life. It may be advantageous for clinicians to suggest to patients who require surgery to opt for breast reconstruction immediately after the mastectomy process as breast reconstruction results in higher levels of body satisfaction, decrease the psychological and physical impacts of breast cancer.

Health services in Ireland may benefit from the information that time since diagnosis impacts levels of body concern in regard to appearance, shape and negatively impacts body appreciation. It may be useful to health services to extend review appointments and request they attend support groups for emotional support of women who have experienced the same disease. More needs to be done in the areas of psychological and physical health for women after breast cancer as after surgery, health care services need to provide more physical therapy for women after breast cancer surgery and psychological services to help to improve quality of life for those affected.

More research needs to be carried out in the areas of age related quality of life after breast cancer as the amount of research available is limited. Although, there is a vast pool of research around the physical effects of breast cancer, researchers would benefit from more research from a psychological perspective to help improve quality of life after breast cancer. Additional research is required on cultural differences impact to quality of life as there is a limited amount of research on breast cancer in the eastern continents of the world, to discover is certain factors impact prognosis after breast cancer surgery, such as family, prayer, diet and so forth.

Although a large amount of research has been carried out on the physical effects of breast cancer on quality of life, body image and body appreciation, this research helps to fill gaps and provides useful information to clinicians, health care providers and researchers. This research will be beneficial to women who have experienced breast cancer to help to improve services related to improving their overall quality of life, body image and body appreciation after breast cancer.

Conclusion

Many new facts were discovered as a result of the present research study such as women who have experienced breast cancer display higher body appreciation than healthy women and age is a significant predictor of higher levels of quality of life. Also, already established facts are improved in their validity and reliability such as the type of treatment received is associated with better physical and psychological outcomes, single or double mastectomy with breast reconstruction or breast conservation procedures give women higher levels of body satisfaction. The amount of time since diagnosis can be lead to less body appearance concerns and higher body satisfaction. These findings can lead to better long term prognosis after surgery, help women to achieve some normalcy in their lives by creating intervention groups or health services to improve psychological, physical outcomes and levels of body appreciation. Also, clinicians and cancer care nurses can use this information to try to lower feelings of cancer related changes to appearance, distress, fear, feelings of vulnerability and suitability after experiencing breast cancer. Future studies carried out on these particular variables will be beneficial to future women who will be diagnosed with breast cancer.

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Appendices

Appendix A

Applicable to Breast Cancer Group

The Body Image after Breast Cancer Questionnaire

Age: _____

When Diagnosed: _____

Height: _____ (cm/ft)

Approx. Weight: _____

Surgical Procedure undertaken:Single Mastectomy Double Mastectomy Breast Reconstruction Breast Conservation Yes No Married: Yes No Partner: Yes No Single: Yes No Children: Yes No **INSTRUCTIONS - PLEASE READ CAREFULLY**

The following pages contain statements about how people might think, feel, or behave after developing breast cancer. You are asked to indicate **the way each statement pertains to you personally over the past month**.

Please read each statement carefully and decide how it applies to you. When answering, consider how you have felt **over the past month**. Your answers **are confidential so please do not write your name on any of the pages**. Using the scales listed below, indicate your answers by writing them to the left of the statements. There are **two types of statements**. For the first type of statement the following scale is use:

- 1 = Strongly Disagree
- 2 = Disagree
- 3 = Neither Disagree
- 4 = Agree
- 5 = Strongly Agree

Example 2 1. Skin Dryness is a problem for me.

In the blank space enter 1 if you **strongly disagree** with the statement, 2 if you **disagree** with the statement, 3 if you **neither agree nor disagree** with the statement, 4 if you **agree** with the statement and 5 if you **strongly agree** with the statement. In this case the answer is 2, the person **disagrees** with the statement.

In the second type of statement in the following scale is used

- 1 = Never/Almost Never
- 2 = Infrequently
- 3 = Sometimes
- 4 = Often
- 5 = Always/Almost Always

Example

4 1. I can use my arm normally.

In the blank space enter 1 if the statement is **never or almost never** true, 2 if the statement is **infrequently** true, 3 if the statement is **sometimes** true, 4 if the statement is **often** true and 5 if the

statement is **always or almost always true**. In this case the answer is **4**, the person can **often** use their arm normally.

Remember that there are no right or wrong answers; just give the answer that is true for you over the past month. Some questions may seem to be more important to you than others. Try to answer all questions to the best of your ability. There should be an answer that is true for you. It is important that you **answer every item**. Please be completely honest. **Your responses are confidential. Your name will never appear on this survey and once your survey is returned, anything that could identify you will be destroyed.**

TYPE *ONE* STATEMENTS

RESPONSES

1 = Strongly Disagree

2 = Disagree

3 = Neither Agree nor Disagree

4 = Agree

5 = Strongly Agree

1. I try to hide my body.
2. The feeling in my arm is normal.
3. I avoid looking at my scars from breast surgery.
4. I feel there is a time bomb inside of me.
5. I am sleepy during the day.
6. I am happy with my level of energy.
7. I feel prone to cancer.
8. I am satisfied with the shape of my body.
9. I feel less feminine since cancer.
10. I like my body.
11. I feel comfortable about the way I look when I exercise.
12. I would feel comfortable changing in a public change-room.
13. I feel my body has been invaded.
14. I am satisfied with the appearance of my arm.
15. I feel my body has let me down.
16. I like my looks just the way they are.
17. Others have had to take over my duties.
18. I feel that part of me must remain hidden.
19. I am afraid of touching the scars from breast surgery.
20. I am satisfied with the appearance of my hips.
21. I avoid close physical contact such as hugging.
22. I feel that something is taking over my body.
23. I am satisfied with the shape of my buttocks.

*The following questions pertain to your feelings about your breast or mastectomy site. If you are missing a breast(s) (if you have had a mastectomy without breast reconstruction) please answer question 24. If you are not missing a breast (if you have had a lumpectomy, a mastectomy with breast reconstruction, or no surgical treatment to your breasts) please skip questions 24 and answer questions 25 to 27. *

Women who are missing one or both breasts should answer the following item.

24. I feel comfortable looking at my mastectomy. *

Women who are not missing a breast should answer the following items.

25. I am happy with the position of my nipple. *
 26. I am satisfied with the size of my breast. *
 27. I feel comfortable when others see my breasts. *
 28. The appearance of my breast could disturb others.

TYPE TWO STATEMENTS

RESPONSES

1 = Never/Almost Never

2 = Infrequently

3 = Sometimes

4 = Often

5 = Always/Almost Always

29. I feel that people are looking at my chest.
 30. I avoid physical intimacy.
 31. I feel that people are looking at me.
 32. I hide my body when changing clothes.
 33. I worry that the cancer is spreading.
 34. I need to be reassured about the appearance of my bust.
 35. I think about breast cancer.
 36. Being tired interferes with my life.
 37. I feel sexually attractive when I am nude.
 38. Swelling of my arm is a problem for me.
 39. I worry about my body.
 40. I would keep my chest covered during sexual intimacy.
 41. I feel angry at my body.
 42. I need reassurance about my health.
 43. I can participate in normal activities.
 44. I have problems concentrating.
 45. My body stops me from doing things I want to do.
 46. I think my breasts appear uneven to others.
 47. Arm pain is a problem for me.
 48. I worry about minor aches and pains.
 49. I feel normal.
 50. I feel people can tell my breasts are not normal.

*The following questions pertain to your feelings about your breast or mastectomy site. If you are missing a breast(s) (if you have had a mastectomy without breast reconstruction) please answer question 51. If you are not missing a breast (if you have had a lumpectomy, a mastectomy with breast reconstruction, or no surgical treatment to your breasts) please skip questions 51 and answer questions 52 and 53. *

Women who are missing one or both breasts should answer the following item.

51. I worry about my prosthesis or padding slipping. *

Women who are not missing a breast should answer the following items.

52. I think about my breast. *

53. My breast is painful to touch. *

* Indicates optional items specific for surgical subgroups, exclude in general comparisons.

(Baxter, Goodwin, Mcleod, Dion, Devins, Bombardier, 2006)

Appendix B

Applicable to Healthy Control Group

The Body Image Questionnaire

Age: _____

Height: _____ (cm/ft)

Approx. Weight: _____

Married: Yes No Partner: Yes No Single: Yes No Children: Yes No **INSTRUCTIONS - PLEASE READ CAREFULLY**

The following pages contain statements about how people might think, feel, or behave after developing breast cancer. You are asked to indicate **the way each statement pertains to you personally over the past two years.**

Please read each statement carefully and decide how it applies to you. When answering, consider how you have felt **over the past two years.** Your answers **are confidential so please do not write your name on any of the pages.** Using the scales listed below, indicate your answers by writing them to the left of the statements. There are **two types of statements.**

Type One Statements

1 = Strongly Disagree

2 = Disagree

3 = Neither Disagree

4 = Agree

5 = Strongly Agree

Example 2 1. Skin Dryness is a problem for me.

In the blank space enter **1** if you **strongly disagree** with the statement, **2** if you **disagree** with the statement, **3** if you **neither agree nor disagree** with the statement, **4** if you **agree** with the statement and **5** if you **strongly agree** with the statement. In this case the answer is **2**, the person **disagrees** with the statement.

Type Two Statements

1 = Never/Almost Never

2 = Infrequently

3 = Sometimes

4 = Often

5 = Always/Almost Always

Example 4 1. I can use my arm normally.

In the blank space enter **1** if the statement is **never or almost never** true, **2** if the statement is **infrequently** true, **3** if the statement is **sometimes** true, **4** if the statement is **often** true and **5** if the statement is **always or almost always true**. In this case the answer is **4**, the person can **often** use their arm normally. **Remember that there are no right or wrong answers**; just give the answer that is true for you over the past month. Some questions may seem to be more important to you than others. Try to answer all questions to the best of your ability. There should be an answer that is true for you. It is important that you **answer every item**. **Please be completely honest**. **Your responses are confidential**. **Your name will never appear on this survey and once your survey is returned, anything that could identify you will be destroyed**.

TYPE *ONE* STATEMENTS**RESPONSES**

1 = Strongly Disagree

2 = Disagree

3 = Neither Agree nor Disagree

4 = Agree

5 = Strongly Agree

- _____ 1. I am sleepy during the day.
- _____ 2. I am happy with my level of energy.
- _____ 3. I am satisfied with the shape of my body.
- _____ 4. I like my body.
- _____ 5. I feel comfortable about the way I look when I exercise.
- _____ 6. I like my looks just the way they are.
- _____ 7. Others have had to take over my duties.
- _____ 8. I am satisfied with the appearance of my hips.
- _____ 9. I am satisfied with the shape of my buttocks.

TYPE *TWO* STATEMENTS**RESPONSES**

1 = Never/Almost Never

2 = Infrequently

3 = Sometimes

4 = Often

5 = Always/Almost Always

- _____ 10. Being tired interferes with my life.
- _____ 11. I can participate in normal activities.
- _____ 12. I have problems concentrating.
- _____ 13. My body stops me from doing things I want to do.
- _____ 14. I feel normal.

Appendix C

Applicable to Breast Cancer Group QOL Scale/Breast Cancer

Quality of Life Scale/BREAST CANCER PATIENT

Directions: We are interested in knowing how your experience of having cancer affects your Quality of Life. Please answer all of the following questions based on your life at this time.

Please circle the number from 0 - 10 that best describe your experiences:

To what extent are the following a problem for you:

1. Fatigue

no problem 0 1 2 3 4 5 6 7 8 9 10 severe problem

2. Appetite changes

no problem 0 1 2 3 4 5 6 7 8 9 10 severe problem

3. Aches or pain

no problem 0 1 2 3 4 5 6 7 8 9 10 severe problem

4. Sleep changes

no problem 0 1 2 3 4 5 6 7 8 9 10 severe problem

5. Weight gain

no problem 0 1 2 3 4 5 6 7 8 9 10 severe problem

6. Vaginal dryness/menopausal symptoms

no problem 0 1 2 3 4 5 6 7 8 9 10 severe problem

7. Menstrual changes or fertility

no problem 0 1 2 3 4 5 6 7 8 9 10 severe problem

8. Rate your overall physical health

Extremely 0 1 2 3 4 5 6 7 8 9 10 excellent
poor

Psychological Well Being Items

9. How difficult is it for you to **cope** today as a result of your disease?

Not at all 0 1 2 3 4 5 6 7 8 9 10 very difficult
Difficult

10. How difficult is it for you to **cope** today as a result of your treatment?

Not at all 0 1 2 3 4 5 6 7 8 9 10 very difficult
Difficult

11. How good is your **quality of life**?

Extremely 0 1 2 3 4 5 6 7 8 9 10 excellent
poor

12. How much **happiness** do you feel?

Not at all 0 1 2 3 4 5 6 7 8 9 10 a great deal

13. Do you feel like you are **in control** of situations in your life?

Not at all 0 1 2 3 4 5 6 7 8 9 10 completely

14. How **satisfying** is your life?

Not at all 0 1 2 3 4 5 6 7 8 9 10 completely

15. How is your present ability to **concentrate or to remember** things?

Extremely 0 1 2 3 4 5 6 7 8 9 10 excellent
poor

16. How **useful** do you feel?

Not at all 0 1 2 3 4 5 6 7 8 9 10 extremely

17. Has your illness or treatment caused changes in your **appearance**?

Not at all 0 1 2 3 4 5 6 7 8 9 10 extremely

18. Has your illness or treatment caused changes in your **self concept** (the way you see yourself)?

Not at all 0 1 2 3 4 5 6 7 8 9 10 extremely

How distressing were the following aspects of your illness and treatment?

19. **Initial diagnosis**

not at all 0 1 2 3 4 5 6 7 8 9 10 very distressing
distressing

20. **Cancer chemotherapy**

not at all 0 1 2 3 4 5 6 7 8 9 10 very distressing
distressing

21. **Cancer radiation**

not at all 0 1 2 3 4 5 6 7 8 9 10 very distressing
distressing

22. **Cancer surgery**

not at all 0 1 2 3 4 5 6 7 8 9 10 very distressing

distressing

23. Completion of treatment

not at all 0 1 2 3 4 5 6 7 8 9 10 very distressing
distressing

24. How much anxiety do you have?

none at all 0 1 2 3 4 5 6 7 8 9 10 a great deal

25. How much depression do you have?

none at all 0 1 2 3 4 5 6 7 8 9 10 a great deal

To what extent are you **fearful** of:

26. **Future diagnostic tests**

no fear 0 1 2 3 4 5 6 7 8 9 10 extreme fear

27. **A second cancer**

no fear 0 1 2 3 4 5 6 7 8 9 10 extreme fear

28. **Recurrence of cancer**

no fear 0 1 2 3 4 5 6 7 8 9 10 extreme fear

29. **Spreading (metastasis) of your cancer**

no fear 0 1 2 3 4 5 6 7 8 9 10 extreme fear

30. To what degree do you feel your life is back to **normal**?

none at all 0 1 2 3 4 5 6 7 8 9 10 a great deal

Social Concerns

31. How distressing has your illness been for your **family**?

not at all 0 1 2 3 4 5 6 7 8 9 10 a great deal

32. Is the amount of **support** you receive from others sufficient to meet your needs?

not at all 0 1 2 3 4 5 6 7 8 9 10 a great deal

33. Is your continuing health care interfering with your **personal relationships**?

not at all 0 1 2 3 4 5 6 7 8 9 10 a great deal

34. Is your **sexuality** impacted by your illness?

not at all 0 1 2 3 4 5 6 7 8 9 10 a great deal

35. To what degree has your illness and treatment interfered with your **employment**?

no problem 0 1 2 3 4 5 6 7 8 9 10 severe problem

36. To what degree has your illness and treatment interfered with your **activities at home**?

no problem 0 1 2 3 4 5 6 7 8 9 10 severe problem

37. How much **isolation** do you feel is caused by your illness?

none 0 1 2 3 4 5 6 7 8 9 10 a great deal

38. How much **concern** do you have for your daughter(s) or other close female relatives regarding breast cancer?

none at all 0 1 2 3 4 5 6 7 8 9 10 a great deal

39. How much **financial burden** have you incurred as a result of your illness and treatment?

none 0 1 2 3 4 5 6 7 8 9 10 a great deal

Spiritual Well Being

40. How important to you is your participation in **religious activities** such as praying, going to church or temple?

not at all important 0 1 2 3 4 5 6 7 8 9 10 very important

41. How important to you are other **spiritual activities** such as meditation or praying?

not at all important 0 1 2 3 4 5 6 7 8 9 10 very important

42. How much has your **spiritual life changed** as a result of cancer diagnosis?

less important 0 1 2 3 4 5 6 7 8 9 10 more important

43. How much **uncertainty** do you feel about your future?

not at all uncertain 0 1 2 3 4 5 6 7 8 9 10 very uncertain

44. To what extent has your illness made **positive changes** in your life?

none at all 0 1 2 3 4 5 6 7 8 9 10 a great deal

45. Do you sense a **purpose/mission** for your life or a reason for being alive?

none at all 0 1 2 3 4 5 6 7 8 9 10 a great deal

46. How **hopeful** do you feel?

not at all 0 1 2 3 4 5 6 7 8 9 10 very hopeful

(Ferrell, Grant, Hassey-Dow, 1995)

Appendix D

Applicable Healthy Control Group

Quality of Life Scale

Directions: We are interested in knowing how your experience over the **last two years** has affected your Quality of Life. Please answer all the following questions based on your life over the **past two years**.

Please **circle** the number from **0 - 10** that best describe your experiences:

To what extent are the following a problem for you:

1. Fatigue

no problem 0 1 2 3 4 5 6 7 8 9 10 severe problem

2. Appetite changes

no problem 0 1 2 3 4 5 6 7 8 9 10 severe problem

3. Aches or pain

no problem 0 1 2 3 4 5 6 7 8 9 10 severe problem

4. Sleep changes

no problem 0 1 2 3 4 5 6 7 8 9 10 severe problem

5. Weight gain

no problem 0 1 2 3 4 5 6 7 8 9 10 severe problem

6. Menopausal symptoms

no problem 0 1 2 3 4 5 6 7 8 9 10 severe problem

7. Menstrual changes or fertility

no problem 0 1 2 3 4 5 6 7 8 9 10 severe problem

8. Rate your overall physical health

Extremely poor 0 1 2 3 4 5 6 7 8 9 10 excellent

Psychological Well Being Items

9. How difficult has it been for you to **cope** over the last **two years**?

Not at all Difficult 0 1 2 3 4 5 6 7 8 9 10 very difficult

10. How difficult is it for you to **cope** today?

Not at all Difficult 0 1 2 3 4 5 6 7 8 9 10 very difficult

11. How good is your **quality of life**?

Extremely poor 0 1 2 3 4 5 6 7 8 9 10 excellent

12. How much **happiness** do you feel?

Not at all 0 1 2 3 4 5 6 7 8 9 10 a great deal

13. Do you feel like you are **in control** of situations in your life?

Not at all 0 1 2 3 4 5 6 7 8 9 10 completely

14. How **satisfying** is your life?

Not at all 0 1 2 3 4 5 6 7 8 9 10 completely

15. How is your present ability to **concentrate or to remember** things?

Extremely poor 0 1 2 3 4 5 6 7 8 9 10 excellent

16. How **useful** do you feel?

Not at all 0 1 2 3 4 5 6 7 8 9 10 extremely

17. Has your **appearance changed in the last two years**?

Not at all 0 1 2 3 4 5 6 7 8 9 10 extremely

18. Has your **self-concept** changed in the last two years (the way you see yourself)?

Not at all 0 1 2 3 4 5 6 7 8 9 10 extremely

19. Do you feel your life is **normal**?

none at all 0 1 2 3 4 5 6 7 8 9 10 a great deal

Social Concerns

20. How distressing has illnesses been for your **family over the past two years**?

not at all 0 1 2 3 4 5 6 7 8 9 10 a great deal

21. Is the amount of **support** you receive from others sufficient?

not at all 0 1 2 3 4 5 6 7 8 9 10 a great deal

22. Does your health or the health of your family interfere with your **personal relationships**?

not at all 0 1 2 3 4 5 6 7 8 9 10 a great deal

23. Has your **sexuality** been impacted over the last two years?

not at all 0 1 2 3 4 5 6 7 8 9 10 a great deal

24. Has your health affected your **employment** over the last two years?

no problem 0 1 2 3 4 5 6 7 8 9 10 severe problem

25. Has your health affected **activities at home** over the last two years?

no problem 0 1 2 3 4 5 6 7 8 9 10 severe problem

26. How much **isolation** do you feel?

None at all 0 1 2 3 4 5 6 7 8 9 10 a great deal

27. How much **concern** do you have for your immediate family or relatives regarding their health?

none at all 0 1 2 3 4 5 6 7 8 9 10 a great deal

28. How much **financial burden** have you experienced over the last two years?

None at all 0 1 2 3 4 5 6 7 8 9 10 a great deal

Spiritual Well Being

29. How important to you is your participation in **religious activities** such as praying, going to church or temple?

not at all important 0 1 2 3 4 5 6 7 8 9 10 very important

30. How important to you are other **spiritual activities** such as meditation or praying?

not at all important 0 1 2 3 4 5 6 7 8 9 10 very important

31. How much has your **spiritual life changed** over the last two years?

less important 0 1 2 3 4 5 6 7 8 9 10 more important

32. How much **uncertainty** do you feel?

not at all uncertain 0 1 2 3 4 5 6 7 8 9 10 very uncertain

33. To what extent have you made **positive changes** in your life over the last two years?

none at all 0 1 2 3 4 5 6 7 8 9 10 a great deal

34. Do you sense a **purpose/mission** for your life or a reason for being alive?

none at all 0 1 2 3 4 5 6 7 8 9 10 a great deal

35. How **hopeful** do you feel?

not at all 0 1 2 3 4 5 6 7 8 9 10 very hopeful

Appendix E

Applicable to both groups

Body Appreciation Scale (BAS)

Directions for participants: For each item, please circle the number that best characterises your attitudes and behaviours.

	1	2	3	4	5
	never	seldom	sometimes	often	always
1 I respect my body.	1	2	3	4	5
2 I feel good about myself.	1	2	3	4	5
3 On the whole, I am satisfied with my body.	1	2	3	4	5
4 Despite its flaws, I accept my body for what it is.	1	2	3	4	5
5 I feel that my body has at least some good qualities.	1	2	3	4	5
6 I take a positive attitude towards my body.	1	2	3	4	5
7 I am attentive to my body's needs.	1	2	3	4	5
8 My self-worth is independent of my body shape or weight.	1	2	3	4	5
9 I do not focus a lot of energy being concerned with my body shape or weight.	1	2	3	4	5
10 My feelings toward my body are positive, for the most part.	1	2	3	4	5
11 I engage in healthy behaviours to take care of to take care of my body.	1	2	3	4	5
12 I do not allow unrealistically thin images of women presented in the media to affect my attitudes toward my body.	1	2	3	4	5
13 Despite its imperfections, I still like my body	1	2	3	4	5

Total Score: _____

(Tylka, 2006)

Appendix F
Information Letter

I am a third-year Psychology student in the National College of Ireland in Dublin. I am carrying out a research study on breast cancer for my final year research project, which will involve women from the ages of 30-65 years of age, have had one of the following three surgical procedures (1) single mastectomy (2) double mastectomy (3) breast reconstruction as a result of breast cancer. The study will be taking place in the Breast Cancer Support Centre, Sligo and Hope Cancer Support Centre, Enniscorthy.

Research Question: Exploration of the link between breast cancer and body image, quality of life and body appreciation.

The research study will involve the participants filling out three short questionnaires (1) Body Image After Breast Cancer Questionnaire (BIBCQ) which measures body image in women after breast cancer, (2) Quality of Life / Breast Cancer Scale (QoL/BCS) measures the quality of life for women following breast cancer, (3) Body Appreciation Scale (BAS) measures appreciation of your body after breast cancer. Taking part in this research study is optional and voluntary. Participants may leave the study at any time without consequence.

Thank You,

Charlotte Lee (Third Year Student).

If you have any question or queries regarding the research study, please contact:

Charlotte Lee on 087 9503331 (Researcher)

Email: x15018237@student.ncirl.ie

Appendix G

Consent form

Dear Participant,

I am writing to you to ask for your informed consent to take part in this research study (Exploration of the link between breast cancer, body image, quality of life and body appreciation). Participants will be asked to complete three questionnaires Body Image After Breast Cancer Questionnaire (BIBCQ), Quality of Life/ Breast Cancer Scale (QoL/BCS) and Body Appreciation Scale (BAS). Participants can withdraw from the study at any time if they wish to do so without any consequences.

I, consent and give permission to the researcher and their supervisor to be included in the research study and for my data to be used in the study.

Yes

No

Signed _____

Date _____

Appendix H

Helplines

Breast Cancer Support Line

1800 200 700

Breast Cancer Ireland

1800 940 025