**Critical Analysis of Cancer and Body Image: What we know and How we know it**

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 **Significance:** Body image influences the emotional and psychosocial aspects of cancer patients due to the profound effects the illness and its treatment have on physical appearance (Esplen & Trachtenberg, 2020). Although treatment regimens vary significantly based on tumor location and stage, treatments change the appearance of many cancer survivors and patients (Bonanno & Choi 2010, Russell et al. 2011). The physical consequences of cancer treatments affect patients' self-image and relationships with others. These complex social, psychological, and emotional components are associated with depression, anxiety, and vulnerability (Romito et al., 2010; Rouanne et al., 2013). Therefore, it is crucial to have a deeper understanding of body image distress, which, in turn, can be used to tailor communications with cancer patients, survivors, and their families. This study aims to understand how body image with cancer patients and survivors have been investigated. We are specifically interested in identifying what factors have been investigated as variables to understand body image of cancer patients and survivors. As a result of a review, we will be able to identify the variables investigated in this topic of inquiry, the gap in understanding the body image of cancer patients, and provide the areas of future research.

 **Theoretical Perspective**. Body investment is composed of the subjective evaluation of appearance and emotions related to appearance investment (Moreir, Silva, & Canavarro, 2010). Body investment is composed of two parts: Self-evaluative salience and self-motivational salience. Self-evaluative salience refers to the importance individuals place on physical appearance in defining self-worth and self-concept. Self-motivational salience refers to individuals’ efforts to engage in appearance management behaviors to improve attractiveness. Cancer survivors’ degree of body image-related distress may not be a consequence of the severity of physical changes alone. Body image distress is the subjective evaluation and experience of the changes caused by the illness and its treatment (Fingeret, 2010; Lehmann & Tuinman, 2018). This notion of body image investment provides the understanding of how cancer patients can cope with physical changes and how to develop self-motivational salience in helping cancer patients to build positive body image.

**Method**: During the literature search stage, a research librarian conducted comprehensive and systematic searches in the MEDLINE (EBSCO), PsycINFO (EBSCO), Business Source Complete (EBSCO), and Scopus databases using keywords referring to body image or body esteem, cancer patients or survivors, and socioeconomic factors including shopping behavior. All languages, geographic regions, and years of publication were included for screening purposes. Initial searches captured 390 records across all databases, and eleven additional studies identified during citation searches conducted in preliminary explorations were also included for a total of 401 citations to review.

We used Covidence, which is a web-based collaboration software platform designed to streamline the production of systematic and other literature reviews, to manage screening and full-text review processes. The elimination of duplicate entries yielded 279 citations for initial screening by the primary investigator. Eligibility criteria included empirical studies employing quantitative statistical analysis investigating the body image of cancer patients and survivors as the dependent variable. Exclusion criteria included qualitative studies that did not employ statistical analysis, and body image was treated as an independent variable affecting other outcomes. Additionally, studies published in languages other than English were excluded due to limitations in the authors’ abilities to read those papers effectively. A total of 84 papers were selected for full-text assessment. Upon full-text review, an additional 47 articles were excluded leaving 37 studies included in this review.

**Results:** The selected 37 studies were published between 1995-2022. Of those studies, 22 were conducted with only female participants, 14 with both male and female, and one involved the young children of boys and girls of leukemia. No studies were conducted exclusively with male participants. The type of cancer investigated for body image included breast cancer (n = 23), head and neck cancer (n = 3), anal & rectal cancer (n = 2), not specified (n = 2), colostmoates (n = 2), and prostate and testicular ( n = 1), visceral ( n = 1) cervical ( n = 1) oral cavity cancer (n = 1) and hysterectomy. The specific variables that were tested as factors influencing body image are following in an order of frequency: educational level (n = 12), age ( n = 10), surgery method (breast conserving vs. mastectomy) ( n = 10), gender ( n = 8), relationship satisfaction ( n = 7), employment ( n = 6), sexual dissatisfaction ( n = 6), body image intervention ( n = 5), depression ( n = 4), income ( n = 4), ethnicity ( n = 4), overall mental health condition ( n = 4), marital status ( n = 4), active coping strategies ( n = 3), time since cancer diagnosis ( n = 3), satisfaction of having reconstruction surgery ( n = 3), overall physical health condition ( n = 2), amount of hair loss ( n = 2), anxiety level ( n = 2), cancer stage ( n = 2), tumor and scar location ( n = 2), self-esteem ( n = 2), skin burns (n = 2), number of professional follow-up visit ( n = 2), treatment method (Chemotherapy vs. nonchemotherapy) ( n = 2), and adjuvant therapy, fertility, paresthesia, morbidity, control of treatment choice, residential area, symptom severity, cancer types and body weight.

**Discussions and Conclusion.** Based on the review of the study, the investigation of body image among cancer patients and survivors is a relatively new area of research, as the earliest publication analyzed this study is the study published in 1995. Not surprisingly, 60% of the study was conducted exclusively with women, while no study was conducted only with males. Chemotherapy induces a worse body image in female cancer patients, which can be an extension of their awareness and concern, in general, relative to society's beauty standards on women. Breast cancer has been the most frequently researched topic concerning the cancer type, which is also relevant to women's body image. It is notable that a wide range of variables were investigated, identifying as a factor influencing the body image of this population.

Interestingly, the individuals’ education level is the most frequently researched variable, followed by age, gender, employment, and sexual satisfaction. These variables are all relevant to understanding individuals' body images, as young females are generally more conscious about their appearance, and their resources enable them to compensate for their body flaw. Employment is an important element of income and socioeconomic condition, which can provide the resources that cancer patients and survivors purchase products to camouflage their perceived physical flow. For the future, specific attention should be given to a vulnerable group, such as female cancer patients with low education levels and who are unemployed, to increase the self-motivational salience concerned with their appearance. As they become self-motivational and enhance their self-image, they will feel more accepted and satisfied with the relationship, building a more positive body image.

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\* A reference list for the studies used for the analysis is available: Jay\_Yoo@baylor.edu