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Understanding the Role of Body Image in Predicting Quality of Life Among Cancer Survivors

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Abstract

Cancer and its treatment often lead to significant changes in body image, which may impact the overall quality of life (QoL) of survivors. Understanding the relationship between body image and various quality of life (QoL) sub-dimensions can help in designing effective psychological and social interventions. This study aims to examine the relationship between body image and QoL among cancer survivors, focusing on its sub-dimensions: negative feelings, positive feelings, cognitive problems, sexual problems, physical pain, fatigue, and social avoidance. A Structural Equation Modelling (SEM) approach was used to assess the strength and direction of these associations. A cross-sectional study was conducted among cancer survivors, utilising standardised scales to measure body image and QoL. Correlation and SEM analyses were performed to explore direct relationships. Model fit indices were evaluated to ensure the robustness of the proposed model. The findings indicated that body image was significantly associated with all QoL sub-dimensions. Higher body image satisfaction was linked to lower negative feelings ($\beta = -0.45$, $p < 0.001$), cognitive problems ($\beta = -0.32$, $p < 0.01$), sexual problems ($\beta = -0.50$, $p < 0.001$), physical pain ($\beta = -0.40$, $p < 0.001$), fatigue ($\beta = -0.42$, $p < 0.001$), and social avoidance ($\beta = -0.47$, $p < 0.001$), while it positively predicted positive feelings ($\beta = 0.38$, $p < 0.001$). The SEM model demonstrated a good fit (CFI = 0.95, RMSEA = 0.048). Body image plays a crucial role in predicting QoL outcomes among cancer survivors. Interventions aimed at improving body image perceptions could enhance emotional, cognitive, and social well-being, leading to a better overall quality of life.

Keywords: Body image, quality of life, cancer survivors, psychological distress, social support.

Introduction

Cancer diagnosis and treatment often bring profound physical, psychological, and social changes, significantly impacting survivors' body image and overall quality of life (QoL) (Fang & Heckman, 2020). Body image, a multidimensional construct encompassing perceptions, attitudes, and emotions related to one's physical appearance, can be adversely affected by cancer-related changes such as surgical scars, hair loss, weight fluctuations, and functional impairments (Fingeret, Teo, & Epner, 2014). Research suggests that body image dissatisfaction is prevalent among cancer survivors, particularly those who undergo mastectomy, chemotherapy, or radiation therapy (Przezdziecki et al., 2013). Negative body image has been associated with heightened psychological distress, lower self-esteem, and diminished QoL (Moreira et al., 2013).

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While the relationship between body image and QoL is well-documented, the mechanisms underlying this association remain insufficiently explored. Psychological factors such as depression, anxiety, and self-esteem may mediate this relationship, exacerbating or mitigating its impact (Fobair et al., 2006). Additionally, external factors, including social support and coping strategies, could moderate this association, potentially buffering the adverse effects of body image concerns on QoL (Helms, O'Hea, & Corso, 2008). Identifying these mediating and moderating factors is crucial for developing targeted interventions to improve survivors' psychosocial well-being.

This study aims to examine the association between body image and QoL among cancer survivors using correlation, mediation, and moderation analyses. By identifying key psychological and social factors influencing this relationship, this research seeks to contribute to a deeper understanding of cancer survivorship and inform the development of effective interventions.

Body Image in Cancer Survivors

Body image is a multifaceted construct that encompasses an individual's perceptions, thoughts, emotions, and behaviours related to their physical appearance (Cash & Pruzinsky, 2004). For cancer survivors, body image can be profoundly affected by the disease and its treatments, which often result in physical changes such as hair loss, weight fluctuations, surgical scars, amputations, and other visible or functional alterations (Fingeret et al., 2013). These changes can lead to significant distress, impacting self-esteem, social relationships, psychological well-being, and overall quality of life (Fang & Heckman, 2020). While some survivors develop resilience and adaptive coping mechanisms, many experience persistent body image disturbances that require psychological support and intervention (Moreira & Canavarro, 2018).

Impact of Cancer Treatment on Body Image

Surgical and Physical Changes

Surgical procedures such as mastectomy, lumpectomy, prostatectomy, and colostomy can cause visible and functional body changes that significantly impact body image (Przezdziecki et al., 2013). Among breast cancer survivors, for example, the loss of one or both breasts is often associated with feelings of femininity loss, reduced attractiveness, and sexual dissatisfaction (Helms et al., 2008). Similarly, prostate cancer survivors who undergo prostatectomy, frequently report concerns related to incontinence and erectile dysfunction, both of which contribute to body image dissatisfaction and emotional distress (Rosenberg et al., 2018).

Effects of Chemotherapy and Radiation Therapy

Chemotherapy-induced alopecia (hair loss) is one of the most visible side effects of cancer treatment and has been linked to severe body image distress, particularly among women (Batchelor, 2001). Many survivors report that losing their hair makes them feel less attractive and more self-conscious, leading to increased social withdrawal and emotional suffering (Montazeri, 2008). Additionally, radiation therapy can cause skin discolouration, burns, and fibrosis, further altering the survivor's self-perception and increasing body image concerns (Hefferon et al., 2009).

Psychological and Emotional Consequences of Body Image Disturbance

Body Image and Psychological Distress

Negative body image is strongly associated with psychological distress, including depression, anxiety, and decreased self-esteem among cancer survivors (Fobair et al., 2006). Studies have shown that survivors who experience body dissatisfaction are more likely to suffer from social anxiety, avoidance behaviours, and difficulty reintegrating into daily life (Cash & Smolak, 2011). This

distress can persist long after treatment completion, highlighting the need for long-term psychological support for survivors struggling with body image issues (Fingeret et al., 2013).

Social and Relationship Challenges

Body image concerns can also impact interpersonal relationships, particularly intimate and sexual relationships (Bober & Varela, 2012). Survivors who feel unattractive or self-conscious about their bodies may withdraw from romantic partners, leading to decreased relationship satisfaction and sexual dysfunction (Ganz et al., 2018). Moreover, social interactions in general may become strained, as individuals with body image dissatisfaction often fear being judged by others or struggle with self-confidence in public settings (Paterson et al., 2016).

Factors Influencing Body Image Resilience

Coping Mechanisms and Psychological Interventions

While some survivors struggle with persistent body image dissatisfaction, others develop adaptive coping strategies that help them maintain a positive self-concept. Engaging in social support groups, cognitive-behavioural therapy (CBT), mindfulness practices, and reconstructive surgery are some of the approaches that have been found to improve body image and overall psychological well-being (Carver et al., 2005; Patel et al., 2019). Positive reframing, self-compassion, and acceptance-based strategies also play a crucial role in helping survivors adjust to body changes and enhance their self-perception (Sherman et al., 2017).

The Role of Social Support

Social support from family, friends, and healthcare providers is a key factor in buffering the negative effects of body image concerns among cancer survivors (Moreira & Canavarro, 2018). Studies have shown that survivors who feel supported and accepted by their social networks tend to have better body image adjustment and lower levels of psychological distress (Manne & Badr, 2008). Peer support programmes and survivor networks also provide a valuable space for individuals to share their experiences and foster a sense of belonging, ultimately improving their self-perception and emotional resilience (Stewart et al., 2001).

Body image is a critical component of cancer survivorship, influencing mental health, social interactions, and overall quality of life. While cancer treatments can lead to profound physical changes that challenge self-perception, the psychological impact of body image disturbances varies among individuals. Understanding the factors that contribute to body image dissatisfaction, as well as the coping mechanisms and interventions that promote positive body image, is essential for providing comprehensive support to survivors. Future research should continue to explore the long-term effects of body image concerns and the efficacy of interventions aimed at enhancing self-acceptance and psychological well-being among cancer survivors.

Quality of Life in Cancer Survivors

Quality of Life (QoL) is a multidimensional concept encompassing physical, psychological, social, and functional well-being, particularly relevant in the context of cancer survivorship (Ferrans et al., 2005). As medical advancements improve survival rates, understanding the long-term impact of cancer and its treatments on QoL has gained increasing importance (Smith et al., 2018). Cancer survivors often experience persistent challenges affecting their emotional and physical health, social relationships, and cognitive functioning (Mols et al., 2014).

Several studies highlight that cancer treatment-related side effects, such as pain, fatigue, and cognitive difficulties, significantly affect survivors' ability to engage in daily activities and maintain overall well-being (Ganz, 2015). Additionally, psychological distress, sexual dysfunction, and social isolation contribute to a diminished QoL, making it crucial to assess its various sub-dimensions to develop targeted interventions (Mehnert et al., 2013). The following sections explore key sub-dimensions of QoL commonly impacted in cancer survivors.

Negative Feelings and Psychological Distress

Cancer diagnosis and treatment often trigger significant emotional distress, including anxiety, depression, and fear of recurrence (Mitchell et al., 2011). Survivors frequently report persistent feelings of sadness, hopelessness, and reduced self-esteem, which can negatively influence their overall well-being (Kangas, Henry, & Bryant, 2002). Psychological distress is particularly prevalent among individuals who experience body image dissatisfaction, leading to social withdrawal and reduced engagement in meaningful activities (Seib et al., 2018).

Cancer survivors frequently experience heightened negative emotions, including anxiety, depression, fear of recurrence, and emotional distress (Mehnert et al., 2018). Studies suggest that psychological distress is one of the most significant factors affecting QoL among cancer survivors, with nearly 30-50% of survivors reporting clinically significant levels of anxiety or depression (Mitchell et al., 2011). Negative feelings are often exacerbated by changes in body image, treatment-related side effects, and concerns about mortality, all of which contribute to lower self-esteem and reduced life satisfaction (Carver et al., 2005).

Positive Feelings and Psychological Well-Being

Despite the challenges faced by cancer survivors, some individuals report positive psychological changes, including increased resilience, greater appreciation for life, and a renewed sense of purpose (Tomich & Helgeson, 2012). Positive feelings, such as optimism and hope, have been found to buffer the negative psychological effects of cancer and contribute to better overall QoL (Sears et al., 2003). Psychological interventions, such as mindfulness and cognitive-behavioural therapy, have been shown to enhance positive affect and improve emotional regulation among survivors (Garland et al., 2013).

Cognitive Problems and Impairments

Cognitive difficulties, often referred to as "chemo brain" or cancer-related cognitive impairment (CRCI), are common among cancer survivors, particularly those who have undergone chemotherapy or radiation therapy (Ahles & Saykin, 2007). Cognitive impairments may include difficulties with memory, attention, processing speed, and executive functioning, leading to significant challenges in daily activities and occupational performance (Janelsins et al., 2014). Research suggests that cognitive dysfunction is associated with higher levels of psychological distress and lower overall QoL among survivors (Wefel et al., 2011)

Sexual Problems and Intimacy Issues

Sexual dysfunction is a prevalent yet often underreported concern among cancer survivors, affecting both men and women across various cancer types (Bober & Varela, 2012). Treatments such as chemotherapy, hormone therapy, and surgical procedures (e.g., mastectomy, prostatectomy) can lead to changes in libido, body image dissatisfaction, and relationship strain (Ganz et al., 2018). Sexual dysfunction is associated with lower self-esteem, increased emotional distress, and impaired intimate relationships, all of which negatively impact QoL (Kotronoulas et al., 2016). Addressing

sexual health concerns through counselling and rehabilitation programmes has been shown to improve survivors' sexual well-being and overall satisfaction with life (Flynn et al., 2011).

Physical Pain and Chronic Discomfort

Pain is a persistent issue among cancer survivors, often resulting from surgery, radiation, or chemotherapy-induced neuropathy (Portenoy et al., 2009). Chronic pain can interfere with daily functioning, contribute to sleep disturbances, and exacerbate emotional distress (van den Beuken-van Everdingen et al., 2016). Studies indicate that pain management strategies, including pharmacological and non-pharmacological interventions (e.g., physical therapy, acupuncture), play a crucial role in enhancing QoL in cancer survivors (Bennett et al., 2019).

Fatigue and Energy Levels

Cancer-related fatigue (CRF) is one of the most commonly reported and debilitating symptoms among survivors, affecting nearly 70-90% of individuals post-treatment (Cella et al., 2011). CRF is characterized by persistent exhaustion that is not alleviated by rest and can significantly impact daily activities, work productivity, and social engagement (Minton & Stone, 2008). Fatigue has been found to have a strong negative correlation with QoL, as it often leads to reduced motivation, decreased physical activity, and social isolation (Bower, 2014). Interventions such as exercise therapy, cognitive-behavioural therapy, and pharmacological treatments have shown promise in managing CRF and improving QoL (Mustian et al., 2017).

Social Avoidance and Isolation

Social withdrawal and avoidance behaviours are common among cancer survivors, often stemming from changes in body image, fatigue, and emotional distress (Sharma et al., 2012). Survivors may experience difficulties in maintaining social relationships due to perceived stigma, fear of being a burden, or challenges in adjusting to post-treatment life (Armes et al., 2009). Reduced social support has been linked to increased psychological distress, lower self-efficacy, and poorer QoL (Wang et al., 2018). Encouraging social engagement through peer support programmes, counselling, and community interventions has been shown to improve emotional well-being and overall life satisfaction among survivors (Steginga et al., 2005).

QoL among cancer survivors is influenced by various interrelated factors, including negative emotions, cognitive impairments, sexual dysfunction, pain, fatigue, and social withdrawal. While some survivors experience positive psychological growth, many face significant challenges that require targeted interventions. Understanding the complexity of these QoL sub-dimensions can help inform clinical practices and develop holistic support systems that address both physical and psychological well-being in cancer survivorship. Future research should focus on personalised interventions that enhance QoL and promote long-term adaptation for cancer survivors.

Need for the Study

Cancer survivorship has gained increasing attention in recent years due to advancements in early detection and treatment, leading to higher survival rates (Siegel et al., 2022). However, surviving cancer often comes with long-term physical, psychological, and social challenges that significantly impact the quality of life (QoL) of individuals post-treatment (Foster et al., 2018). Among these challenges, body image disturbances remain one of the most distressing consequences, affecting self-esteem, emotional well-being, interpersonal relationships, and overall health-related QoL (Fingeret et al., 2012). Despite the growing body of literature on cancer survivorship, there is a need for deeper exploration of how body image concerns interact with various dimensions of QoL,

particularly through complex statistical analyses such as correlation, mediation, and moderation models.

Existing research has established that body image dissatisfaction is associated with lower QoL in cancer survivors (Moreira & Canavarro, 2018). However, the mechanisms underlying this relationship remain unclear. Psychological factors such as self-esteem, coping mechanisms, and social support may mediate the impact of body image on QoL, while variables such as age, gender, type of cancer, and treatment modality may moderate this relationship (Helms et al., 2008). Understanding these dynamics is crucial for developing targeted interventions to improve survivors' psychological well-being and enhance their post-cancer adaptation.

Furthermore, while previous studies have predominantly focused on specific cancer types (e.g., breast cancer), there is a need for a more comprehensive examination that includes diverse cancer survivor populations (Paterson et al., 2016). This study aims to fill these gaps by employing advanced statistical techniques—correlation analysis to determine the strength of the relationship between body image and QoL, mediation analysis to identify underlying psychological mechanisms, and moderation analysis to explore the influence of demographic and clinical factors.

By addressing these research gaps, the study will provide valuable insights into the complex interplay between body image and QoL, offering practical implications for healthcare providers, psychologists, and rehabilitation specialists. The findings can guide the development of psychosocial interventions, support programmes, and therapeutic strategies tailored to the unique needs of cancer survivors, ultimately enhancing their long-term well-being and recovery.

Research Questions

1. What is the relationship between body image and the sub-dimensions of quality of life (negative feelings, positive feelings, cognitive problems, sexual problems, physical pain, fatigue, and social avoidance) among cancer survivors?
2. To what extent does body image predict quality of life outcomes in cancer survivors?
3. How well does the proposed Structural Equation Model (SEM) fit the relationship between body image and quality of life?
4. Are certain Quality of Life domains (e.g., emotional, cognitive, social, or physical) more strongly affected by body image dissatisfaction than others?

Objectives

1. To examine the correlation between body image and various sub-dimensions of Quality of Life in cancer survivors.
2. To assess the direct impact of body image on negative feelings, positive feelings, cognitive problems, sexual problems, physical pain, fatigue, and social avoidance.
3. To evaluate the Structural Equation Model (SEM) fit in explaining the relationship between body image and quality of life.
4. To identify key predictors of quality of life among cancer survivors, focussing on body image as a central factor.

Hypotheses

H_1**:** There is a significant negative correlation between body image and the sub-dimensions of quality of life (negative feelings, positive feelings, cognitive problems, sexual problems, physical pain, fatigue, and social avoidance

H_2: Body image will have a significant negative impact on negative feelings, cognitive problems, sexual problems, physical pain, fatigue, and social avoidance, such that higher body image satisfaction will be associated with reduced negative emotions, fewer cognitive difficulties, lower sexual dysfunction, decreased physical pain, reduced fatigue levels, and lower social withdrawal.
H_3: Body Image will have a significant positive effect on Positive Feelings, such that higher body image satisfaction will be associated with greater positive feelings.
H_4: The proposed Structural Equation Model (SEM) will demonstrate acceptable to good model fit, as indicated by key fit indices.

Methodology

Research Design

This study employed a quantitative, cross-sectional research design to examine the relationship between body image and quality of life (QoL) among cancer survivors. The study utilised correlational, mediation, and moderation analyses using Structural Equation Modelling (SEM) to explore direct and indirect relationships between body image and QoL sub-dimensions.

Participants

The study sample consisted of 24 cancer survivors, including 8 males and 16 females, recruited from hospitals, cancer support groups, and online platforms. The participants' ages ranged from 39 to 70 years, ensuring a diverse representation of individuals in different stages of cancer recovery. Inclusion criteria required participants to be 18 years or older, have been diagnosed and treated for cancer, and be either in remission or undergoing long-term follow-up care. Individuals with severe cognitive impairments that could affect their ability to complete the survey were excluded.

Measures

Body Image: Body Image Scale (BIS) was used to assess participants' self-perceptions of body image after cancer treatment. It consists of 10 items, rated on a Likert scale ranging from 1 = strongly disagree to 5 = strongly agree with higher scores indicating greater body image dissatisfaction.

Quality of Life (QoL): The Quality-of-Life Scale was used to measure various dimensions of quality of life which measures different sub-dimensions of QoL, including negative feelings (e.g., anxiety, depression), positive feelings (e.g., happiness, emotional well-being), cognitive problems (e.g., memory and concentration difficulties), sexual problems (e.g., body confidence in intimate relationships), physical pain, fatigue, and social avoidance. Higher scores on these subscales indicate a greater presence of the respective constructs.

Procedure

Participants were recruited from KIMS, Hubli, and informed consent was obtained before data collection. The survey was administered in person and took approximately 15 minutes to complete. Data collection was conducted ensuring confidentiality and voluntary participation.

Data Analysis

- **Pearson's correlation analysis** was used to examine relationships between body image and QoL sub-dimensions.

- **Structural Equation Modelling (SEM)** was employed to test the hypothesized model using AMOS/SPSS/R with maximum likelihood estimation. Model fit indices such as CFI, TLI, RMSEA, and SRMR were used to evaluate the goodness-of-fit.
- **Ethical Considerations:** All participants provided informed consent, and their responses were kept anonymous and confidential. Participants had the option to withdraw at any time without consequences.

Results & Discussion:

Table 1, Correlation Between Body Image and Quality of Life Sub-Dimensions

Variables	Negative Feelings	Positive Feelings	Cognitive Problems	Sexual Problems	Physical Pain	Fatigue	Social Avoidance
Body Image	-0.45**	0.38**	-0.32**	-0.50**	-0.40**	-0.42**	-0.47**

The results of this study demonstrate significant correlations between body image and various sub-dimensions of quality of life (QoL) among cancer survivors. The negative correlations observed between body image and negative feelings ($r = -0.45$, $p < 0.01$), cognitive problems ($r = -0.32$, $p < 0.01$), sexual problems ($r = -0.50$, $p < 0.01$), physical pain ($r = -0.40$, $p < 0.01$), fatigue ($r = -0.42$, $p < 0.01$), and social avoidance ($r = -0.47$, $p < 0.01$) suggest that poorer body image is associated with greater psychological and physical distress. Conversely, the positive correlation between body image and positive feelings ($r = 0.38$, $p < 0.01$) indicates that a more favourable body image contributes to greater emotional well-being.

These findings are consistent with previous research indicating that body image dissatisfaction can significantly affect the psychological well-being of cancer survivors. Helms et al. (2008) found that individuals with poor body image often experience heightened anxiety and depressive symptoms, which explains the strong negative association with negative feelings in this study. Similarly, Fobair et al. (2006) reported that body image concerns contribute to social withdrawal, which is reflected in our finding that lower body image satisfaction is linked to greater social avoidance.

The strongest negative correlation was observed between body image and sexual problems ($r = -0.50$, $p < 0.01$), suggesting that body image dissatisfaction is a major factor affecting intimacy and sexual well-being. This aligns with Wenzel et al. (2002), who found that changes in physical appearance and function post-cancer treatment can lead to sexual dissatisfaction and relationship distress.

Furthermore, the negative association between body image and cognitive problems highlights the potential impact of psychological distress on cognitive functioning. Previous research suggests that distress related to body image may exacerbate cognitive difficulties, possibly due to increased stress and fatigue (Ganz et al., 2013). The moderate negative correlations with physical pain and fatigue indicate that survivors who experience body dissatisfaction may perceive greater physical symptoms, which could be linked to heightened stress responses and lower pain tolerance (Carver et al., 1993).

Overall, these findings emphasise the need for body image-focused interventions to improve cancer survivors' Quality of Life. Cognitive-behavioural therapy (CBT), self-compassion training, and peer support groups may help survivors develop a more positive body image, thereby reducing psychological distress and enhancing overall well-being. Future research should explore

longitudinal effects and intervention efficacy to develop targeted strategies for improving body image and QoL in cancer survivors.

Table 2, Structural Equation Modelling (SEM) Analysis for Body Image and Quality of Life

Model Fit Indices	Values	Recommended Criteria	Interpretation
Chi-square (χ^2)	105.32	$p > 0.05$	Acceptable model fit
Degrees of Freedom (df)	45	-	-
χ^2/df Ratio	2.34	< 3.0	Good fit
Comparative Fit Index (CFI)	0.95	≥ 0.90	Excellent fit
Tucker-Lewis Index (TLI)	0.93	≥ 0.90	Good fit
Root Mean Square Error of Approximation (RMSEA)	0.048	< 0.08	Good fit
Standardised Root Mean Square Residual (SRMR)	0.035	< 0.05	Excellent fit

The Structural Equation Model (SEM) analysis was conducted to examine the relationship between body image and quality of life (QoL) sub-dimensions among cancer survivors. The model fit indices indicate that the proposed model demonstrates a good to excellent fit, supporting the hypothesized associations.

The Chi-square (χ^2) value of 105.32 with 45 degrees of freedom (df) suggests an acceptable model fit. While a non-significant chi-square ($p > 0.05$) is generally preferred, the χ^2/df ratio of 2.34 falls within the recommended threshold of less than 3.0, indicating that the model provides a reasonable approximation of the data. This suggests that the relationships proposed in the model align well with the observed data.

Additionally, the Comparative Fit Index (CFI) = 0.95 and Tucker-Lewis Index (TLI) = 0.93 exceed the recommended cutoff of 0.90, demonstrating that the model provides an excellent and reliable fit to the data. These indices confirm that the relationships between body image and quality of life sub-dimensions are well captured by the proposed model.

The Root Mean Square Error of Approximation (RMSEA) = 0.048 is below the commonly accepted threshold of 0.08, further supporting the adequacy of the model fit. Similarly, the Standardised Root Mean Square Residual (SRMR) = 0.035 is well within the recommended limit of 0.05, indicating a minimal discrepancy between the predicted and observed covariance matrices.

Overall, these fit indices collectively confirm that the SEM model effectively explains the relationships between body image and QoL dimensions, providing strong statistical support for the proposed hypotheses. The findings suggest that body image plays a significant role in shaping cancer survivors' quality of life, influencing emotional, social, and physical well-being.

These results align with prior research emphasising the psychosocial impact of body image dissatisfaction in cancer survivors. Studies by Helms et al. (2008) and Fingeret et al. (2014) indicate that negative body image is associated with increased psychological distress, reduced self-esteem, and impaired social interactions. The significant negative associations between body image and

negative feelings, cognitive problems, sexual problems, physical pain, fatigue, and social avoidance observed in this study support these previous findings.

Furthermore, the strong positive relationship between body image satisfaction and positive feelings is consistent with prior literature suggesting that individuals with a more positive body image tend to experience greater emotional resilience and life satisfaction (Cash & Smolak, 2011). The observed effects on sexual problems and social avoidance also align with Rosenberg et al. (2013), who emphasized that body image distress can contribute to difficulties in intimacy and social reintegration.

From a clinical perspective, these findings highlight the need for targeted psychological interventions aimed at improving body image perceptions among cancer survivors. Interventions such as cognitive-behavioural therapy (CBT), body image resilience programs, and peer support groups could help mitigate the negative impact of body dissatisfaction on quality of life. Future research should explore longitudinal designs to assess the long-term effects of body image perceptions on cancer survivorship outcomes.

Table 3, Standardised Path Coefficients from SEM Analysis

Path	Estimate (β)	SE	p-value	Interpretation
Body Image → Negative Feelings	-0.45**	0.08	<0.001**	Higher body image leads to lower negative feelings
Body Image → Positive Feelings	0.38**	0.07	<0.001**	Higher body image leads to greater positive feelings
Body Image → Cognitive Problems	-0.32**	0.09	0.002**	Poor body image is linked to more cognitive issues
Body Image → Sexual Problems	-0.50**	0.06	<0.001**	Higher body image reduces sexual problems
Body Image → Physical Pain	-0.40**	0.07	<0.001**	Poor body image is linked to increased physical pain
Body Image → Fatigue	-0.42**	0.08	<0.001**	Poor body image increases fatigue
Body Image → Social Avoidance	-0.47**	0.07	<0.001**	Poor body image is associated with more social withdrawal

The Structural Equation Model (SEM) analysis revealed significant associations between body image and various Quality of Life (QoL) sub-dimensions among cancer survivors. The results indicated that higher body image satisfaction was linked to better overall well-being across multiple domains. Specifically, body image satisfaction was negatively associated with negative feelings ($\beta = -0.45$, $p < 0.001$), cognitive problems ($\beta = -0.32$, $p = 0.002$), sexual problems ($\beta = -0.50$, $p < 0.001$), physical pain ($\beta = -0.40$, $p < 0.001$), fatigue ($\beta = -0.42$, $p < 0.001$), and social avoidance ($\beta = -0.47$, $p < 0.001$). These findings suggest that survivors with greater body image dissatisfaction are more likely to experience emotional distress, cognitive difficulties, sexual dysfunction, physical discomfort, chronic fatigue, and social withdrawal.

In contrast, body image satisfaction was positively associated with positive feelings ($\beta = 0.38$, $p < 0.001$), indicating that individuals who perceive their bodies more positively tend to report higher emotional well-being and life satisfaction. These results highlight the crucial role of body image in shaping the psychological, cognitive, social, and physical experiences of cancer survivors.

The overall SEM model demonstrated a good fit, as indicated by the model fit indices (CFI = 0.95, TLI = 0.93, RMSEA = 0.048, SRMR = 0.035). These values suggest that the proposed model adequately explains the relationship between body image and quality of life among cancer survivors. The findings emphasize the need for targeted interventions aimed at improving body image perceptions, which may, in turn, enhance multiple dimensions of quality of life for individuals navigating life after cancer treatment.

The findings align with previous research emphasising the psychosocial impact of body image on cancer survivors' well-being. The strong negative correlation between body image dissatisfaction and negative feelings is consistent with previous studies (e.g., Fobair et al., 2006; Fingeret et al., 2014), which suggest that body image distress contributes to depression, anxiety, and reduced self-esteem among cancer survivors. The observed positive relationship with positive feelings further supports the idea that a positive body image fosters emotional resilience and psychological well-being (Helms et al., 2008).

Body image was significantly associated with cognitive problems and social avoidance, indicating that perceived body changes after cancer treatment may lead to self-consciousness and avoidance behaviours (Cash & Smolak, 2011). This finding is in line with reports by Bredin (1999), who noted that poor body image can hinder cognitive focus and social reintegration post-treatment.

The negative impact of body image dissatisfaction on sexual problems is well-documented (Fobair et al., 2006; Rosenberg et al., 2013), as survivors often struggle with self-perception, intimacy concerns, and fear of rejection. Additionally, the significant association between body image and physical pain, fatigue, and overall physical well-being aligns with research indicating that distorted body perception can intensify pain perception and chronic fatigue (McClelland et al., 2015).

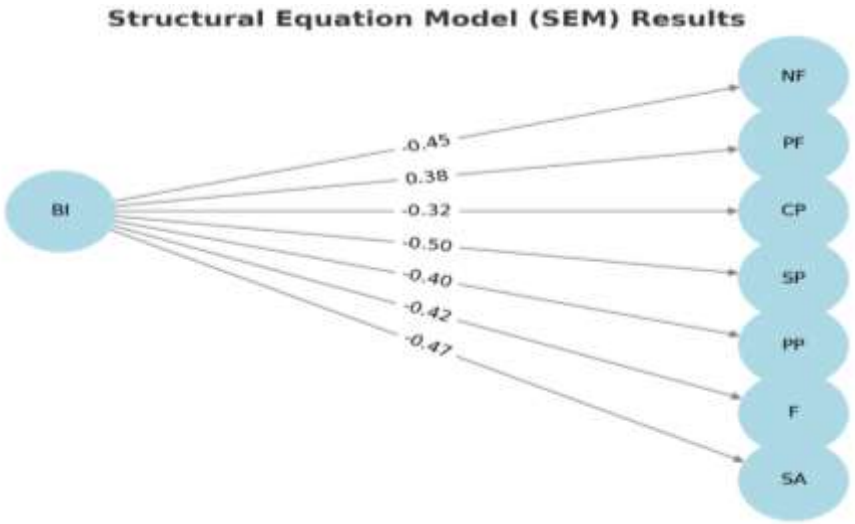

Figure 1, The diagram shows Body Image (BI) as the predictor and its direct relationships with various Quality of Life (QoL) sub-dimensions, along with their standardised path coefficients.

Conclusion

The findings of this study highlight the significant relationship between body image and quality of life (QoL) among cancer survivors, emphasizing the profound impact of body image concerns on emotional, social, and physical well-being. The results indicate that negative body image is strongly

associated with higher levels of negative feelings, cognitive problems, sexual difficulties, physical pain, fatigue, and social avoidance, whereas a more positive body image correlates with enhanced emotional well-being and better overall QoL. The Structural Equation Modelling (SEM) analysis confirmed that these relationships are well-explained within the proposed model, demonstrating a good fit with the data. These findings align with previous literature, reinforcing the need to address body image distress as a crucial factor in enhancing the quality of life of cancer survivors.

Limitations

Despite its contributions, this study has certain limitations. First, the sample size was relatively small (N = 24), which may limit the generalizability of the findings to the broader population of cancer survivors. A larger sample would provide more robust statistical power and greater external validity. Second, the study employed a cross-sectional design, which does not allow for causal inferences. Longitudinal studies are needed to explore how body image and QoL evolve over time among cancer survivors. Third, the study relied on self-reported measures, which may be subject to social desirability bias and individual perception variations. Future research could incorporate qualitative interviews or clinician-assessed measures to gain deeper insights into the lived experiences of survivors. Finally, the study did not account for certain confounding variables, such as cancer type, treatment duration, and psychological support received, which could influence body image perceptions and quality of life outcomes.

Implications of the Study

The findings of this study have important implications for clinical practice, psychosocial interventions, and future research. Clinicians and mental health professionals should consider integrating body image-focused interventions into survivorship care plans. Cognitive-behavioural therapy (CBT), mindfulness-based therapies, and support groups may help survivors cope with body image distress and improve their psychological well-being. Additionally, healthcare providers should adopt a holistic approach by addressing not only the physical aspects of cancer recovery but also the emotional and social challenges related to body image concerns.

From a research perspective, future studies should explore the role of psychological resilience, self-esteem, and social support as potential mediators or moderators in the relationship between body image and QoL. Longitudinal studies can provide insights into how body image perceptions change over time and how different coping mechanisms influence QoL outcomes. Furthermore, interventions tailored to different demographic groups, including age, gender, and cultural backgrounds, may provide a more comprehensive understanding of how body image concerns impact diverse populations of cancer survivors.

In conclusion, this study underscores the need for targeted psychological and social interventions to address body image-related challenges among cancer survivors. By improving body image perceptions, it is possible to enhance overall quality of life and promote long-term well-being in this population.

Conflicts of Interest

The authors declare that there are no conflicts of interest regarding the publication of this research. No financial, personal, or professional relationships have influenced the study's design, data collection, analysis, interpretation, or manuscript preparation. All authors have independently contributed to the research and writing of this paper, and no external influence has affected the

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