Research Square

Preprints are preliminary reports that have not undergone peer review.
They should not be considered conclusive, used to inform clinical practice,
or referenced by the media as validated information.

Effects of Dance/Movement Therapy on Body Image and Intimacy in Couples Affected by Breast Cancer: A Proof-of-Concept Study

Alexandria B. Callahan
acallahan@coh.org
City of Hope Chicago
Ajaz Khan
City of Hope Chicago
Kelly Scherger
South Charlotte VA Clinic
Adrienne Rowland
A Healing Place, LLC
Sara Lorenzo
City of Hope Chicago
Karina Szymulanska-Ramamurthy
City of Hope

Research Article

Keywords: Dance/Movement Therapy, Breast Cancer, Sexual Intimacy

Posted Date: June 2nd, 2026

DOI: https://doi.org/10.21203/rs.3.rs-9762833/v1

License: This work is licensed under a Creative Commons Attribution 4.0 International License. Read Full License

Additional Declarations: No competing interests reported.

Abstract

Breast cancer treatment is associated with physical and hormonal changes that may adversely affect body image and intimacy within relationships. Survivors frequently report a sense of disconnection from their bodies and challenges in maintaining closeness with partners. Dance/Movement Therapy (DMT), a body-based therapeutic approach incorporating breathing, structured movement, and partnered exercises, has been proposed as a potential supportive intervention.

This proof-of-concept study explored whether DMT may influence body image and intimacy among couples in which one partner has been diagnosed with breast cancer. Couples participated in a structured DMT session, with pre- and post-intervention questionnaires assessing body image and intimacy-related perceptions.

Descriptive analyses suggested increased body awareness and communication among both survivors and partners following the intervention, with mixed changes in perceived intimacy. Participant feedback indicated enhanced self- and partner-awareness, alongside variability in relational experiences.

These preliminary findings suggest that DMT may represent a promising supportive approach for addressing body image and relational challenges in this population. Further research with larger samples and longitudinal designs is warranted to more rigorously evaluate its impact.

1 Introduction

Breast cancer remains a major global health concern, accounting for approximately one-quarter of new cancer diagnoses among women worldwide. In the United States alone, an estimated 310,720 cases of invasive breast cancer were projected for 2024, representing nearly one in three cancer diagnoses among women [1–2]. While advances in treatment including surgery, chemotherapy, radiation, and hormone therapy have improved survival rates, these interventions often result in significant physical and psychosocial challenges.

Common physical side effects include hair loss, fatigue, vaginal dryness, and scarring, while psychosocial sequelae frequently encompass anxiety, depression, body image disturbance, and sexual dysfunction. For many women, breasts hold deep personal and cultural significance, symbolizing femininity, sexuality, and nurturing. Consequently, treatment-related changes such as mastectomy or altered sensation can profoundly disrupt self-perception and intimacy.

Prior research highlights that body image and sexual concerns often emerge soon after treatment and may persist long-term. Fobair et al. [3] found that younger survivors reported higher rates of body image distress and sexual difficulties, including dyspareunia and medically induced menopause, which were linked to treatment side effects and relationship strain. Psychological distress such as anxiety and adjustment disorders also remains prevalent post-treatment, with survivors navigating identity shifts and emotional vulnerability [4].

These challenges extend beyond the individual, frequently impacting romantic relationships. Survivors may fear diminished desirability, leading to self-judgment and communication breakdowns. Therapeutic approaches that foster openness and reconnection between partners are critical to mitigating these effects.

This proof-of-concept (POC) study explores these dynamics, focusing on body image and intimacy changes among breast cancer survivors and their partners.

Breast cancer treatment often results in profound physical and psychosocial changes that affect survivors' sense of identity and intimate relationships. Alterations in appearance, such as mastectomy and reconstruction, can lead to negative self-image, feelings of loss, and emotional distress [5]. These changes may disrupt perceptions of femininity and sexuality, as breasts often hold cultural and personal significance related to nurturing, attractiveness, and intimacy.

Hormonal shifts caused by treatment, including estrogen suppression, further contribute to sexual dysfunction, vaginal dryness, and decreased libido, complicating efforts to maintain romantic and sexual connection. Partners may respond with overprotectiveness or emotional withdrawal, which can exacerbate survivors' feelings of isolation and shame [6]. Cultural norms surrounding body image and gender roles may intensify these challenges.

Research indicates that intimacy and sexual functioning frequently decline after cancer treatment, with couples reporting reduced sexual activity and emotional closeness [7]. Survivors and partners often experience oscillation between disconnection and attempts to renegotiate intimacy, influencing overall relationship quality [8]. These disruptions underscore the need for interventions that address body image, communication, and sexual health within the context of survivorship.

Breast cancer treatment often leads to significant physical and psychological changes that can disrupt body image and intimacy. Survivors frequently report feeling disconnected from their bodies, describing their post-treatment form as unfamiliar, which may result in anxiety, depression, and shame. These challenges extend to romantic relationships, where communication breakdowns and reduced intimacy are common.

Chemotherapy and other treatments introduce side effects such as hair loss, fatigue, vaginal dryness, and nerve damage, further complicating survivors' sense of self. Addressing these issues requires integrated approaches that promote body confidence and relational connection.

Dance/Movement Therapy (DMT) has emerged as a promising intervention for supporting psychological adaptation and quality of life among breast cancer survivors. Studies have shown that DMT intervention ranging from authentic movement to structured group exercises—may enhance coping, reduce distress, and foster emotional well-being [9–11]. While findings vary, evidence suggests that movement-based therapies may help survivors reconnect with their bodies and may support improvements in interpersonal relationships.

This POC study builds on prior research by exploring whether DMT interventions can positively influence body image and intimacy among couples where one partner is diagnosed with breast cancer. Breast cancer treatment often results in profound physical and emotional changes that can lead to a sense of intrapersonal disconnect. Survivors frequently report feeling unfamiliar with their bodies, which may contribute to anxiety, shame, and relational strain. Addressing these challenges requires interventions that foster reconnection with the body and promote emotional well-being.

Dance/Movement Therapy (DMT), defined by the American Dance Therapy Association as "the psychotherapeutic use of movement to promote emotional, social, cognitive, and physical integration of the

individual" [12], offers a non-verbal approach to self-expression and healing. Unlike traditional dance, DMT emphasizes body awareness and authentic movement to support psychological integration. Movement-based interventions can help release stored emotions, reduce isolation, and enhance interpersonal connection, creating opportunities for improved self-awareness and relational growth.

This POC study explored whether Dance/Movement Therapy (DMT) may influence body image and intimacy among survivors of early-stage breast cancer and their partners, with the aim of identifying preliminary signals of change following a structured intervention. The research question guiding this study was: *To what extent might DMT influence body image in survivors and intimacy within couples affected by breast cancer?*

2 Methods

2.1 Recruitment methods

Institutional Review Board (IRB) approval was obtained prior to the initiation of any study procedures. The Principal Investigator (PI) introduced the study to the medical oncologists and nursing staff during the weekly Breast Board meeting and in the clinic, requesting their permission to have Institutional Review Board (IRB) approved study recruitment flyers (Appendix A) distributed and displayed in the clinic areas, at check-in desks, and waiting areas. Staff members were directed to address all study related questions to the PI to limit potential influence from oncology teams. Participation in the study was kept confidential, and information did not go beyond recruitment when there was a physician or staff referral. The PI spoke with the survivors and partners who requested study information, to explain the purpose and rationale of the study and explore any interest in participating. During each discussion, both the survivor and partner were made aware that participation was voluntary, confidential and would have no impact on the level of cancer care they received.

2.2 Eligibility screening activities

All survivors were able to inquire about participation and meet with the PI to assess interest and ability to participate in the study. The PI verbally screened potential participants utilizing the eligibility criteria (described below) and obtained the couple's written consent. Because this study focused on sexual intimacy within a couple, both parties of the couple needed to provide consent to participate.

2.3 Inclusion criteria

Early-stage Stage I and II breast oncology survivors who were in a committed relationship, subjectively defined by the participants, with either a spouse or life partner. Survivors who were in active cancer treatment, defined as having undergone at least one round of chemotherapy (IV or PO), hormone treatment, post-op from cancer-specific surgery, or at least one radiation treatment, were included to identify treatment-related side effects. Those in survivorship are allowed to participate. Participants needed to be able to return to campus at least once a month. Survivors and partners were required to be able to follow basic movement cues and are physically able to engage in gentle movement, seated or standing. Participants were required to read and write in English to answer survey questions independently. It was a requirement for the couple to come to the facility for face-to-face intervention sessions. The survivor and partner needed to be present, in person for the sessions. The survivor and partner both needed to understand and give informed consent to participate in this

study. If one member of the consenting couple decided not to participate or left the study, then the other partner was not able to proceed.

2.4 Consenting process

Once the survivor and the partner/spouse spoke with the PI and verified participation for the study criteria requirements were met, the PI met with the couple to sign the informed consent form. The informed consent form included a statement that participation in this examination would not have any negative impact or influence on the medical care for cancer nor regular benefits. This study was separate from all cancer care. Leaving the study did not affect the participants' medical care and participation in the study was voluntary.

A copy of the informed consent form was provided to the couple for them to read and review. The PI gave the couple time alone, checking in periodically to see if either participant had questions. Once the couple had reviewed the informed consent form, the principal investigator reviewed the informed consent form verbally, quizzed the couple to ensure they understood the informed consent form clearly and that they were free to stop participating at any time without consequence. All participants received both a paper and/or electronic copy of their informed consent form and had the opportunity to ask questions at any time during the study. With each follow up session, verbal consent was obtained to confirm continued agreement to participate in this clinical study.

2.5 Study Interventions

The POC study consisted of three sessions: 1) reviewing the study and consenting, 2) the intervention session, and 3) a follow-up session. All sessions were conducted with each couple individually and the PI. The timeframe between each session was dependent on the survivor's return to the clinic for medical appointments and the couple's availability.

The initial session was scheduled for 60 minutes to allow enough time to explain and review the study and to go over the details of the consent forms for both the survivor and partner. The intervention session with each couple was scheduled for 90 minutes, allowing time to re-consent for study participation through verbal confirmation that they are ready to continue this study, time to complete study questionnaires, individual movement interventions, performed simultaneously but individually, and the couple's combined movement interventions. After verbal re-consent was obtained at the start of the intervention session, a paper and pencil demographics survey and a body image and intimacy questionnaire (see Appendix B) were provided. The questionnaire adapted fromHopwood et al. (2001) to include partnered intimacy questions was provided to assess and rate concerns around body image and intimacy using a five-point Likert scale. The same survey and questionnaire were provided to the survivor and the spouse/partner during the initial and follow-up sessions.

Dance/Movement Therapy (body-based) therapeutic interventions were provided as the main source of intervention, and a guide was created by the PI for consistency of interventions. Participants were encouraged to engage in the movement exercises to the best of their physical abilities and comfort levels. Chairs that were locked in place and yoga mats were set up in the room to ensure participants' safety and various options for engaging in the movement interventions. The same interventions were used for each pair of participants, recognizing that everyone interprets and moves differently, providing an authentic movement experience.

Since schedules differed, some couples preferred to combine the initial consenting session and intervention session. The DMT intervention began with individual breathing exercises and body awareness cues, grounded in Irmgard Bartenieff's six developmental movement patterns: breath, core-distal, head-tail, upper-lower, body half, and cross-lateral. These stages supported body connectivity and insight into movement limitations.

Couples were introduced to a "defense scale" [13] exploring spatial movement across three axes—vertical (self), horizontal (others), and sagittal (world). Each participant created personalized movements and words for each axis, reflecting themes of body image and self-connection. Partner work included mirroring exercises, alternating roles as mover and observer. Sessions began with heart-focused breathing to foster presence and connection. Participants shared their movement scales while partners mirrored both movement and language, deepening empathy and embodiment of each other's experiences.

The intervention progressed to non-verbal authentic movement, with partners alternating leader and follower roles. Sessions concluded with eye-contact breathing and verbal processing led by the principal investigator to address emotional responses.

Couples were encouraged to continue practicing the movements independently. A follow-up session (30 minutes) included a post-questionnaire and discussion of relational and personal changes. Scheduling was flexible, and some couples opted to combine the consent and intervention sessions.

The follow-up session with the couple was scheduled for 30 minutes, to conduct the post-questionnaire, process their continued experience, and discuss any changes they may have observed in how they are relating individually and as a couple after having time to integrate the movement further into their bodies and life. The timeframe between each session varied based on the survivor's schedule to return for medical follow up.

2.6 Data collection

The data was collected between April 2024 and July 2024, in which the conditions of collection were the same for all participants. Data collected included participants' responses on the demographic survey and a body image and intimacy questionnaire for both the survivor and partner. The body image and intimacy questionnaire was a hybrid tool: body image items were adapted from Hopwood et al.'s validated Body Image Scale [14], while intimacy-related questions were developed specifically for this study and were not part of a validated scale. Both survivors and partners completed the questionnaire independently, and all items were self-referential, capturing each participant's own perceptions of body image and relational experiences rather than proxy assessments of their partner. Questionnaires were provided prior to the Dance/Movement Therapy interventions and completed again during the post-intervention follow-up session.

2.7 Data analysis

The questionnaire used a five-point Likert scale (1 = Not at all to 5 = Very much), and responses were summarized for each question individually rather than as a composite score. Given the exploratory, POC nature of the study and the small sample size, analyses were primarily descriptive. Pre- and post-intervention responses were examined separately for survivors and partners to assess patterns and directional changes in body image and intimacy-related perceptions.

Responses were summarized using percentages to facilitate interpretation of trends across items. Comparisons focused on identifying changes in response distributions between pre- and post-intervention assessments, rather than formal hypothesis testing. Observed patterns were interpreted as preliminary signals to inform future research.

3 Results

A total of six couples participated in the study. Participants were predominantly White/Caucasian (83%), with 16% identifying as Black/African American. Most participants identified as heterosexual (83%), with 16% identifying as lesbian. Among survivors, the majority were aged 45–54 years, with two aged ≥ 55 years and one aged 35–44 years. Partners ranged in age from 35 to ≥ 55 years. Half of the couples reported being together for ≥ 25 years, while the remaining couples had been together for 5–10 years (n = 2) or 10–15 years (n = 1). All survivors had undergone surgery and chemotherapy, and most had also received radiation and hormone therapy. Pre-intervention questionnaire data were available for all six survivors and their partners. Post-intervention data were available for five survivors and four partners, reflecting some attrition at follow-up. Analyses were based on available responses at each time point.

As shown in Table 1, descriptive patterns among survivors indicated changes in body image– and intimacy-related perceptions following the intervention. Pre-intervention data were available for six survivors, and post-intervention data were available for five survivors.

Across body image–related items, survivors demonstrated shifts in response distributions following the intervention. A higher proportion of participants reported being “not at all” dissatisfied with their appearance when dressed, and fewer participants reported difficulty looking at themselves naked. Reductions were also observed in avoidance of others due to appearance. Responses related to feeling less feminine/masculine and sexually attractive showed variability, with no consistent directional pattern across participants.

For items related to body connection and intimacy, findings were mixed. Responses indicated some shifts toward greater reported disconnect from partners and lower levels of perceived connection for certain participants. Reports of decreased intimacy and disconnection from one’s body or sexuality also showed variability, with changes observed in both directions across individuals.

Overall, these findings suggest that while some aspects of appearance-related perceptions shifted toward more favorable categories following the intervention, responses related to intimacy and relational connection were more heterogeneous among survivors.

As shown in Table 2, descriptive patterns among partners indicated changes in body image– and intimacy-related perceptions following the intervention. Pre-intervention data were available for six partners, and post-intervention data were available for four partners.

Across body image–related items, partners demonstrated shifts in response distributions following the intervention. Responses suggested less difficulty looking at themselves naked and reduced avoidance of others due to appearance. Responses related to feeling less feminine/masculine and less sexually attractive

showed variability, with changes observed across multiple response categories. Interpretation of dissatisfaction with appearance when dressed (Q1) is limited by item-level missing data.

For intimacy- and relationship-related items, findings were mixed. Responses related to feeling connected to a spouse/partner shifted from higher response categories at baseline toward more varied responses at follow-up. Reports of decreased intimacy also shifted, with a greater proportion of partners endorsing “a little” decrease at follow-up. Responses related to feeling disconnected from a partner and from one’s body or sexuality showed variability, with changes observed in multiple directions.

Overall, partner responses indicated changes in response distributions across several items, with no consistent directional pattern observed across intimacy and relational domains.

Taken together, descriptive patterns across survivors and partners indicated shifts in body image–related perceptions following the intervention, although the direction of change varied across items and participants. Responses related to intimacy and relational connection were similarly variable. Changes were not uniform across participants, with both improvements and worsening observed across different domains.

Table 1

Survivors Responses

Question	Not at all (Pre/Post)	A little (Pre/Post)	Neutral (Pre/Post)	Quite a bit (Pre/Post)	Very much (Pre/Post)	Direction of change
Q1: Dissatisfied with appearance when dressed	16.67 / 60.00	66.67 / 40.00	16.67 / 0.00	0.00 / 0.00	0.00 / 0.00	Improvement
Q2: Feeling less feminine/masculine	50.00 / 40.00	33.33 / 40.00	0.00 / 20.00	16.67 / 0.00	0.00 / 0.00	Mixed
Q3: Difficult to look at yourself naked	33.33 / 40.00	16.67 / 60.00	16.67 / 0.00	33.33 / 0.00	0.00 / 0.00	Improvement
Q4: Feeling less sexually attractive	16.67 / 20.00	66.67 / 40.00	0.00 / 20.00	16.67 / 20.00	0.00 / 0.00	Mixed
Q5: Avoiding people because of appearance	66.67 / 80.00	33.33 / 20.00	0.00 / 0.00	0.00 / 0.00	0.00 / 0.00	Improvement
Q6: Feeling a sense of disconnect from partner	33.33 / 20.00	50.00 / 60.00	0.00 / 0.00	16.67 / 0.00	0.00 / 20.00	Mixed
Q7: Dissatisfied with your body	33.33 / 40.00	66.67 / 40.00	0.00 / 0.00	0.00 / 20.00	0.00 / 0.00	Mixed
Q8: Feel connected to your partner	0.00 / 20.00	16.67 / 20.00	16.67 / 20.00	50.00 / 40.00	16.67 / 0.00	Mixed
Q9: Felt a decrease in intimacy with partner	33.33 / 40.00	50.00 / 0.00	0.00 / 40.00	0.00 / 0.00	16.67 / 20.00	Mixed
Q10: Felt disconnected from your body/sexuality	16.67 / 20.00	50.00 / 40.00	16.67 / 0.00	16.67 / 40.00	0.00 / 0.00	Mixed

• *Percentages are based on total sample size (pre: n = 6; post: n = 5)*

- *Direction of change is based on shifts in response distributions from pre- to post-intervention. For negatively worded items (Q1–Q7, Q9, Q10), a shift toward lower response categories from pre to post indicates improvement, while a shift toward higher categories indicates worsening. For the positively worded item (Q8), the interpretation is reversed. "Mixed" indicates no clear directional pattern.*

Table 2

Partner Responses

Question	Not at all (Pre/Post)	A little (Pre/Post)	Neutral (Pre/Post)	Quite a bit (Pre/Post)	Very much (Pre/Post)	Direction of change
Q1: Dissatisfied with appearance when dressed	16.67 / 50.00	33.33 / 25.00	0.00 / 0.00	0.00 / 0.00	0.00 / 0.00	Not interpretable – incomplete data
Q2: Feeling less feminine/masculine	100.00 / 50.00	0.00 / 50.00	0.00 / 0.00	0.00 / 0.00	0.00 / 0.00	Worsening
Q3: Difficult to look at yourself naked	50.00 / 75.00	17.00 / 25.00	33.00 / 0.00	0.00 / 0.00	0.00 / 0.00	Improvement
Q4: Feeling less sexually attractive	33.00 / 50.00	50.00 / 25.00	17.00 / 25.00	0.00 / 0.00	0.00 / 0.00	Improvement
Q5: Avoiding people because of appearance	67.00 / 100.00	17.00 / 0.00	17.00 / 0.00	0.00 / 0.00	0.00 / 0.00	Improvement
Q6: Feeling a sense of disconnect from partner	17.00 / 25.00	83.00 / 50.00	0.00 / 0.00	0.00 / 25.00	0.00 / 0.00	Mixed
Q7: Dissatisfied with your body	33.00 / 50.00	17.00 / 0.00	50.00 / 50.00	0.00 / 0.00	0.00 / 0.00	Improvement
Q8: Feel connected to your partner	0.00 / 0.00	0.00 / 0.00	0.00 / 25.00	67.00 / 50.00	33.00 / 25.00	Mixed
Q9: Felt a decrease in intimacy with partner	0.00 / 0.00	33.00 / 75.00	33.00 / 0.00	33.00 / 25.00	0.00 / 0.00	Improvement
Q10: Felt disconnected from your body/sexuality	50.00 / 50.00	33.00 / 25.00	17.00 / 25.00	0.00 / 0.00	0.00 / 0.00	Mixed

- *Percentages are based on total sample size (pre: n = 6; post: n = 4). For Q1, not all participants provided responses; therefore, percentages may not sum to 100% due to item-level missing data. No imputation was performed.*
- *Direction of change is based on shifts in response distributions from pre- to post-intervention. For negatively worded items (Q1–Q7, Q9, Q10), a shift toward lower response categories from pre to post indicates improvement, while a shift toward higher categories indicates worsening. For the positively worded item (Q8), the interpretation is reversed. "Mixed" indicates no clear directional pattern. For Q1, direction of change could not be determined due to incomplete response data.*

4 Discussion

This POC study explored whether Dance/Movement Therapy (DMT) may influence body image and intimacy-related perceptions among breast cancer survivors and their partners. Descriptive patterns suggest that DMT

may be associated with changes in body awareness and aspects of self-perception, although findings were not uniform across participants.

Among survivors, shifts in body image–related perceptions were observed across several items, including reduced dissatisfaction with appearance and less difficulty looking at oneself naked. In contrast, responses related to intimacy and relational connection were more variable, with some participants reporting decreased perceived connection or increased feelings of disconnect. These findings highlight the complexity of relational dynamics in the context of cancer survivorship, where increased self-awareness may not immediately translate into improved interpersonal outcomes.

Partner responses similarly reflected changes in body awareness and perceptions of connection, with variability across items and individuals. While some shifts in appearance-related perceptions were observed, responses related to intimacy and relational connection were heterogeneous. Baseline responses indicated generally high levels of perceived connection, which shifted toward more varied responses at follow-up, suggesting differential individual responses to both the cancer experience and the intervention.

Qualitative findings provided additional context to the observed patterns in questionnaire responses. Qualitative themes included feelings of warmth, increased body awareness, and shared insights during movement exercises. While some couples were able to integrate aspects of the intervention into their daily lives, others experienced difficulty maintaining these changes without structured follow-up. One couple reported heightened conflict following the intervention, whereas another described improved intimacy and increased mindfulness. These findings highlight the variability in participant experiences and suggest that the effects of the intervention may differ across individuals and couples.

Collectively, these findings suggest that DMT may offer a supportive, body-based approach to addressing body image concerns and fostering communication among couples affected by breast cancer. The observed variability in intimacy-related responses indicates that such interventions may benefit from tailored delivery and may require multiple sessions or structured follow-up to support integration into daily life. Clinicians incorporating DMT should be mindful that increased awareness may initially surface relational challenges, and appropriate support mechanisms may be needed to help couples navigate these changes.

This study has several limitations. The small sample size and exploratory design limit generalizability, and the absence of a control group precludes attribution of observed changes to the intervention. The use of a hybrid questionnaire, with some items not derived from validated scales, may affect measurement consistency. Variability in follow-up participation and item-level missing data for certain responses further limit interpretability.

Future research should build on these preliminary findings using larger, more diverse samples and longitudinal designs. Multi-session interventions and structured follow-up may help to sustain and better understand the effects observed in this study. Further work is also needed to refine outcome measures and to examine how individual and relationship-level factors influence response to DMT interventions.

5 Conclusion

This POC study suggests that DMT interventions may enhance body awareness and, in some cases, improve intimacy among breast cancer survivors and their partners. Qualitative findings further highlighted increased awareness and communication, alongside heterogeneous relational experiences. These findings should be interpreted considering the study's small sample size and exploratory design. Overall, the results support the potential of DMT as a supportive, body-based approach and highlight the need for larger, more rigorous studies to further evaluate its impact.

Declarations

Supplementary information

Article has accompanying supplementary files: Appendices A, B, C, and D.

Acknowledgements

All the survivors and their partners who volunteered to help with this research. We would also like to express our sincere gratitude to biostatistician, Digant Gupta, for his valuable contributions to this proof-of-concept study. His expert input in revising the manuscript and refining the underlying data analyses greatly strengthened the quality of this work.

8.1 Funding

The authors declare that no funds, grants, or other support were received during the preparation of this manuscript.

8.2 Conflict of interest/Competing interests

The authors have no relevant financial or non-financial interests to disclose.

8.3 Ethics approval and consent to participate

This is an observational study. This study was performed in line with the principles of the Declaration of Helsinki. Approval was granted by the WCG IRB (Date February 6, 2024 / Study No. 1367123).

8.4 Consent to participate

Informed consent was obtained from all individual participants included in the study.

8.5 Data availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

8.6 Author contribution

All authors were actively involved in the study, contributing to its conception, design, and development. Dr. Alexandria B. Callahan and Sara Lorenzo carried out material preparation, data collection, and analysis. Dr.

Karina Szymulanska-Ramamurthy prepared the initial draft of the manuscript, which underwent review and feedback from all authors. The final manuscript was carefully reviewed, edited, and approved by every contributing author. Additionally, Dr. Karina Szymulanska-Ramamurthy assisted with the preparation and submission process for IRB approval, ensuring compliance with institutional requirements.

Drs. Khan (Chair), Scherger, and Rowland provided valuable guidance throughout herein study. Sara Lorenzo also played a critical role in analyzing the data and creating the graphs and charts presented in this manuscript.

References

1. American Cancer Society. (2024). *Key statistics for breast cancer*. https://www.cancer.org/.
2. Cancer Atlas. (2024). *Breast Cancer*. https://canceratlas.cancer.org/the-burden/breastcancer.
3. Fobair, P., Stewart, S. L., Chang, S., D'Onofrio, C., Banks, P. J., & Bloom, J. R. (2006). Body image and sexual problems in young women with breast cancer. *Psycho-Oncology*, *15*(7), 579–594. https://doi.org/10.1002/pon.991
4. Brederecke, J., Heise, A., & Zimmermann, T. (2021). Body image in patients with different types of cancer. *PLoS ONE*, *16*(11 November). https://doi.org/10.1371/journal.pone.0260602
5. Madwantsi, V. (2023). Breast cancer survivor shares what it is like navigating sexual intimacy after cancer diagnosis. *The Star Nairobi, October. Vuyile ProQuest document link full text*.
6. Brazzil, M. (2005). Intimacy at Peril. *La Buena Vida Health*. *1January/February*, 66.
7. Hawkins, Y., Ussher, J., Gilbert, E., Perz, J., Sandoval, M., & Sundquist, K. (2009). Changes in sexuality and intimacy after the diagnosis and treatment of cancer. The experience of partners in a sexual relationship with a person with cancer. *Cancer Nursing TM, 32*(4), 271-280. http://journals.lww.com/cancernursingonline
8. Gilbert, E., Ussher, J. M., & Perz, J. (2013). Embodying sexual subjectivity after cancer: A qualitative study of people with cancer and intimate partners. *Psychology and Health*, *28*(6), 603–619. https://doi.org/10.1080/08870446.2012.737466
9. Dibbell-Hope, S. (2000). The use of Dance/Movement Therapy in psychological adaptation to breast cancer. *Arts in Psychotherapy,27*(1), 51-68.
10. Ho, R. T. H., Lo, P. H. Y., & Luk, M. Y. (2016). A good time to dance? A mixed-methods approach of the effects of Dance/Movement Therapy for breast cancer patients during and after radiotherapy. *Cancer Nursing*, *39*(1), 32–41. https://doi.org/10.1097/NCC.0000000000000237
11. Vardhan, V., Goyal, C., Chaudhari, J., Jain, V., Kulkarni, C. A., & Jain, M. (2022). Effect of Dance/Movement Therapy on cancer-related fatigue in breast cancer patients undergoing radiation therapy: A pre-post intervention study. *Cureus*, *14*(1). https://doi.org/10.7759/cureus.21040
12. *What is Dance/Movement Therapy?* (2024). www.adta.org.
13. Hackney, P. (2002). *Making Connections: Total Body Integration Through Bartenieff Fundamentals*. Routledge.

14. Hopwood, P., Fletcher, I., Lee, A., & Al Ghazal, S. (2001). A body image scale for use with cancer patients. *European Journal of Cancer*, *37*(2). https://doi.org/10.1016/S0959-8049(00)00353-1

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- Appendix.docx