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A preliminary waitlist-controlled randomised trial (WRCT) of mindful-compassion for improving sexual intimacy, well-being, and quality of life in women following cancer treatment in home hospice care

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ABSTRACT

Psychosexual interventions remain limited in hospice care worldwide. This exploratory pilot study evaluated the feasibility of a mindful-compassion intervention to enhance psychosexual well-being among 22 women with advanced cancer receiving in-home hospice care. A mixed-methods design was employed, combining a waitlist-controlled randomised trial (WRCT) with qualitative content analysis of participant feedback. The intervention comprised four weekly mindful-compassion sessions. Co-primary outcomes were sexual function, mindful-compassion, well-being, and quality of life, assessed at baseline (week 0), week 4, and week 12. Participants were randomly allocated to an active intervention group or a delayed (waitlist-control) group. Potential benefits over time were observed across sexual functioning, mindful-compassion, well-being, and quality of life ($p < .05$). At week 4, outcomes in the active group suggested improvements in well-being, sexual functioning, and sexual pain compared with the delayed group ($p < .05$). By week 12, differences between groups had narrowed, suggesting similar benefits following intervention delivery. Qualitative analysis reported enhanced sexual intimacy, reflected in improved emotional connection, communication, touching, and kissing with partners. Participants emphasised that intimacy remains meaningful even in the final stages of life. These preliminary findings highlight the potential value of mindful-compassion psychosexual support in hospice care. Larger controlled studies are required to confirm and extend these results.

1. Introduction

Hospice care can be delivered at home or in a hospice healthcare centre and prioritises quality of life and overall well-being [1]. Quality of life in hospice care is vital, given the challenges faced by patients, caregivers, practitioners, families, and partners. It encompasses physical, psychological, social, and spiritual dimensions [1,2]. Hospice care provides essential support in addressing the biopsychosocial aspects of quality of life. However, issues emerge in relation to sexual intimacy. Healthcare practitioners may avoid discussing sex or feel uncomfortable doing so, primarily due to limited training and uncertainty in addressing sensitive topics [3]. Failure to address sexual intimacy can deprive patients of opportunities to express needs and desires, potentially affecting well-being [4]. Sex is a fundamental human need that fosters connection; its absence may impact relationships and self-esteem, with implications for end of life care [3,4].

Among women, lung cancer, followed by breast cancer, is the most commonly reported cancer in hospice care [2]. Regardless of cancer type, disease and treatment can negatively affect sexual functioning [5]. Women often experience vaginal dryness or reduced lubrication, dyspareunia, early menopause, and diminished sexual desire or arousal [6]. A frequently reported post-treatment sexual dysfunction is hypoactive sexual desire disorder (HSDD) [7,8], characterised by persistent absence of sexual desire, fantasies, or pleasure, resulting in significant distress and presenting as lifelong, acquired, situational, or specific [8].

Sexual well-being is influenced by cancer diagnosis, medication, and treatment. Radiation therapy may damage vaginal tissues, while chemotherapy can reduce lubrication and increase sexual pain [9]. In

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addition, fatigue, anxiety, depression, and reduced libido contribute to altered sexual functioning [10]. A terminal diagnosis can profoundly affect identity and overall well-being, influencing intimacy, partnerships, and relationships [11,12]. For some, intimacy is integral to quality of life, fostering connection with self and others [5]. It is also dynamic and may evolve across the illness trajectory in relation to changing needs and desires [11,12].

A range of psychosexual interventions is available following cancer treatment, with mindfulness-based approaches, including mindful-compassion [13]. Mindful-compassion is gaining recognition in healthcare as a theory-driven, integrative approach to mental health difficulties [14,15]. It incorporates mindfulness meditation and self-kindness practices that enhance emotional resilience, reduce self-criticism, and emphasise shared humanity and gratitude [16]. It involves awareness of emotional suffering and responding with acceptance and understanding rather than self-criticism [16].

The three-systems model provides a framework for mapping and normalising emotional experiences and understanding their influence on sexual arousal and enjoyment [12,17]. It comprises the threat, drive, and soothing systems. Individuals often operate primarily within the threat and drive systems, with limited activation of the soothing system, which is associated with poorer well-being. Within this framework, mindful-compassion exercises, sensate awareness, and work with the inner critic have been used to enhance sexual functioning, well-being, and quality of life [13,18]. The approach aims to reduce threat activation, balance the drive system, and strengthen the soothing system, promoting a greater sense of safety and comfort in relating to self and others [19,20]. It has been applied in psychosexual services for difficulties including sexual pain disorder [13,21].

Evidence from a systematic review of 10 studies indicated that mindfulness improves well-being and quality of life in women with cancer [19]. Variability in sexual outcomes was attributed to differences in study design and clinical factors such as cancer type, duration, recurrence, treatment, and psychosocial support. Although mindful-compassion was not included in these studies, mindfulness showed promise, particularly given the limited research in palliative care. A subsequent systematic review and meta-analysis of 12 studies reported large effects of mindfulness on sexual functioning, including arousal, desire, lubrication, orgasm, and reduced sexual pain [22], with large effects for sexual arousal (d=.89) and orgasm (d=.79).

Further research has examined mindful-compassion in gynaecological and breast cancer populations. One online intervention study involving 52 women aged 18–50 years reported improvements in sexual functioning, well-being, and mindful-compassion [22]. Another study of 83 women post-gynaecological cancer treatment investigated mindful-compassion as an adjunct to cannabis suppositories, reporting reductions in sexual pain and improvements in arousal and lubrication compared with care-as-usual [21,23].

Patients frequently seek information and support regarding physical, sexual, and psychological changes following cancer diagnosis [3,24]. However, sexual concerns are often underreported unless actively addressed by healthcare professionals [3,25]. Discussion of sexual matters may cause embarrassment and discomfort [26]. Digital health offers one means of reducing these barriers by increasing accessibility of interventions, particularly for individuals with limited mobility [27].

Research on mindful-compassion in hospice end of life care remains limited. This is a sensitive but important area, as sexual intimacy may remain meaningful despite a terminal prognosis. Connection with others remains essential at the end of life and may include sexual intimacy. This study, therefore, aimed to evaluate an online mindful-compassion intervention, grounded in the three-systems model, among women with terminal cancer receiving hospice care at home.

It was hypothesised that mindful-compassion would improve sexual functioning (sexual desire, sexual arousal, orgasm, lubrication, sexual satisfaction, sexual pain), well-being, and quality of life in women following cancer treatment and in end of life care.

2. Methods

2.1. Design

This was a waitlist-controlled randomised trial (WRCT) with active and delayed groups. Participants were randomly assigned to one of these two groups. Simple randomisation, in which participants were allocated to either the active intervention group or the delayed (waitlist) group. A random allocation sequence was generated using a computer-based random number generator in SPSS. Participants were assigned in a 1:1 ratio to either the active or the delayed group. The allocation sequence was generated after baseline assessments were taken to ensure that group assignment was independent of participant characteristics. Waitlist-controlled studies do not have an independent control group [26] and incorporate pretest/post-test elements. Still, they are more robust when the delayed group serves as the control within the same sample [28]. The study was conducted online and one-on-one over four weeks. Participants were randomly allocated to either an active intervention group (weeks 0–4) or a delayed waitlist group (weeks 4–8). Outcome assessments were conducted at baseline (week 0), week 4, and week 12 for both groups, with the active group completing the week 12 follow-up prior to the delayed group due to the staggered intervention schedule.

Six open-ended feedback questions assessed women's experiences of the intervention and provided insights into sexual intimacy among women in hospice care. Participants were recruited via social media sites, including LinkedIn and Facebook. Social media recruitment may introduce selection bias. However, social media can reach individuals receiving hospice care at home in a wide geographic location.

2.2. Participants

With reference to Fig. 1, twenty-two participants took part in this study. Post-randomisation, two participants allocated to the delayed group expressed discomfort with waiting to receive the intervention. Following contact with the principal investigator, and in consideration of participant well-being, they were reallocated to the active intervention group. As a result, the final group sizes were $n = 12$ in the active group and $n = 10$ in the delayed group. This resembled a per-protocol or as-treated approach. This raised concerns about selection bias and confounding variables, where a sensitivity analysis using assumption testing was conducted for a repeated-measures outcome.

Table 1 outlines the inclusion and exclusion criteria for participants in this study. These criteria were established to ensure that participant selection was both deliberate and ethically appropriate. They aimed to confirm that participants had access to appropriate support while minimising potential distress by using screening assessments that addressed cognitive capacity and mental health. Ethical considerations were therefore central to the development and justification of the inclusion and exclusion criteria.

3. Materials

The intervention consisted of psychosexual education, and the main exercises included mindful-compassion, breathing techniques, relaxation methods, sensory awareness, and self-understanding [12,16,21,29]. This involved recognising the three-systems model of emotions and learning to identify and respond to internalised self-talk with acceptance and self-compassion. Each of the four online sessions lasted approximately one hour. Support and feedback, along with discussions on the educational components, training, modelling, and empowerment, were provided throughout. Homework exercises were relaxed and tailored to participants' comfort levels. These included breathing exercises, diary keeping, and needs-and-wants activities. All participants received the same intervention weekly for four weeks.

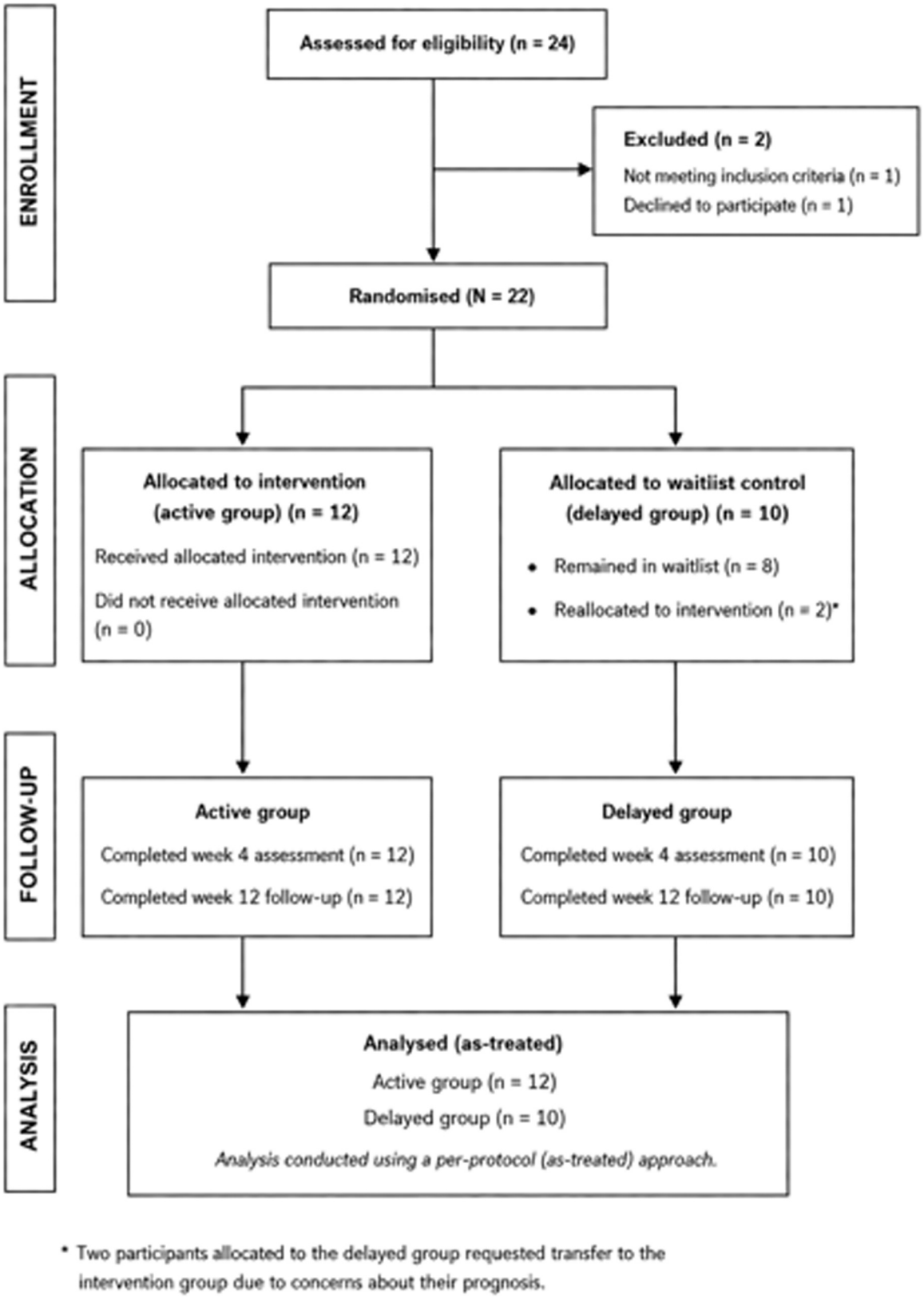

Fig. 1. CONSORT flow diagram of participant progress through the study.

3.1. Preliminary screening tool PHQ−9 for inclusion/exclusion criteria [30]

The PHQ−9 was used to assess depression levels. The internal reliability ranges from 0.86 to 0.89, indicating good consistency. This 9-item measure asks participants to rate the frequency of current difficulties over the past 2 weeks. Scores indicate the presence and severity of depression, with a minimum of 0 and a maximum of 27. See the

Table 1
Participant inclusion and exclusion criteria.

Inclusion criteria	Exclusion criteria
• Were in hospice care with a cancer diagnosis/terminal • Were receiving support and care • Identified as female • Registered with a healthcare service or charity • Self-perceived satisfactory sexual intimacy before cancer diagnosis • Aged 18 years or older • Had a computer, laptop, mobile phone- intervention was online. • Read and wrote English, as the intervention was delivered in English • Patient Health Questionnaire- PHQ−9 screening (score range from minimal to moderate, 0−14)[31] • Mental Capacity (2005) - Mini-Cog outcomes 3,4,5 (cognitive comprehension)[32]	• Were not in hospice care with cancer diagnosis/not terminal • Did not identify as female • Were very late-stage palliative/hospice care in which capacity (medication) may be compromised, or discomfort is experienced • Were aged below 18 years old • Had reading and writing difficulties in English • Had a moderate to severe to high PHQ−9 screening score (ranging from moderate to severe – 15−27).[31] • Mental Capacity (2005) - Mini-Cog outcomes 0,1,2 (problematic cognitive comprehension)[32]

inclusion/exclusion criteria for cut-off scores.

3.2. Preliminary screening tool for inclusion/exclusion criteria Mini-Cog [31]

The Mini-Cog was used to assess cognitive capacity. The inter-rater reliability ranges from 0.93 to 0.95. This is a three-step process established to assess cognitive functioning.

3.3. Female sexual function index (FSFI) [32]

This is a validated 19-item measure with five response options that assesses sexual function, including desire, orgasm, lubrication, pain, and sexual satisfaction with an internal reliability of ≥ 0.82. Sample questions include, "Over the past four weeks, how often did you feel sexual desire or interest?" and "Over the past four weeks, how confident were you about becoming sexually aroused during sexual activity or intercourse?" It has also been validated in cancer populations [34]. The Cronbach's alpha in this study was 0.85.

3.4. Short warwick-edinburgh mental well-being scale (SWEMWBS) [33]

This is a validated six-item measure with five response options that assesses aspects of functioning and emotional well-being with an internal reliability of ≥ 0.70. An example question is "I've been feeling close to other people". It has also been validated in cancer populations [36]. The Cronbach's alpha in this study was 0.87.

3.5. Brunnsviken brief quality of life scale (BBQ) [34]

This is a validated 12 item measure with five response options that assesses subjective quality of life including satisfaction with oneself, friends, family, and creativity. Example questions include, 'How do I view my life as important for my quality of life?' and 'I am satisfied with my friends and friendship: I have friends I associate with and who support me.' It has been used in research and clinical populations, including cancer populations [38]. The Cronbach's alpha in this study was 0.65.

3.6. State self-compassion short form [35]

This is a validated 12-item measure with 5 response categories. It assesses self-kindness versus self-judgement, common humanity versus isolation, and mindfulness versus over-identification with painful thoughts and emotions. An example question includes,“ when something upsets me, I try to keep my emotions in balance”. It has also been validated in cancer populations [40]. The Cronbach's alpha in this study was 0.70.

Six open-ended questions, based on participant feedback about the intervention, are presented in the results section. Questions centred on participants' overall experiences of the intervention, ways of improving it, and communicating participants' experiences of discussing sexual intimacy in home hospice settings.

3.7. Procedure

Following ethical approval on 08/08/2023 from the London Metropolitan University Research Ethics Review Panel, this study was conducted in accordance with the British Psychological Society (BPS) Code of Ethics and Conduct [36], SSSP08/08/2023. This study was retrospectively registered with ClinicalTrials.gov (identifier: NCT07296796) on 19/12/2025. Registration occurred after study initiation due to administrative constraints; however, the study protocol and outcomes were defined a priori. Due to ethical restrictions on access to palliative care, participants contacted the principal researcher via a home hospice setting to support this research. An experts-by-experience link expressing interest in this subject was initially posted on social media, and it received a significant response from individuals eager to participate. Details of the study were shared on social media platforms, including LinkedIn and Facebook. Interested participants signed a consent form via an encrypted email. Mental health was screened (depression) using the PHQ−9 [30], alongside a Mini-Cog to assess cognitive capacity [31].

Both the active and delayed groups completed assessments at weeks 0, 4, and 12. Following consent and collection of demographic details, the survey was conducted in the following order: the Female Sexual Function Index (FSFI); the Short Warwick-Edinburgh Mental Well-being Scale (SWEMWBS); Brunnsviken Brief Quality of Life Scale (BBQ); and the Short State Self-Compassion Scale, followed by a debrief as a reminder of any additional support services needed. A link to this survey was sent to participants' email addresses using an encrypted password. The principal researcher was present with participants throughout, particularly when addressing questions arising from participant feedback or when difficulties arose in completing the survey.

Each week was dedicated to exploring all aspects of mindful-compassion, with the intervention focusing on thoughts and behaviour and using mindful-compassion to support and regulate the three-systems model of emotions [12,13]. Online sessions were delivered by a psychosexual therapist via Microsoft Teams and lasted approximately 1 h each, once per week for 4 weeks. The sessions were standardised in delivery and consistently led by the same facilitator; however, it was important to allow sessions to proceed at a pace appropriate to each participant. Throughout the study, participants were assured of confidentiality regarding their involvement in the programme and of anonymity with respect to their identity outside the research team. Participants were reminded that they could withdraw from the study at any time or take regular breaks if needed. Participants completed questionnaires independently to minimise perceived pressure to respond in a particular way. All participant responses were stored on a password-protected computer and managed in accordance with the Data Protection Regulations [37]. All data will be kept for up to 5 years before being securely deleted [38].

3.8. Data analysis

Cronbach's alpha was calculated for each assessment tool (excluding measures used for inclusion or exclusion criteria). Sensitivity analysis included testing the assumptions underlying the statistical analyses, which were assessed prior to hypothesis testing. Normality was evaluated using the Shapiro–Wilk test and visual inspection of Q–Q plots. Homogeneity of variance between groups was assessed using Levene's

test where appropriate. For repeated-measures analyses, sphericity was assessed using Mauchly's test, with Greenhouse–Geisser corrections applied when violations were detected. In most cases, assumptions were not violated ($p > .05$). A repeated-measures ANOVA with within-participant comparisons was conducted at weeks 0, 4, and 12 across the active and delayed groups with 95% CI for mean difference. Partial eta-squared is referenced as the effect size measure in this study. Independent-samples *t*-tests were conducted to compare outcomes between the active and delayed groups at weeks 0, 4, and 12. Bonferroni adjustments have been applied across all statistical analyses to manage type 1 error. A subgroup analysis was conducted on sexual frequency, ethnicity, partnership, cancer type, and medication use concerning sexual function across well-being, quality of life, and mindful-compassion. Statistical analyses were conducted using a significance threshold of $p < .05$ for all tests. Qualitative responses were analysed using inductive frequency-based content analysis, where categories were derived directly from participants' responses and the frequency of each category was calculated. Two researchers independently reviewed participant responses before reaching consensus on the outcomes.

SPSS 31 was used to analyse the outcomes.

4. Results

4.1. Demographic information

Among the 22 participants, 2 (9.1%) were aged between 18 and 30 years; 11 (50.0%) between 31 and 40 years; and 9 (40.9%) between 41 and 50 + years. Ethnicity included 11 (50.0%) white, 8 (36.4%) African Caribbean, and 3 (13.6%) identifying as mixed ethnicity. Of the sample, 1 (4.5%) was partnered for 1–2 years, 3 (13.6%) for 3–4 years, and 18 (81.8%) for 5 years or more. The types of cancers initially diagnosed were 10 (45.5%) lung cancer, 7 (31.8%) breast cancer, 3 (13.6%) gynaecological cancer, and 2 (10.5%) bowel cancer. Medication included 15 (68.2%) morphine, 4 (18.2%) benzodiazepine, and 3 (13.6%) haloperidol. Of the sample, 2 (9.1%) attempted sexual intimacy weekly; 8 (36.4%) every two weeks; 8 (36.4%) monthly; and 4 (18.2%) over a month. When participants were asked about their understanding of sexual intimacy, 3 (13.6%) reported being held, 5 (22.7%) closeness, 5 (22.7%) being touched, 7 (31.8%) feeling connected, and 2 (9.1%) reported sexual intercourse.

4.2. Active group

4.2.1. Overall effects of time

With reference to Table 2, there was a significant effect of time (weeks 0–12) on overall sexual functioning, $F(1, 11) = 29.603$, $p < .001$, $\eta p^2 = .655$, with 95% confidence intervals (CIs) ranging from 18.206 to 22.683. Pairwise comparisons using Bonferroni adjustments indicated a significant improvement from week 0 to week 12 ($p = .002$).

4.2.2. Sexual functioning domains

Significant effects of time were observed for several domains including sexual desire: $F(1, 11) = 9.270$, $p = .011$, $\eta p^2 = .457$, CIs [2.096, 3.238], $p = .033$; sexual satisfaction: $F(2, 10) = 11.765$, $p = .002$, $\eta p^2 = .702$, CIs [2.839, 4.161], $p = .002$ and sexual pain: $F(2, 10) = 6.637$, $p = .015$, $\eta p^2 = .570$, CIs [3.370, 4.574], $p = .010$. No other sexual domains reached significance ($p > .05$).

4.2.3. Well-being and quality of life outcomes

Significant improvements over time were also found for mindful-compassion: $F(2, 10) = 38.404$, $p < .001$, $\eta p^2 = .885$, CIs [29.603, 34.675]; well-being: $F(2, 10) = 317.047$, $p < .001$, $\eta p^2 = .984$, CIs [15.923, 28.373] and quality of life: $F(2, 10) = 7.956$, $p = .009$, $\eta p^2 = .614$, CIs [20.190, 25.027]. All pairwise comparisons using a Bonferroni adjustment from week 0 to 12 were significant ($p \leq .005$).

Table 2
Means (M) and Standard Deviations (SD) for Outcome Variables Across Time Points.

Outcome Variable	Group	Week 0 (M ± SD)	Week 4 (M ± SD)	Week 12 (M ± SD)
Mindful-Compassion	Active	23.75 ± 6.57	36.58 ± 3.83	36.08 ± 2.68**
	Delayed	26.10 ± 7.25	35.30 ± 4.60	36.80 ± 3.85**
Overall Sexual Function	Active	18.83 ± 3.27	21.00 ± 3.79	21.25 ± 3.79**
	Delayed	23.90 ± 3.04	24.70 ± 2.91	26.50 ± 2.64**
Sexual Desire	Active	1.83 ± 1.03	3.08 ± 1.17	3.00 ± 1.16*
	Delayed	1.50 ± 0.53	2.40 ± 0.70	3.30 ± 0.68**
Sexual Arousal	Active	4.33 ± 0.31	4.79 ± 0.32	4.83 ± 0.32
	Delayed	3.60 ± 1.17	4.10 ± 0.88	4.70 ± 0.82*
Lubrication	Active	4.00 ± 0.95	4.25 ± 1.72	4.15 ± 1.16
	Delayed	4.00 ± 0.94	4.00 ± 0.94	4.40 ± 1.17
Orgasm	Active	3.00 ± 1.13	3.25 ± 0.99	3.25 ± 0.99
	Delayed	2.70 ± 1.16	4.00 ± 0.94	3.00 ± 1.25
Sexual Satisfaction	Active	2.67 ± 1.30	2.66 ± 1.16	5.17 ± 1.59*
	Delayed	2.90 ± 1.20	4.50 ± 1.78	4.70 ± 1.64*
Sexual Pain	Active	5.75 ± 0.65	3.16 ± 0.32	3.00 ± 0.28*
	Delayed	8.20 ± 1.48	6.80 ± 1.82	6.20 ± 1.69*
Quality of Life	Active	17.75 ± 3.84	20.17 ± 3.51	21.00 ± 3.16*
	Delayed	16.30 ± 3.71	19.80 ± 3.71	19.60 ± 4.25*
Well-Being	Active	14.58 ± 2.11	27.58 ± 1.56	27.41 ± 1.51**
	Delayed	14.20 ± 3.43	18.20 ± 3.88	23.60 ± 3.17**

Key: *p < .05, **p < .001

4.2.4. Interaction effects

A significant interaction effect was observed across outcomes, $F(6, 6) = 44.622$, $p < .001$, $\eta p^2 = .998$, CIs [16.879, 17.931]. Pairwise analyses using Bonferroni adjustments were significant across variables ($p < .05$), except for overall sexual functioning ($p > .05$).

4.3. The delayed group

4.3.1. Overall effects of time

With reference to Table 2, there was a significant effect of time (weeks 0–12) on overall sexual functioning, $F(2, 8) = 7.466$, $p = .015$, $\eta p^2 = .651$, CIs [23.091, 26.975], with a significant improvement from week 0 to week 12 ($p = .008$).

4.3.2. Sexual functioning domains

Significant effects of time were observed for sexual desire: $F(2, 8) = 36.000$, $p < .001$, $\eta p^2 = .900$, CIs [1.877, 3.738]; sexual arousal: $F(2, 8) = 4.511$, $p = .049$, $\eta p^2 = .520$, CIs [3.534, 4.730]; sexual satisfaction: $F(2, 8) = 7.756$, $p = .010$, $\eta p^2 = .544$, CIs [6.201, 8.332] and sexual pain: $F(1, 9) = 10.637$, $p = .015$, $\eta p^2 = .570$, CIs [3.370, 4.574]. No other domains were significant ($p > .05$).

4.3.3. Well-being and quality of life outcomes

Significant improvements were also found for mindful-compassion: $F(2, 8) = 18.868$, $p < .001$, $\eta p^2 = .828$, CIs [29.291, 36.176], well-being: $F(2, 8) = 45.124$, $p < .001$, $\eta p^2 = .919$, CIs [17.318, 20.016] and quality of life: $F(2, 8) = 7.433$, $p = .015$, $\eta p^2 = .650$, CIs [17.373, 21.025]. All pairwise comparisons using Bonferroni adjustments from week 0 to 12 were significant ($p \leq .01$).

4.3.4. Interaction effects

A significant interaction effect was observed, $F(7) = 30.835$, $p < .001$, $\eta p^2 = .990$, CIs [15.544, 16.781]. Pairwise analyses using Bonferroni adjustments were significant across variables ($p < .05$), except for sexual satisfaction, arousal, and desire ($p > .05$).

4.3.5. Between-group differences at each time point

Independent-samples *t*-tests were conducted to assess baseline differences between the active and delayed groups. At week 0, significant differences were observed for overall sexual functioning, $t(20) = -3.74$, $p = .001$, and sexual pain, $t(20) = -5.19$, $p < .001$, with higher scores in the delayed group. No significant differences were found for mindful-compassion, well-being, quality of life, sexual desire, sexual arousal, or sexual satisfaction ($p > .05$). At week 4, significant differences were observed for well-being, $t(20) = 7.68$, $p < .001$, sexual functioning, $t(20) = -2.53$, $p = .020$, and sexual pain, $t(20) = -6.82$, $p < .001$. At week 12, significant differences were observed for well-being, $t(20) = 3.71$, $p = .001$, and sexual functioning, $t(20) = -3.69$, $p = .001$. No other variables were significant ($p > .05$).

Overall effect sizes for significant outcomes in the active and delayed groups were large (see limitations).

4.3.6. Subgroup analyses

Subgroup analyses examining sexual frequency, ethnicity, partnership status, cancer type, and medication use suggested no statistically significant effects (to be interpreted with caution) on sexual functioning, well-being, quality of life, or mindful-compassion ($p > .05$).

Feedback from participants about mindful-compassion and sexual function.

(1) What made you decide to participate in this study?

Thirty-three responses were gathered from participants. Wanting to do as much as possible in the time I have left, n = 9 (27.3%), seeking to feel connected with my partner, n = 11 (33.3%), some closure and connection, n = 8 (24.2%), and feeling fed up with healthcare not discussing this, n = 5 (15.2%).

(2) Tell me about your experiences of talking about sex in hospice care

Fifty responses were collected from participants. What discussion! Or no discussion at all, n = 14 (28.0%). I felt shut down when the word sex was mentioned, n = 24 (48.0%), and felt too embarrassed to talk about it, n = 7 (14.0%), felt forgotten, dismissed and disregarded, n = 5 (10.0%).

(3) Tell me about your experiences of mindful-compassion as part of this intervention?

Fifty-two responses were collected from participants. Communication was greatly improved, n = 10 (19.2%), my partner helped me and we grew closer, n = 13 (25.0%), I felt better, n = 9 (17.3%), and this contributed to our relationship with closure, n = 7 (13.5%), just a sense of general well-being, n = 8 (15.4%) and it takes you away from your condition, n = 5 (9.6%).

(4) And how did you find mindful-compassion for sexual intimacy, if any?

Fifty-six responses were gathered from participants. We learnt to explore each other, n = 8 (14.3%), engage in more kissing and touching, n = 10 (17.9%), behave gently and lovingly, n = 13 (23.2%), feel connected through touch and massage, n = 10 (17.9%), experience intimacy without necessarily having sex, n = 8 (14.3%), felt like being pampered, n = 7 (12.5%).

(5) How might the intervention be done/delivered differently?

Fifty responses were gathered from participants. Please organise group sessions, many of us would like to connect and feel part of a community, n = 40 (80.0%), and consider including partners as part of a group session, n = 10 (20.0%).

(6) What message do you want to give to others about this intervention, or any general messages you might wish to communicate?

Sixty-two responses were gathered from participants. Stop treating us like we are already dead!, n = 7 (11.3%), I want to feel human and alive, n = 9 (14.5%), sex happens right up until the end, n = 10 (16.1%), I want a happy ending!, n = 9 (14.5%), this (the intervention) was a lovely experience and has made a difference to my life, n = 7 (11.3%), I will continue using mindful-compassion, n = 8 (12.9%), this (the intervention) should become part of palliative care and hospices worldwide, n = 8 (12.9%), I did not want to die without feeling connected, n = 4 (6.5%).

5. Discussion

This exploratory study aimed to address the sensitive yet under-researched topic of sexual intimacy in hospice care. It explored sexual intimacy in relation to well-being and quality of life using mindful-compassion exercises. The hypotheses were partly supported for both the active and delayed groups, with findings suggesting increases in mindful-compassion, well-being, quality of life, and aspects of sexual function, including sexual desire, sexual satisfaction, and reduced sexual pain. However, changes in orgasm and lubrication were non-significant.

Comparing these findings with existing research was challenging, as studies on mindful-compassion and sexual intimacy in palliative or hospice care remain scarce. Mindful-compassion has been introduced in some UK psychosexual services, where it appears beneficial for a range of psychosexual difficulties [46]. Cancer affects not only individuals but also their partners, who may experience periods of sexual abstinence during treatment. For example, during radiation therapy (depending on type and site), patients are often advised to abstain from sexual activity [6,39]. In such contexts, differences in engagement with mindful-compassion practices between partners may influence relational sexual dynamics, including desire and willingness for sexual exploration [21,39]. Future research may therefore benefit from involving partners alongside patients to potentially enhance outcomes.

Indeed, in a mixed-methods study of 52 British women aged 18–50 years post-breast cancer treatment, increases in sexual arousal and desire were reported following a mindful-compassion intervention [22]. Qualitative findings highlighted sexual discrepancies among partnered participants, as the intervention was delivered only to individuals, which influenced sexual satisfaction and orgasm experience. In the present study, improvements were observed in sexual desire, satisfaction, and pain, but not in orgasm or lubrication. Conversely, mindfulness-based research has generally reported improvements in lubrication and orgasm [17,21,40,41]. However, participants in this study were taking medications such as morphine, benzodiazepines, and haloperidol, which have been associated with reduced lubrication and delayed or inhibited orgasm, alongside the cumulative effects of chemotherapy and/or radiotherapy [42–45].

Participants also reported improvements in well-being, mindful-compassion, and quality of life following the intervention. These findings are consistent with a meta-analysis of 41 studies (N = 8235), which reported a significant association between mindful-compassion and well-being ($r = .53$, CI [.48,.58], $p = .001$) [46]. Similar positive associations have been observed among cancer patients undergoing chemotherapy, with improvements in well-being and quality of life [47,48].

Qualitative findings in this study highlighted participants' feelings of being overlooked by healthcare systems, having their needs dismissed, and sexual intimacy disregarded. Participants frequently expressed a desire to "feel human and alive." A scoping review similarly identified key themes in end of life sexuality and intimacy care, including the impact of illness on sexuality, barriers to addressing sexual needs, genital-focused conceptualisations of intimacy, and a disconnect between patient needs and healthcare professional support [3]. Although sexual intercourse was included as an outcome measure in the current study, it did not define sexual functioning. Sexual intimacy was understood more broadly, extending beyond penetration to include communication, emotional connection, touch, massage, and being held. These elements reflect principles consistent with mindful-compassion and sensate focus embedded within the intervention. While not an intended

outcome, this emphasis on non-goal-oriented intimacy provides useful insight for future psychosexual and relationship-based interventions. Sensate focus, originally developed by Masters and Johnson, involves structured exercises within the couple's home environment, shifting attention away from performance and genitals toward sensory experience and connection [29,49]. It emphasises touch, closeness, and gradual reintroduction of sexual activity at the individual or couple's own pace, with reduced performance pressure.

This study has several limitations. Although demographic data were limited to avoid participant burden, this may have limited the contextual interpretation of the findings. A waitlist randomised controlled design was used rather than an independent control group for ethical reasons, ensuring all participants received the intervention. While common in psychotherapy research, waitlist designs may introduce inflated effect sizes and limit internal validity [50]. Additionally, observed improvements may partly reflect natural psychological adaptation to terminal illness and may also reflect expectancy/placebo or non-specific therapeutic effects in both groups. Social media recruitment may also have introduced selection bias, although it enabled access to a geographically broader population than recruitment from a single hospice setting would have. Future studies should incorporate multiple recruitment pathways, including clinical services, to reduce sampling bias [51].

The inclusion of multiple co-primary outcomes increases the risk of type I error; however, a Bonferroni correction was applied, with significant improvements observed across outcomes [52]. An exploratory power analysis (G*Power) indicated that the observed effect size for sexual functioning ($\eta p^2 = .655$; $f \approx 1.37$) provided adequate power to detect large effects in this pilot sample ($N = 22$). However, these estimates should be interpreted cautiously, given the small sample size and exploratory design. Smaller samples face significant challenges regarding statistical power and generalisability, diminishing the ability to detect true effects or relationships and increasing sampling error, which limits the ability to extend findings beyond the immediate participants. A future study powered at 80% ($\alpha = .05$) would require approximately 40 participants, although larger samples are recommended for stability and generalisability.

Post randomisation the final group sizes were $n = 12$ in the active group and $n = 10$ in the delayed group as two participants voiced a concern about their prognosis. This resembled a per-protocol or as-treated approach which raises concerns about selection bias and confounding variables [62]. A sensitivity analysis using assumption testing was conducted for a repeated-measures outcome, with sphericity assessed using Mauchly's test and Greenhouse–Geisser corrections applied when violations were detected. In most cases, assumptions were not violated ($p > .05$). This was not ideal, but participants' needs, guided by an ethical, participant-centred approach, were prioritised. The Cronbach's alpha for the BBQ scale in the present study was 0.65, which is slightly below the conventional threshold of 0.70 [34]. However, values in the range of 0.60–0.70 are generally considered acceptable in exploratory research, particularly in studies investigating complex and multidimensional psychological constructs. The BBQ scale has been previously validated and widely used in well-being research, supporting its appropriateness for inclusion. It is also important to note that the current study employs a novel experimental context, which may influence response patterns and internal consistency. In line with best practice, the reliability coefficient is reported transparently, and findings derived from this measure are interpreted with appropriate caution.

The four-session format was designed to maximise feasibility for individuals with advanced cancer in hospice care. Participant feedback suggested a preference for online group delivery over individual intervention, as it fostered shared experience, connection, and a sense of community. Future research could therefore explore a tailored online group mindful-compassion intervention incorporating sensate focus principles and, where appropriate, partner involvement. This may also support individuals without partners receiving palliative or hospice care. Greater institutional and funding support is needed for psychosexual research in palliative settings, where quality of life remains central. Sexual intimacy and connectedness remain important components of quality of life throughout the end of life trajectory.

In conclusion, this mindful-compassion intervention targeted women after cancer treatment and those in end of life hospice care. This preliminary, exploratory study aimed to improve sexual function, well-being, and quality of life through a four-week mindful-compassion intervention. Outcomes suggested improvements in sexual desire and satisfaction, reduced sexual pain, and enhanced well-being and quality of life, with gains maintained at follow-up. The sexual function component focused on sensate mindfulness, emphasising feeling connected through communication, touch, kissing, and massage rather than sexual intercourse. Participants strongly supported an online group intervention, stating that it could help hospice patients feel connected to a shared community. All participants were partnered, which further supported the delivery of this intervention. These outcomes may represent a promising approach but should be interpreted with caution. It is hoped that this study will continue both qualitatively and quantitatively to develop a holistic understanding of how to support and enhance quality of life through psychosexual interventions in palliative care and hospice settings. This would hope to prompt hospice and palliative care to promote and support psychosexual research, potentially from a mindful-compassionate and sensate focus perspective, to ensure the best end of life care for this cohort. As per participant request, the concluding words of this paper are: "I want a happy ending" (followed by laughter!).

CRediT authorship contribution statement

Samantha Banbury: Writing – review & editing, Writing – original draft, Validation, Supervision, Software, Resources, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Hutchison Paul:** Writing – review & editing. **Chandler Chris:** Writing – review & editing.

Ethics approval

Ethics approval was obtained through the London Metropolitan Ethics Review panel (Reference: SSSP08/08/2023). This study adhered to the Helsinki Declaration and the British Psychological Society's code of ethics and conduct.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

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