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Review

A systematic review of spousal couple-based intervention studies for couples coping with cancer: direction for the development of interventions

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Abstract

***Objective*: With the research focus on family caregiving shifting from the individual to the dyadic level, it is suggested that the caregiver-patient dyad as a unit be the focus and direction of caregiving interventions for families coping with cancer. The objectives in conducting this review were to explore the existing interventions for spousal couples coping with cancer in terms of type of intervention, contents, approach, and outcome measurements; and to identify directions for the development of interventions.**

***Methods*: A systematic search of four databases was conducted to identify articles published in English or Chinese from the launch of the databases to March 2013. Studies were located using an electronic search, a manual search, and an author search.**

***Results*: A total of 17 articles were identified and included in this review. These interventions focused mainly on patient caregiving and caregiver self care, and usually lasted for 6 weeks using a face-to-face group mode, with follow-up at around 3 months. The outcome measures can be grouped into three main dimensions: dyadic appraisal, dyadic coping, and dyadic adjustments. Positive outcomes were reported for these interventions, including improvements in communication, dyadic coping, the quality of life of both the patients and their partners, psychosocial distress, sexual functioning, and marital satisfaction.**

***Conclusions*: These findings highlighted the positive outcomes of couple-based interventions that focus on couples coping with cancer. Future studies on couple-based interventions should be conducted in different cultures, such as in Asian countries. Collaboration between researchers and clinicians is crucial to ensure the development of effective and accessible supportive interventions targeting couples coping with cancer.**

Introduction

The diagnosis of cancer and its treatment can have an impact on both patients and their family caregivers, particularly the spouse, because, for the most part, the spouse is the primary caregiver [1–4]. Reviews of the literature showed that spousal caregivers of cancer patients perceived both negative and positive experiences in their coping throughout the cancer trajectory [5,6]. Based on the fact that family caregivers provide extraordinary uncompensated care that is physically, emotionally, and socially demanding and results in negative health consequences, and with the research focus on family caregiving shifting from the individual to the dyadic level [7], it has been suggested that both family caregivers [8,9] and the caregiver-patient dyad as a unit [10] be the focus and direction of research and interventions on the caregiving experiences of families coping with cancer. Indeed, couple-based training interventions on coping through facilitating communication have yielded promising results among dyads in which one member has cancer [11–13].

Reviews on couple-based interventions report that they can lead to improvements in dyadic-level adjustment [14,15]. However, these reviews included studies that did not report partner outcomes [15] and did not provide details with regard to the efficacy of the intervention [14], which limits interpretations of the differential effects of a couple-based intervention for patients and partners [16]. Another review found that couple-based interventions produced greater effect sizes than interventions that focused on patients only [17]. That review, however, mainly focused on interventions that improve the sexuality and body image of women with cancer [17].

Recently, a systematic review of couple-based psychosocial interventions reported that the ‘effect sizes of couple-based interventions are similar to those reported in patient-only and caregiver-only interventions ($\sim d = 0.35$–0.45).’ [18] (p.279). However, it should be noted that the couple-based intervention was also offered to other family caregivers, and not only to couples. No reviews of the literature on supportive intervention studies focusing specifically on spousal caregiver-cancer patient dyads were found. In order to gain a better understanding of existing supportive interventions for couples coping with cancer, a literature review was conducted specifically on spousal couple-based supportive interventions for couples coping with cancer. The insights thus gained can help professionals to develop interventions that support couples coping with cancer and improve the quality of caregiving.

Throughout this review, the term ‘couple’ refers to spousal caregiver-cancer patient dyads, which means spousal couples and includes couples of those currently married or living together. Interventions refer to supportive interventions, including psychosocial education, skill training, and exercise, rather than pharmacological interventions. Couple-based interventions refer to interventions focusing on couples as the unit of intervention.

The aims of this literature review were two-fold: (i) to explore the existing interventions for couples coping with cancer in terms of type of intervention, contents, approach, and outcome measurements; and (ii) to identify directions for future intervention research.

Methods

The process of searching and selecting

Literature related to couple-based interventions was searched. The keywords used were the following: ‘intervention’ or ‘program’ or ‘therapy’ or ‘cope’ or ‘coping’ AND ‘cancer’ or ‘oncology’ or ‘carcinoma’ AND ‘couple’ or ‘partner’ or ‘spouse’ AND ‘carer’ or ‘caregiving’ or ‘caregiver’. Literature published in English and Chinese from the establishment of the four respective databases (Science Citation Index Expanded (1970+), PsycInfo (1806+), Medline (1950+) via OvidSP, CINAHL database (1982+)) to March 2013 was included. A manual search of the references to the identified literature and an author search were also conducted. The eligibility and selection of the articles were assessed by screening records and accessing the full texts according to predefined inclusion and exclusion criteria. The flow diagram of the search and selection process is outlined in Figure 1.

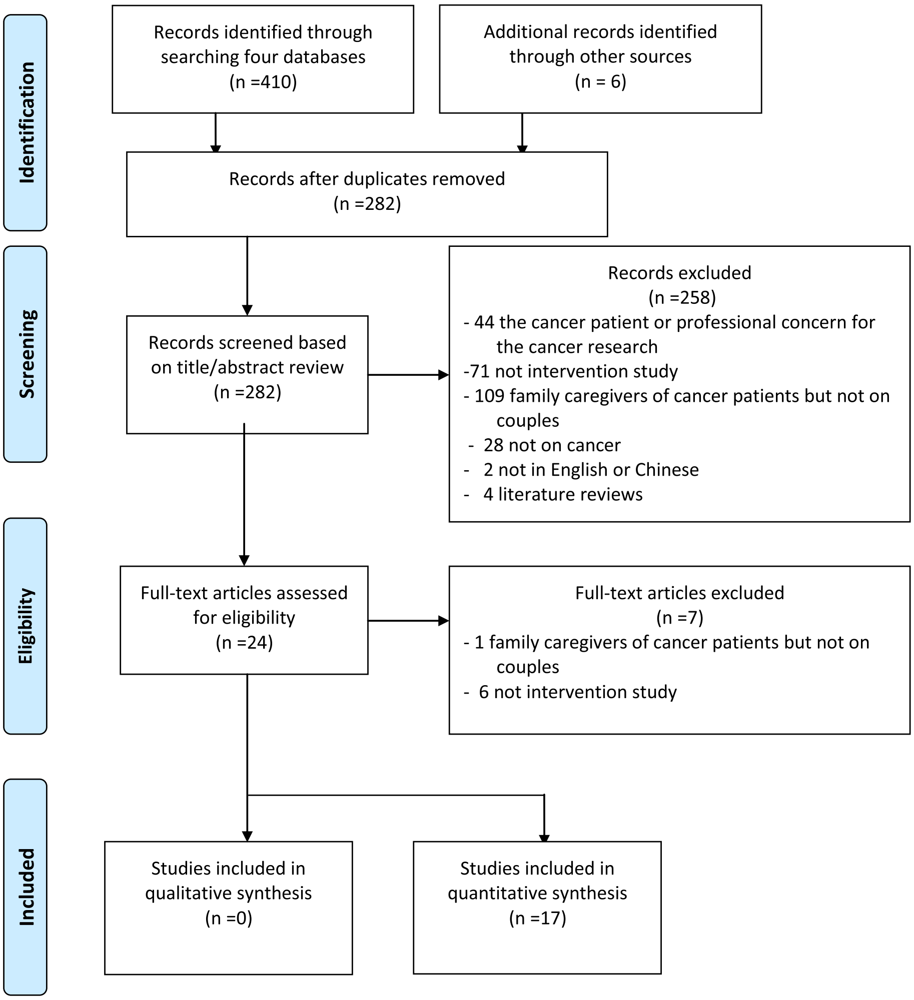

Figure 1. The flow diagram on identifying the literature

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Criteria for inclusion and exclusion

The studies included in this review met the following criteria: articles published in English or Chinese (languages spoken by the authors) from the establishment of the four databases searched to March 2013. The focus of the studies was on couple-based interventions, and the outcome measures included both cancer patients and spousal caregivers. Commentaries, editorials, literature reviews, and conference proceedings were not included in this review.

Data extraction and quality assessment

Two reviewers independently extracted data from each of the included studies using a standard format, which included information on the literature, study design, target population, contents of the intervention, dosage of the intervention, delivery of the intervention, outcome measurements, and significant outcomes (Tables S1 and S2). An assessment of the quality of the included studies was conducted using the criteria proposed by the Effective Public Health Practice Project (EPHPP) [19]. The EPHPP has been demonstrated to be a reliable, valid, and comprehensive tool for assessing the methodological quality of primary studies with a variety of study designs, and is considered suitable for application to systematic reviews of the effectiveness of interventions [19].

Quality assessment components and rating for EPHPP criteria are described in Table 1 [19]. Those with no weak ratings and at least four strong ratings were considered strong. Those with fewer than four strong ratings and one weak rating were considered moderate. Finally, those with two or more weak ratings were considered weak. As shown in Table S2, four studies had a global rating of ‘strong,’ whereas the remaining 13 studies were rated as ‘moderate.’ The most common reason for a study not to have received a rating of ‘strong’ was a low response rate from eligible participants and high withdrawal rate, which led to otherwise ‘strong’ articles being rated as ‘moderate.’

Results

A total of 17 quantitative studies were included in this review. Table S1 summarizes the characteristics of the identified interventions.

Characteristics of the interventions

All 17 studies that focused on couple-based interventions for couples coping with cancer had been conducted in Western countries, namely the USA ($n=11$, 64.7%), Australia ($n=2$, 11.8%), Canada ($n=2$, 11.8%), the Netherlands ($n=1$, 5.9%), and Germany ($n=1$, 5.9%). Of the 17 studies, 12 were randomized controlled trials (RCT) and five were cohort studies.

Target population

The size of the samples in these studies ranged from 9 to 263 couples, involving a total of 1142 couples. The attrition rate ranged from 6% to 34%, with an average rate of 20% (225/1142). The reasons given by the cancer dyads for refusing to participate in or dropping out of a couple-based intervention were the time issue [12,20–24], including being too busy, the time burden of the intervention, or having to complete a baseline questionnaire [12,20–24]; the intervention not meeting their expectations or refusing a group assignment [11,12,21–23]; the spouse declining to provide data [23,25]; and living too far away from the intervention facilities [26,27].

The couples in these intervention studies were coping with prostate cancer ($n=6$, 35.3%), breast cancer ($n=4$, 23.5%), breast or gynecological cancer ($n=2$, 11.8%), gastrointestinal cancer ($n=1$, 5.9%), and multiple types of cancer ($n=4$, 23.5%). Twelve out of the 17 studies (70.5%) focused on a gender-specific form of cancer.

Theoretical framework of the interventions

Various theoretical frameworks were adopted to guide the design of the interventions. Most of these theoretical frameworks focused on the couple’s relationship,

Table 1. Quality assessment components and rating for Effective Public Health Practice Project criteria [19]

Components	Strong	Moderate	Weak
Selection bias	Very likely to be representative of the target population and greater than 80% participation rate	Somewhat likely to be representative of the target population and 60–79% participation rate	All other responses or not stated
Study design	Randomized and controlled controlled trials	Cohort analytic, case-control, cohort, or an interrupted time series	All other designs or design not stated
Confounders	Controlled for at least 80% of confounders	Controlled for 60–79% of confounders	Confounders not controlled for, or not stated
Blinding	Blinding of outcome assessor and study participants to intervention status and/or research question	Blinding of either outcome assessor or study participants	Outcome assessor and study participants are aware of intervention status and/or research question
Data collection methods	Tools are valid and reliable	Tools are valid but reliability not described	No evidence of validity or reliability
Withdrawals and dropouts	Follow-up rate of >80% of participants	Follow-up rate of 60–79% of participants	Follow-up rate of <60% of participants or withdrawals and dropouts not described

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including the Adaptation Model of Couples Functioning [21], Emotionally Focused Therapy [13,28], Spiegel's Supportive-Expressive Model [29], Equity Theory [22], the Relationship Intimacy Model [12,30], and the Social-Cognitive Processing Model of Emotional Adjustment to Cancer and Coping Theory [25]. The exception was the Stress and Coping Model, which focused on the stress-coping process at the individual level [11]. Although these models were used in the articles included in this review, the majority of studies failed to describe how theory was used in the study. No specific theoretical framework on cancer dyads coping with cancer was found in the articles included in this review.

Intervention approaches and focuses

On the basis of a synthesis of the interventions included in this review, the couple-based interventions reviewed here can be classified under three broad categories according to their approaches: skills training ($n = 11$, 64.7%), therapeutic counseling ($n = 6$, 35.3%), and psycho-education ($n = 2$, 11.8%) [31]. It was common for the intervention protocols to include both skills training and psycho-education ($n = 11$, 64.7%).

In terms of focus, the interventions for couples can be grouped under patient caregiving ($n = 7$, 41.2%), caregiver self care ($n = 7$, 41.2%), and marital/family care ($n = 17$, 100%). The focus of patient caregiving refers to the provision of information or skills to help caregivers perform their caregiving tasks [31]. The focus of caregiver self care refers to the information, skills, and support needed by caregivers to manage their own physical and emotional health needs, gain confidence in their caregiving role, maintain their social support system, and access to resources that can ease the caregiving burden [31]. Marital/family care addressed in all 17 studies, refers to helping couples to manage family and marital concerns, including communication, teamwork, dyadic coping, and intimate relationships [31].

Dosage of interventions and follow-up time frame

The interventions involved a mean of 6.2 sessions (range: 1–16 sessions). Face-to-face sessions lasted for an average of 79 min (range: 45–120 min), and telephone contact for an average of 32 min (range: 20–45 min). These interventions lasted for an average of 8.3 weeks (range: 1–24 weeks from the first to the last session). The follow-up periods of these interventions were the following: 12 months ($n = 6$, 35.3%), 6 months ($n = 1$, 5.9%), 3 months ($n = 4$, 23.5%), 8 weeks ($n = 1$, 5.9%), and immediately post intervention ($n = 5$, 29.4%).

Delivery of the interventions

Nearly half of the interventions were delivered by psychologists ($n = 8$, 47.1%), about one fourth by specially trained therapists or counselors ($n = 4$, 23.5%), and the others by psychologists or social workers ($n = 2$, 11.7%), nurses ($n = 2$, 11.7%), and social workers ($n = 1$, 5.9%). All of these studies developed and followed specific intervention protocols and included regular reviews throughout the intervention program to maintain standards of treatment fidelity.

The majority of the interventions were delivered to couples face-to-face ($n = 13$, 76.5%). Three (17.6%) were delivered using a combination of face-to-face and telephone contact. One (5.9%) intervention was delivered only by telephone. Of the 13 interventions delivered face-to-face, two were delivered in groups, and the rest were delivered to couples at home or during visits to a clinic.

Outcomes of the interventions

The outcome measures of the interventions are summarized in Table S2. They can be discussed under three main dimensions – dyadic appraisal, dyadic coping, and dyadic adjustment – according to a development-contextual model of couples coping with chronic illness (CCCI) [32]. CCCI extends the Stress and Coping Model [33] by acknowledging the reciprocal nature of stress and coping within couples. This model consists of the three main domains of the coping process: dyadic appraisal, dyadic coping, and dyadic adjustment [32]. On the basis of CCCI, the dyadic outcomes contain both individual-level outcomes, including those for caregivers and patients, and dyadic-level outcomes as a whole. The presentation of the following dyadic outcomes will be in the sequence of patients, spousal caregivers, and the couple as a unit.

Dyadic appraisal

Dyadic appraisal includes the appraisal of illness, self-efficacy, and communication, which was conceptualized both at individual and dyadic level. The individual level refers to how patients and their partners perceived and understood their ability to cope with cancer, and their emotional status; and the dyadic level refers to how couples appraised the illness of cancer as a unit [32]. Communication between couples affected the couples' appraisal of their illness and efficacy.

A study examined how patients and spouses appraised the illness and caregiving experience using the Appraisal of Illness Scale, the Appraisal of Caregiving Scale, Beck's Hopelessness Scale (BHS) for appraising hopelessness, and the Mishel uncertainty in illness scale (MUIS) for appraising uncertainty [11]. The study found that patients in the family intervention group reported less uncertainty about their illness than controls at 4 months (MUIS, $m = 56.9$ vs. 60; $p < 0.05$). Spouses in the intervention group gave a less negative appraisal of caregiving (the Appraisal of Caregiving Scale, $m = 2.29$ vs. 2.44; $p < 0.01$), had less uncertainty about the illness (MUIS, $m = 59.5$ vs. 63.1;

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$p < 0.01$), and felt less of a sense of hopelessness (BHS, $m = 2.47$ vs. 3.07; $p < 0.05$) than spouses in the control group at 4 months. The level of uncertainty continued to be lower for spouses in the intervention group than for spouses in the control group at 8 months ($m = 59.5$ vs. 62.2; $p = 0.05$) [11]. Another study also assessed the appraisal of hopelessness (BHS), but no significant results were found [13].

Two studies assessed self-efficacy in illness and symptom management, using the Self-Efficacy for Symptom Control Inventory [20] and the Lewis Cancer Self-Efficacy Scale (LCSES) [11]. A study reported that spouses in the intervention group had higher self-efficacy concerning ways to manage symptoms of the illness than spouses in the control group at 4 months (LCSES, $m = 144.1$ vs. 138.8; $p < 0.05$) and 12 months (LCSES, $m = 143.8$ vs. 137.8; $p < 0.05$). Although there were no significant differences in self-efficacy between spouses in the intervention and control groups (effect size range: 0.03–0.30), a small-to-moderate effect size (0.30) was observed for Self-Efficacy for Symptom Control Inventory, with spouses in the intervention group reporting higher self-efficacy than spouses in the control group [20].

It was noteworthy that all of the interventions included promoting communication between a patient and the patient's spouse as a means of improving coping and adjustment to cancer. However, only four studies assessed the couples' patterns of communication, using the Lewis Mutuality and Interpersonal Sensitivity Scale [11], the Relationship Communication Scale [12], the Communication Subscale from the Partnership Questionnaire [21], and qualitative interviews [25]. All four studies reported greater improvements in communication between patients and spouses in the intervention group than in the control group immediately following the intervention. One study reported sustained improvements in communication for spouses in the intervention group compared with spouses in the control group at the 12-month follow-up point [11].

Dyadic coping

Dyadic coping strategies are the ways in which both patients and their spouses attempted to cope with the disease. Five intervention studies assessed changes in coping strategies after the intervention to support coping. Of the two studies that used brief COPE (BCOPE) [11,29], one reported that spouses in the intervention group used more active coping strategies at 12 months than spouses in the control group (brief COPE, $m = 30.5$ vs. 28.9; $p < 0.05$) [11].

The ways in which both partners coped were examined using the Ways of Coping Questionnaire-Cancer Version [25] measure. The results showed that patients in the intervention group made more efforts to cope than those in the control group immediately following the intervention, and that this was also the case at 12 months after the intervention [25]. Another study reported that patients in the intervention group scored higher on the Relationship-Focused Coping Scale than patients in the control group (least square means: 33.84 vs. 28.25, $p = 0.028$) [13].

Dyadic coping was measured using the Dyadic Coping Inventory [21]. It was found that couples who received a skill training intervention maintained a high level of dyadic coping, whereas couples in the control group showed a decline across the post-intervention period and the first follow-up at 6 months, and a subsequent increase in dyadic coping at 12 months [21].

Dyadic adjustment

Dyadic adjustments are measured in four dimensions – quality of life (QOL) and mental, physical, and marital satisfaction – according to the World Health Organization's health model [34].

Quality of life: Two studies assessed QOL using the Functional Assessment of Cancer Therapy (FACT)-Breast for breast cancer patients [26,27]. One study showed an improvement in Functional Assessment of Cancer Therapy (FACT)-Breast functional well-being with effect sizes of 0.97 (pre-post intervention) and 1.14 (preintervention-12 months follow-up) [26]. The other study reported that the patients in the intervention arm had higher means on all of the subscales (Physical, Emotional, Social/Family, and Functional) and the total QOL scale than patients in the control arm at the 6-month and 12-month follow-ups. The effect sizes ranged from 0.27 to 0.55 [27]. This study also assessed the QOL of the spouses using the Quality of Life Questionnaire for Spouses and the Illness Intrusiveness Rating Scale [27]. The findings showed that the spouses in the intervention arm consistently scored higher in emotional well-being and lower in illness intrusiveness than the spouses in the control arm. The effect sizes ranged from 0.26 to 0.54 [27].

Another study examined the effect of a brief one-off supportive intervention on the quality of life of prostate cancer patients and their partners using FACT-Prostate and Short Form (SF)-36 [35]. The results showed that scores for the physical and functional well-being of patients worsened between pre-surgery and 3 weeks post-surgery but improved between 3 weeks and 1 year post-surgery [35]. The same pattern was found in the subscale of role limitations due to physical health, emotional functioning, pain, energy, and social functioning assessed using SF-36 [35]. Spouses showed impairment in their role performance due to physical problems/emotional functioning at 3 weeks post-surgery compared with pre-surgery and improvement in role performance between 3 weeks and 1 year post-surgery. The social functioning of the couples remained constant between pre-surgery and 3 weeks post-surgery, but the couples experienced better social functioning at 1 year than at 3 weeks post-surgery [35].

The family intervention study of Northouse *et al.* [11] also assessed the QOL of both patients and spouses using FACT-General and Medical Outcomes Study SF-12. The findings indicated that spouses in the intervention group reported better physical QOL than controls at 8 months ($m = 44.9$ vs. 42.9; $p < 0.05$) and at 12 months ($m = 44.6$ vs. 42.3; $p < 0.01$) [11]. Spouses in the intervention group also had better SF-12 mental QOL scores ($m = 50.9$ vs. 49; $p < 0.05$) and overall FACT-General QOL scores ($m = 86.5$ vs. 83.5; $p < 0.01$) than those in the controls at 4 months, but not at 8 or 12 months [11]. In the two studies that assessed general QOL using SF-36 for patients and partners, no significant findings were reported [20,36].

Mental health – psychological distress, depression, and benefit finding

Psychological distress was conceptualized as emotional distress, anxiety, depression, worry, negative thoughts, and/or negative moods. In the 15 studies that assessed psychological distress, different instruments were used (Table S2).

It has been reported from randomized control trials that patients in the intervention groups experienced a significant decrease in psychological stress compared with those in the control groups immediately following the intervention [21–23,25,26] and at the final follow-up [21–23,25,26,35]. Other RCT studies have also reported significant improvements in the psychological status of spouses in the intervention groups compared to those in the control groups immediately following the intervention [20,22,23,26]; and at follow-up [22,23,26]. Besides RCT studies, there are also cohort studies reporting within-group improvements in the psychological distress of both patients and spouses after receiving the intervention [28–30,36] or at follow-ups [28,29].

In terms of depression outcomes, three studies reported improvements in depression for both patients and their partners at the time points of immediately following the intervention [22,23,28] and at 3 [22,23,28] and 6 months [23] after the intervention. One study did not show any significant improvement in depression for either patients or partners [13].

There were three studies that assessed the couples' benefit finding using the revised Benefit Finding Scale [29] and the Posttraumatic Growth Inventory [21,26]. One study showed that patients reported relative gains in post-traumatic growth immediately post-intervention and at the 1-year follow-up, while spouses showed an increase in posttraumatic growth at the 1-year follow-up [26]. Another study reported more post-traumatic growth in both patients and partners at two time points: post-test and the 1-year follow-up [21].

Physical health – physical distress and sexual functioning

Physical distress was conceptualized as the impact of the diagnosis of cancer and the side effects of treatment on the physical functioning, pain, fatigue, and sexual functioning of individuals. Of the four studies that assessed physical distress [11,20,26,35], one study among couples coping with breast cancer assessed the physical distress of patients using the Brief Fatigue Inventory, the Brief Pain Inventory, and the Rotterdam Symptom Checklist. The findings showed that patients in the intervention group reported more functional well-being (e.g., a greater ability to work and finding work more fulfilling), with large effect sizes: $d = 0.97$ at post-test and $d = 1.14$ at the 1-year follow-up, than those in the control group [26].

Of the two studies using the Expanded Prostate Cancer Index Composite among prostate cancer patients, one reported improvements among patients in the intervention group of less bowel trouble ($d = 0.47$), less urinary trouble ($d = 0.32$), less sexual trouble ($d = 0.45$), and fewer hormonal symptoms ($d = 0.38$) than among patients in the control group immediately following the intervention [20]. Another study reported that spouses in the intervention group were significantly less affected by the patient's physical distress than spouses in the control group immediately following the intervention [11].

Sexual functioning was conceptualized as the sexual function and satisfaction of patients and spouses since their diagnosis. Five studies assessed sexuality [11,20,23,25,26]. One study that assessed sexuality using the Sexual Self Schema reported more improvements in sexuality for patients in the intervention group than for those in the control group immediately following the intervention and at the 12-month follow-up [25]. One study using the Cancer Rehabilitation Evaluation System reported greater improvements in sexual functioning among patients in the intervention group than among those in the control group at the 6-month follow-up [23], while for spouses, improvements in sexual functioning were reported immediately following the intervention and at the 6-month follow-up [23].

Marital satisfaction

Marital satisfaction was conceptualized as the quality of the marital relationship between patients and partners and their satisfaction with the relationship.

Greater improvements in patients' marital satisfaction were reported in the intervention group than in the control group immediately following the intervention [13,21–24,26,30] and at the final follow-up [21–23,26,28]. Greater improvements in the marital satisfaction of the spouses of cancer patients were also reported in the intervention group compared with spouses in the control group immediately following the intervention [12,13,21–23,26] and at the final follow-up [21–23,26,28].

Marital satisfaction was measured using the Quality of Marriage Index and the Miller Social Intimacy Scale [24]. The findings of a study showed that both patients and spouses in the partner-assisted emotional disclosure intervention group reported increases in marital satisfaction after intervention when compared with patients and spouses in the education/support group. However, these positive effects of the partner-assisted emotional disclosure intervention on marital satisfaction occurred only when patients reported high levels of holding back from talking about cancer-related concerns to their spouse at baseline [24].

Discussion

In conducting this literature review, the aims were to explore the existing supportive care interventions for couples coping with cancer in terms of type of intervention, contents, approach, and outcome measurements; and to identify directions for future intervention research.

The reviewed studies provided some valuable suggestions on developing interventions for couples coping with cancer. It was noted that while all of these studies focused on the couples' communication and relationship, only about 40% focused on the subject of caregivers' self-care. Caregivers often place the needs of the patient above their own; as a result, they often spend less time than they otherwise might have on maintaining their own physical, mental, and social health [31], with possibly negative consequences for their health. Improving their self-care ability benefits not only caregivers but also their patients, and thus the couple as a dyad coping with cancer [31]. It is necessary to conduct a study to examine the self-care behaviors and physical health outcomes of spousal caregivers, if they are to continue to provide care for their partners with cancer.

All of the intervention studies included in the review reported positive outcomes to some extent, including improvements in the quality of life [11], psychosocial distress [26,28,30,36], sexual functioning [25], and marital satisfaction of both the patients and their partners [22,23,26,28]. However, none of these interventions evaluated all the outcomes, which included the couples' appraisal of illness, coping strategies, mental and physical health, and marital satisfaction, as dyads in the same study.

A variety of measurements were used in these intervention studies to measure similar concepts or outcomes. For example, many measurements of psychological distress were used to measure stress. This not only affected the research outcomes, but also made it difficult to compare the findings of these intervention studies with one another.

Study gaps identified

It is worth noting that none of these interventions were conducted in Asian countries. Also, although it has been reported that a group intervention can offer the participants an opportunity to meet with other caregivers and to share their experiences with people in similar situations [37–39], a group approach was adopted in only one intervention [40].

Despite the fact that numerous models were adopted in the intervention studies included in this review, in the majority of studies, there was a failure to describe how theory was used in the study. A dyadic theoretical framework on couples coping with cancer is lacking. Developing such a framework will not only make possible a better understanding of the related concepts in the context of couples coping with cancer, but also facilitate the development of interventions to support spousal caregiver-patient dyads in coping with cancer [41].

Limitations of this review

It is essential to acknowledge that this review has several limitations. Although studies in both English and Chinese were searched, no literature published in Chinese on couple-based interventions was identified. Other languages, conference abstracts, dissertations, and book chapters were not included.

The heterogeneity of the studies that were included, such as those targeting couples with different types of cancer, study designs including cohort studies and RCTs, and a group versus an individual couple intervention format, might have affected views of the efficacy of interventions and the comparability of outcome evaluations. This review was conducted on the assumption that the evidence in cohort studies has the same weighting as that of RCT studies. A couple-based approach may not be universally beneficial across different types of cancers, or suitable for all study designs and delivery formats. More studies and comparisons are needed to delineate which target group or intervention approach is the best.

Recommendations for future couple-based intervention research

On the basis of the results of this review and incorporated with the authors opinions, highlighted here are recommendations for healthcare professionals who seek to provide a couple-based intervention program that focuses on the couple as the unit of intervention and supports couples coping with cancer:

1. Target population: spousal caregivers caring for patients with cancer; where the spouse is an active caregiver, the intervention should be provided to the couple as a unit: dyads.
2. Theoretical framework and approaches of interventions: there should be a clear dyadic theoretical framework on couples' coping with cancer to guide the intervention, approaches, and outcome measures.
3. Types and contents of interventions: the intervention should be a combination of skills training and a psycho-educational intervention; including marital/

family support, skills training for patient care, and caregiver self-care.

4. Dosage of interventions and follow-up: a reasonable intervention dosage (i.e., six weekly sessions of 90 min each); with at least 3 months of follow-up is recommended.
5. Program flexibility: the barriers to taking part in interventions, and the reported attrition rates, point to the need for greater flexibility in the contents and mode of delivery of interventions for couples coping with cancer.
6. Delivery of interventions: interventions should be delivered by trained professionals, including nurses/counselors, psychiatrists, psychologists, and social workers using a face-to-face group mode.
7. Outcomes of interventions: the outcomes of interventions should assess both partners' illness appraisals, strategies for coping, and health outcomes, including mental, physical, and marital satisfaction.

Conclusion

These findings highlight the positive outcomes of couple-based interventions that focus on couples coping with cancer. Future studies on couple-based interventions can be conducted in different cultures, such as in Asia. The feasibility, applicability, and acceptance of the program should be considered in the whole process of developing, delivering, and assessing couple-based programs. Collaboration between researchers and clinicians is crucial to ensure the development of effective and accessible interventions targeting couples coping with cancer.

Author contributions

Qiuping Li: study conception/design; literature search/analysis; drafting of manuscript. Alice Yuen LOKE: supervision, literature analysis, and critical revisions for important intellectual content

Conflict of interest

The authors have no funding or conflicts of interest to disclose.

References

1. Chen ML, Chu L, Chen HC. Impact of cancer patients' quality of life on that of spouse caregivers. *Support Care Cancer* 2004;**12**:469–475.
2. Kurtz ME, Kurtz JC, Given CW, Given B. Relationship of caregiver reactions and depression to cancer patients' symptoms, functional states and depression – a longitudinal view. *Soc Sci Med* 1995;**40**:837–846.
3. Nijboer C, Tempelaar R, Sanderman R, Triemstra M, Spruijt RJ, Van Den Bos GAM. Cancer and caregiving: the impact on the caregiver's health. *Psycho-Oncology* 1998;**7**:3–13.
4. Braun M, Mikulincer M, Rydall A, Walsh A, Rodin G. Hidden morbidity in cancer: spouse caregivers. *J Clin Oncol* 2007;**25**:4829–4834.
5. Li Q, Loke AY. The positive aspects of caregiving for cancer patients: a critical review of the literature and directions for future research. *Psycho-Oncology* 2013;**22**:2399–2407.
6. Li Q, Loke AY. A spectrum of hidden morbidities among spousal caregivers for patients with cancer, and differences between the genders: a review of the literature. *Eur J Oncol Nurs* 2013;**17**:578–587.
7. Fletcher B, Miaskowski C, Given B, Schumacher K. The cancer family caregiving experience: an updated and expanded conceptual model. *Eur J Oncol Nurs* 2012;**16**:387–398.
8. Higginson IJ, Gao W. Caregiver assessment of patients with advanced cancer: concordance with patients, effect of burden and positivity. *Health Qual Life Outcome* 2008;**6**:42.
9. Given B, Wyatt G, Given C, Sherwood P, Gift A, DeVoss D, Rahbar M. Burden and depression among caregivers of patients with cancer at the end of life. *Oncol Nurs Forum* 2004;**31**:1105–1117.
10. Li Q, Loke AY. A literature review on the mutual impact of the spousal caregiver-cancer patients dyads: 'communication', 'reciprocal influence', and 'caregiver-patient congruence'. *Eur J Oncol Nurs* 2013;1–8. DOI: 10.1016/j.ejon.2013.09.003
11. Northouse LL, Mood DW, Schafenacker A, *et al*. Randomized clinical trial of a family intervention for prostate cancer patients and their spouses. *Cancer* 2007;**110**:2809–2818.
12. Manne SL, Kissane DW, Nelson CJ, Mulhall JP, Winkel G, Zaider T. Intimacy-enhancing psychological intervention for men diagnosed with prostate cancer and their partners: a pilot study. *J Sex Med* 2011;**8**:1197–1209.
13. McLean LM, Walton T, Rodin G, Esplen MJ, Jones JM. A couple-based intervention for patients and caregivers facing end-stage cancer: outcomes of a randomized controlled trial. *Psycho-Oncology* 2013;**22**:28–38. DOI: 10.1002/pon.2046
14. Hopkinson JB, Brown JC, Okamoto I, Addington-Hall JM. The effectiveness of patient-family carer (couple) intervention for the management of symptoms and other health-related problems in people affected by cancer: a systematic literature search and narrative review. *J Pain Symptom Manage* 2012;**43**:111–142.
15. Baik OM, Adams KB. Improving the well-being of couples facing cancer: a review of couples-based psychosocial interventions. *J Marital Fam Ther* 2011;**37**:250–266.
16. Baucom DH, Porter LS, Kirby JS, Hudepohl J. Couple-based interventions for medical problems. *Behav Ther* 2012;**43**:61–76.
17. Scott JL, Kayser K. A review of couple-based interventions for enhancing women's sexual adjustment and body image after cancer. *Cancer J* 2009;**15**:48–56.
18. Regan TW, Lambert S, Girgis A, Kelly B, Kayser K, Turner J. Do couple-based interventions make a difference for couples affected by cancer? A systematic review. *BMC Cancer* 2012;**12**:1–14.
19. Thomas BH, Ciliska D, Dobbins M, Micucci S. A process for systematically reviewing the literature: providing the research evidence for public health nursing interventions. *Worldviews Evid Based Nurs* 2004;**1**:176–184. DOI: 10.1111/j.1524-475X.2004.04006.x
20. Campbell LC, Keefe FJ, Scipio C, *et al*. Facilitating research participation and improving quality of life for African American prostate cancer survivors and their intimate partners: a pilot study of telephone-based coping skills training. *Cancer* 2007;**109**:414–424.
21. Heinrichs N, Zimmermann T, Huber B, Herschbach P, Russell DW, Baucom DH. Cancer distress reduction with a couple-based skills training: a randomized controlled trial. *Ann Behav Med* 2012;**43**:239–252. DOI: 10.1007/s12160-011-9314-9
22. Kuijer R, Buunk B, De Jong G, Ybema J, Sanderman R. Effects of a brief intervention program for patients with cancer and their partners on feelings of inequity, relationship quality and psychological distress. *Psycho-Oncology* 2004;**13**:321–334. DOI: 10.1002/pon.749
23. McCorkle R, Siefert ML, Dowd MF, Robinson JP, Pickett M. Effects of advanced practice nursing on patient and spouse

depressive symptoms, sexual function, and marital interaction after radical prostatectomy. *Urol Nurs* 2007;**27**:65–77.

24. Porter LS, Keefe FJ, Baucom DH, *et al*. Partner-assisted emotional disclosure for patients with gastrointestinal cancer results from a randomized controlled trial. *Cancer* 2009;**115**: 4326–4338. DOI: 10.1002/cncr.24578
25. Scott JL, Halford WK, Ward BG. United we stand? The effects of a couple-coping intervention on adjustment to early stage breast or gynecological cancer. *J Consult Clin Psychol* 2004;**72**:1122–1135.
26. Baucom DH, Porter LS, Kirby JS, *et al*. A couple-based intervention for female breast cancer. *Psycho-Oncology* 2009;**18**:276–283.
27. Kayser K, Feldman BN, Borstelmann NA, Daniels AA. Effects of a randomized couple-based intervention on quality of life of breast cancer patients and their partners. *Soc Work Res* 2010;**34**:20–32. DOI: 10.1093/swr/34.1.20
28. McLean LM, Jones JM, Rydall AC, *et al*. A couples intervention for patients facing advanced cancer and their spouse caregivers: outcomes of a pilot study. *Psycho-Oncology* 2008;**17**:1152–1156.
29. Collins AL, Love AW, Bloch S, *et al*. Cognitive existential couple therapy for newly diagnosed prostate cancer patients and their partners: a descriptive pilot study. *Psycho-Oncology* 2013;**22**:465–469. DOI: 10.1002/pon.2085
30. Manne S, Badr H. Intimacy and relationship processes in couples' psychosocial adaptation to cancer. *Cancer* 2008;**112**: 2541–2555.
31. Northouse LL, Katapodi MC, Song L, Zhang L, Mood DW. Interventions with family caregivers of cancer patients meta-analysis of randomized trials. *CA: A Cancer J Clin* 2010;**60**:317–339. DOI: 10.3322/caac.20081
32. Berg CA, Upchurch R. A developmental-contextual model of couples coping with chronic illness across the adult life span. *Psychol Bull* 2007;**133**:920–954. DOI: 10.1037/0033-2909.133.6.920
33. Folkman S. Positive psychological states and coping with severe stress. *Soc Sci Med* 1997;**45**:1207–1221.
34. Larson JS. The conceptualization of health. *Med Care Res Rev* 1999;**56**:123–136.
35. Thornton AA, Perez MA, Meyerowitz BE. Patient and partner quality of life and psychosocial adjustment following radical prostatectomy. *J Clin Psychol Med Settings* 2004;**11**:15–30. DOI: 10.1023/B: JOCS.0000016266.06253.95
36. Mohr DC, Moran PJ, Kohn C, *et al*. Couples therapy at end of life. *Psycho-Oncology* 2003;**12**:620–627.
37. Hudson PL, Lobb EA, Thomas K, *et al*. Psycho-educational group intervention for family caregivers of hospitalized palliative care patients: pilot study. *J Palliat Med* 2012;**15**: 277–281. DOI: 10.1089/jpm.2011.0347
38. Hudson P, Thomas T, Quinn K, Cockayne M, Braithwaite M. Teaching family carers about home-based palliative care: final results from a group education program. *J Pain Symptom Manage* 2009;**38**:299–308. DOI: 10.1016/j.jpainsymman.2008.08.010
39. Hudson P, Quinn K, Kristianson L, *et al*. Evaluation of a psycho-educational group programme for family caregivers in home-based palliative care. *Palliat Med* 2008;**22**:270–280. DOI: 10.1177/0269216307088187
40. Shields CG, Rousseau SJ. A pilot study of an intervention for breast cancer survivors and their spouses. *Fam Process* 2004; **43**:95–107.
41. Carbonneau H, Caron C, Desrosiers J. Development of a conceptual framework of positive aspects of caregiving in dementia. *Dementia* 2010;**9**:327–353. DOI: 10.1177/1471301210375316

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