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Self-Management Education for Patients with Cancer: Evidence Summary

D. Howell*, T. Harth*, J. Brown, C. Bennett, S Boyko, and *the Patient Education Program Committee*

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An assessment conducted in December 2022 deferred the review of Evidence Summary (ES) 20-3. This means that the document remains current until it is assessed again next year. The PEBC has a formal and standardized process to ensure the currency of each document (PEBC Assessment & Review Protocol)

You can access ES 20-3 here:
https://www.cancercareontario.ca/en/guidelines-advice/types-of-cancer/31726

* Howell and Harth were co-chairs for this Evidence Summary.

For information about this document, please contact Doris Howell, through the PEBC via:
Phone: 905-527-4322 ext. 42822 Fax: 905 526-6775 E-mail: ccopgi@mcmaster.ca

For information about the PEBC and the most current version of all reports, please visit the CCO website at http://www.cancercare.on.ca/ or contact the PEBC office at:
Phone: 905-527-4322 ext. 42822 Fax: 905 526-6775 E-mail: ccopgi@mcmaster.ca

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THE PROGRAM IN EVIDENCE-BASED CARE

The Program in Evidence-Based Care (PEBC) is an initiative of the Ontario provincial cancer system, Cancer Care Ontario (CCO). The PEBC mandate is to improve the lives of Ontarians affected by cancer through the development, dissemination, and evaluation of evidence-based products designed to facilitate clinical, planning, and policy decisions about cancer control.

The PEBC is a provincial initiative of CCO supported by the Ontario Ministry of Health and Long-Term Care (OMHLTC). All work produced by the PEBC is editorially independent from the OMHLTC.

OBJECTIVES AND RESEARCH QUESTIONS

A small Working Group of the PEBC's Patient Education Program Committee developed the following objective(s) for this evidence summary:

- To define self-management education interventions, and essential components or elements, with respect to cancer.
- More specifically, to identify self-management education interventions that have been shown to support patients with cancer in developing the skills needed for effective self-management of disease, and self-management of the acute or immediate, long-term, and late harmful effects of cancer treatment, while avoiding preventable complications and improving quality of life.

From these objectives, the following research questions were derived and intended to direct the search for available evidence that could inform decision-making to meet the objectives.

1. What is the effectiveness of self-management education interventions in reducing physical symptoms and emotional distress in adult patients with cancer?
2. What components or elements of each self-management education intervention are associated with the strength of its effectiveness?
3. Are there patient characteristics that are associated with each effect found?

TARGET POPULATION

The target population consists of adult patients 18 years and older in the treatment or recovery/survivorship phases of the cancer journey.

INTENDED PURPOSE

This research is in alignment with the Ontario Cancer Plan IV and meets the CCO Patient Education program's goals of:

- Advancing the quality of patient education services throughout Ontario.
- Enhancing and developing patient education skills and knowledge among cancer care providers.

- Ensuring that patients and their families have access to information, tools, and skills that support their engagement in self-management throughout their experience with cancer.

INTENDED USERS

This evidence summary is targeted for:

- Healthcare providers involved in the development of programs to enhance patient education and self-management support.
- Clinicians and researchers.

INTRODUCTION

Self-management education interventions support patients with cancer in acquiring or maintaining the skills needed to manage their life with a chronic disease. This includes the medical management of illness, the adjustment of roles and relationships, the management of the emotional and psychosocial impact of illness and of treatment, and the maintenance of a healthy lifestyle to optimize health across the trajectory of cancer. Patients who are taught self-management behaviours may feel more empowered and are better able to make informed decisions, cope with treatment and treatment-related side effects, and navigate the cancer system; as a result, they may be more satisfied with their care, and therefore have a better experience of cancer and of care. Moreover, as CCO moves to a chronic disease management approach to cancer, self-management of the acute, long-term, and late treatment effects of cancer, and the disease-related effects of cancer, will be a critical component. Furthermore, with the introduction of medical advances such as oral chemotherapy and the focus on symptom management as part of the cancer system experience, self-management support will become critical for ensuring adherence to medication regimens and to the effective management of symptoms. Research into other chronic diseases has demonstrated that the use of self-management behaviours can reduce disease symptoms, improve clinical and health outcomes, and significantly reduce both health service utilization and related healthcare costs.

Self-management is defined as the tasks that individuals must undertake to manage the symptoms, treatment, physical and psychosocial consequences, and lifestyle changes inherent in living with a long-term health condition or disability [1]. The National Health Service in the United Kingdom has also developed definitions for guiding self-management work streams. The National Health Service defines self-management specific to cancer survivorship as follows: “awareness and active participation by the person with cancer in their recovery, recuperation, and rehabilitation, to minimize the consequences of treatment, promote survival, and health and well-being” [2]. Self-management support is defined as “the systematic provision of education and supportive interventions by healthcare staff to increase the patients’ skills and confidence in managing their health problems, including daily decision-making, regular assessment of progress and problems, goal setting, and problem-solving support” [3]. The elements of these definitions are derived from systematic review evidence, with or without meta-analyses, that have examined the effectiveness of self-management education interventions, or programs, in traditional chronic diseases (e.g., diabetes, arthritis, and heart failure). These reviews assert that the most effective self-management education interventions, or programs, teach patients how to act on problems through five fundamental self-management skills: (i) Problem-solving that includes problem definition, generation of possible solutions, solution implementation, and evaluation of effect; (ii) Decision-making that includes application of knowledge about the condition and symptom recognition to make the appropriate judgments and daily adjustments in behaviours; (iii) Use of resources in ways that include awareness, but also how to use these resources effectively (i.e., system navigation); (iv) Patient-provider partnerships that include application of skills for relationship building with healthcare providers and for effective reporting of the tempo and trends of illness for shared decision-making; and, (v) Taking action: behaviours that include making a short-term action plan based on goals and carrying out the action plan. These key self-management skills are endorsed in health policy for the development and dissemination of self-management programs for chronic conditions in Canada [4] and are considered applicable to cancer [5].

Table 1 shows the eight core elements of self-management education interventions for patients with cancer that guided this evidence summary. These elements were derived from the grey literature [6] and other literature reviews in the field [7, 8], and were reviewed by the Working Group to guide decisions about the terms used in search strategies and to identify important components of self-management education intervention for final data extraction. This ensured a common understanding among the members of the Working Group regarding the main components of self-management education and their outcomes on patient skills, behaviours, and health [9, 10].

Table 1. Eight core elements of self-management education interventions

The self-management education intervention should:	
1.	Be tailored to the needs, characteristics, and life circumstances of the patient (Includes low health literacy and cultural diversity)
2.	Facilitate mastery and patients’ confidence (self-efficacy) so that they can manage their illness and related symptoms
3.	Support the patient in developing effective skills to communicate with health care providers
4.	Facilitate the patient’s understanding and confidence (self-efficacy) for managing their care (Includes health and support services system navigation)
5.	Be coached by a specially trained instructor
6.	Be supported by collaboration and guidance from the healthcare team
7.	Facilitate uptake of health behaviours through goal setting/action planning
8.	Support development and practice of problem solving skills to address barriers to behaviours

Core element 1 states that self-management interventions or programs, should be tailored specifically to the needs, characteristics (including health literacy), life circumstances, skills, and current levels of activation or engagement of patients in managing their health. Core element 2 suggests that having an active role in self-management of a long-term health condition can empower patients to act for themselves and increases their confidence (i.e., facilitates or builds self-efficacy skills) to manage the multidimensional effects of cancer and its treatment [10]. Self-management education supports the patient to become an active partner in their day-to-day health care and, as delineated in core element 3, effective self-management education facilitates effective communication with healthcare providers and effective use of resources (including system navigation). Likewise, core element 4 suggests that successful self-management support should include individualized assessment to facilitate each patient’s understanding of and confidence in managing their illness. Teaching and coaching by an individual specially trained in both self-management knowledge and skills for facilitating behaviour change (core element 5), and support from the collaboration and guidance of a team of healthcare experts (core element 6), are important keys to effective self-management interventions. Finally, facilitating the uptake of health behaviours through coaching patients in goal setting and action planning (core element 7), and supporting patients’ development of problem-solving skills (core element 8) are also essential facets of effective self-management education interventions. All the components in this framework guided our review of the evidence and, specifically, our reaching consensus on what self-management education interventions entail; however, our intent was not, as is typical, to show causal relationships among these elements (see Table 1).

Information provision to change knowledge alone is insufficient for making behavioural change. Self-management education interventions focus on supporting patients in the daily decision-making necessary to manage an illness and the uptake of health-related behaviours to improve clinical and other health outcomes. Lorig and Holman [9] proposed that the goals of self-management education are to empower patients to perform the following three sets of everyday tasks: (i) medical management of illness that includes managing medical/treatment regimens and symptoms, (ii) adjusting to changes in roles and activities impacted by an illness, and (iii) managing the emotional impact of an illness. The development of these tasks can be facilitated by an instructor (through educator action or intervention strategies) and adopted by the person with cancer through several techniques, including action plans, problem solving, self-monitoring, stress management, sharing experiences, coaching, motivation and confidence building, positive feedback, and peer modelling [2].

Self-management education interventions can be *adjustment-focused*, facilitating adaption to stress and emotional demands of an illness by, for example, enhancing coping skills) or *problem-focused* (e.g., managing specific problems or symptoms, such as fatigue or relationship difficulties), or a mix of both [2]. They are typically delivered in the form of group sessions, one-to-one counselling, or technology-assisted methods (e.g., web-based, telephone), and can be professional-led, peer-led, or use a co-tutor (i.e. peer and health professional-led) approach.

The planned objective of this evidence summary was to develop a definition of self-management education interventions in the context of cancer. More specifically, to identify the eight core self-management educational interventions used in cancer research that have been shown to support patients with cancer in developing the skills needed for effective self-management of the acute, long-term, and late detrimental effects of disease and treatment, while avoiding preventable complications and improving quality of life. The review is intended to be a resource to guide healthcare professionals in supporting people with cancer to develop self-management skills. These objectives and the research questions above were outlined in the project plan and approved by the Working Group and its sponsor, CCO's Patient Education Program, on April 21, 2015. See Appendix A for a list of the Working Group members.

METHODS

This evidence summary was developed using a planned two-stage method, summarized here and described in more detail below.

1. Search and evaluation of existing systematic reviews: If one or more existing systematic reviews was identified that addressed the research questions and were of reasonable quality, then those systematic reviews would form the core of the evidentiary base.

2. Systematic review of the primary literature: This evidence summary would focus on those areas not covered by existing reviews if any were located and accepted.

Search for Systematic Reviews

A systematic search was conducted in OVID MEDLINE (2005 through April 2015) EMBASE (2005 to 2015 week 15), the Cochrane Database of Systematic Reviews (Issue 4, April 2015), CINAHL (2005-2015), PsychINFO (2005 to 2015). Keywords searched include "self-management patient education" or "patient education" (see Appendix B).

Systematic reviews were included if:

1. They evaluated randomized controlled trials (RCTs) for patients with any form of cancer who received self-management education interventions.

2. The literature search strategy for the existing systematic review was reproducible (i.e., reported) and appropriate.

3. The existing systematic review reported the sources searched as well as the dates that were searched.

Identified systematic reviews that met the eligibility criteria would be assessed using the AMSTAR tool [11]. The results of the AMSTAR assessment would be used to determine whether or not an existing review could be incorporated as part of the evidentiary base. Any identified review that did not meet the criteria above, whose AMSTAR assessment indicated important deficiencies in quality, or that was otherwise not incorporated as part of the evidence base, was reported in the reference list but not further described or discussed.

Search for Primary Literature

Assuming that no existing systematic review was identified, or that identified reviews were incomplete in some fashion, a systematic review of the primary literature was also planned. This review would be reduced in scope, such as a reduction in subject areas covered, time frames covered, etc., based on the scope of incorporated existing reviews. The criteria described below were written assuming no existing reviews would be incorporated.

Study Selection Criteria and Protocol

The target population consisted of adult patients 18 years and older in the treatment or recovery/survivorship phases of the cancer journey. Self-management education interventions were included if they included at least one of the eight core elements outlined in Table 1 and they addressed the physical, psychosocial, or supportive care needs of the patients with cancer, incorporating various teaching strategies (e.g., traditional lectures, discussion, written materials, audiotapes, videotapes, etc.) and modes of teaching delivery (e.g., group-based, individual-based, structured, unstructured, etc.).

The following intervention types were excluded:

- Interventions that were psychotherapy sessions, or support groups or networks.
- Interventions solely based on the dissemination of leaflets or videos.
- Interventions dealing with prevention and screening for cancer.
- Interventions related to general diet and exercise.
- Studies focused on family members.
- Meditation, art, and music therapy interventions.
- Interventions primarily designed to help patients make treatment choices.

Other exclusion criteria:

- Letters, comments, or editorials.
- Single-arm studies.
- Nonsystematic reviews.
- Non-English publications.

Viable comparison groups included self-management education interventions versus usual care or versus other patient education interventions.

Outcomes of interest were related to the cancer and/or its treatment, and included physical symptoms, change in function, physical distress, emotional distress, quality of life, or long-term or late harmful effects.

A review of the titles and abstracts that resulted from the search was initially performed by JB. For those items that warranted full-text review, JB and other members of the Patient Education Program Committee (DH, TH, SB, CB) reviewed each item for inclusion in the evidence summary.

Data Extraction and Assessment of Study Quality and Potential for Bias

Data from the included studies was independently extracted by JB. If more than one publication addressed the same study, only the most updated or recent version of the data would be reported in the results.

Important quality features such as population, intervention type, control group, and outcomes measured for each study were extracted for the included studies.

RCTs identified in the updated literature search that met the inclusion criteria were evaluated for key methodological characteristics using the information provided in the trial reports. The following elements were assessed: randomization sequence generation, allocation concealment, blinding, incomplete outcome data, selective reporting, and other potential biases.

Synthesizing the Evidence

If clinically homogeneous results from two or more trials were available, a meta-analysis would have been conducted using the Review Manager software (RevMan 5) available from the Cochrane Collaboration [11, 12]. For time-to-event outcomes, hazard ratios (HR), rather than the number of events at a certain time point, would be the preferred statistic for meta-analysis and would be used as reported. If the HR and/or its standard error were not reported, they would be derived from other information reported in the study, if possible, using the methods described by Parmar et al. [13]. For all outcomes, the generic inverse variance model with random effects or other appropriate random effects models in RevMan software would be used.

RESULTS

Search for Existing Systematic Reviews

Six systematic reviews were found [7, 14-18]. However, either they did not address self-management interventions specific to the general population of patients with cancer, or their defined outcomes were too specific to include the breadth of possible cancer-related symptoms of interest in the present evidence summary. These systematic reviews will not be discussed further.

Search for Primary Literature

Literature Search Results

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow diagram summarizing this information is provided in Appendix C.

Articles were retrieved from the following databases: Medline (n=2043), Embase (n=2262), PsycINFO (n=274), and CINAHL (n=436). After duplicates were removed from the combined search results, 2105 articles were assessed by title for possible inclusion in the evidence summary. Of these, 1504 articles were rejected `and the remaining 601 were assessed at the abstract level. Three hundred and twenty-six articles were assessed at full text.

Fifty-six articles from 43 RCTs examined self-management education interventions for patients with cancer [19-74]. One study was published in abstract form [38] and will not be discussed further given the limited information provided; the remaining 42 RCTs (55 articles) were full reports.

Trial Characteristics

The 42 RCTs were published between 2005 and 2015. Sixteen studies examined patient populations with breast cancer [20, 24, 26, 27, 31, 32, 36, 37, 50-52, 59, 63, 65, 66, 70], two examined patients with prostate cancer [19, 54], two examined patients with lung cancer [29, 61], one examined patients with malignant melanoma [23], and one examined patients with colorectal cancer [67]. Eleven studies had patient populations diagnosed with a variety of cancers [21, 33, 34, 40, 42, 45, 47, 58, 60, 64, 69]. Eight examined patients with cancer who were undergoing chemotherapy or radiotherapy treatment [22, 39, 41, 48, 49, 56, 68, 72] and one examined patients with newly created ostomies [30]. The mean age of the trial participants ranged from 42.3 years [50] to 65.6 years [58]. Of the studies whose patient population had both male and female participants, the percentage of women ranged from 17% [29] to 85% [34].

Twenty-six of the interventions were primarily delivered to the patients in a one-on-one format [21, 22, 30, 31, 33, 34, 36, 37, 39, 40, 42, 47-49, 52, 56, 59-61, 63-68, 72, 75], 14 were group-based [19, 20, 23, 24, 27, 29, 32, 41, 45, 51, 54, 69-71] and two were Internet-based [26, 76]. All studies were problem focused, with two having the additional component of being adjustment focused, specific to cancer survivorship [37, 69].

Study Design and Quality

Four of the RCTs were pilot studies [19, 42, 50, 51] and the remaining were full RCTs. There were six three-arm trials [26, 31, 45, 61, 63, 72] and one four-arm trial [39]. The remaining trials were two-arm. The number of randomized patients ranged from 21 [51] to 483 [37]. Intervention durations ranged from three weeks [37] to over one year [59]. Sixteen of the RCTs had four follow-up measurements [22, 23, 26, 27, 29, 31, 33, 42, 45, 47, 51, 56, 59, 64-66], 14 had three follow-ups [19-21, 24, 32, 34, 37, 39, 49, 52, 61, 67, 70, 72], and 11 had two follow-ups [36, 40, 41, 48, 50, 51, 54, 60, 68, 69, 75]. One study measured data at post-intervention only [30]. See Appendix D for individual study characteristics.

The results of the trial quality assessment are summarized in Appendix E. More than 75% of the RCTs described the method used to generate the allocation sequence in sufficient detail to allow an assessment of whether it should produce comparable groups; these RCTs were rated at low risk of bias. Around 75% described the allocation sequence in enough detail to determine that allocation was adequately concealed and were rated at low risk of bias. Since it would be very difficult to blind participants to the educational intervention, all studies were rated at high risk of performance bias for this category. More than 50% of studies did not blind the outcome assessor and thus, were rated at high risk for detection bias. Slightly over 75% adequately reported attrition and exclusions. Most studies (98%) were free of suggestion of selective outcome reporting and other problems that could put them at high risk of bias.

Interventions

Most of the studies (90%) employed self-management education interventions that facilitated self-efficacy skills to give patients confidence to manage their conditions (core element 2). Seventy-six percent (n=32) used elements that facilitated uptake of health behaviours through action plans (core element 7) and 57% (n=24) tailored their intervention to the needs of the patient (core element 1). Half of the studies (50%) used elements that assessed the patient's understanding and confidence for managing their care (core element 4). Forty percent (n=17) used coaching by a specially trained instructor (core element 5) and 38% (n=16) supported the development of problem solving skills (core element 8). Twenty eight percent (n=12) helped the patient to develop effective skills to communicate with primary care physicians and others (core element 3) and 26% (n=11) were supported by collaboration and guidance of healthcare team experts (core element 6). See Appendix F for a list of the core elements used in each of the interventions.

One study used all eight core elements, while two used seven, four used six, four used five, and 17 used four. Ten studies used three core elements, three used two, and one used one (see Appendix F). There were a total of 30 different combinations of core elements used by the studies. Four studies used the combination of tailoring the intervention to the needs of the patient, facilitating self-efficacy skills, supporting the patient's understanding and confidence for managing their care, and facilitating uptake of health behaviours through action plans (core elements 1,2,4,7) [31, 50, 56, 65]. Three studies used a combination of facilitating self-efficacy, supporting collaboration with healthcare providers, facilitating uptake of health behaviours through action plans, and supporting the development and application of problem solving skills (core elements 2,6,7,8) [22, 23, 27]. Another three studies used a combination of facilitating self-efficacy, facilitating the patients understanding and confidence, coaching by a specially trained instructor, and facilitating uptake of health behaviours through action plans (core elements 2,4,5,7) [29, 30, 70]. Of the remaining 27 different combinations of self-management core elements, one was used by three studies (core elements 1,2,7) and three were used by two studies each (core elements 2,7; core elements 2,3,5; and core elements 2,4,7). The remaining 23 combinations were used by single studies (see Appendix F).

Outcomes

The outcomes of interest for this review are organised according to the main goals of self-management education interventions: namely, managing symptoms and medical regimes, managing role and relationship changes, and managing the emotional impact of cancer.

Managing Symptoms and Medical Regimens

Eighteen studies examined fatigue (see Table 2) and 11 examined pain (see Table 3). Five studies examined physical function/ability [24, 31, 32, 50, 69], and six examined symptom limitations/severity [33, 52, 60, 61, 67, 77]. Five examined nausea/anorexia/vomiting [21, 24, 32, 41, 72], five examined sleep [31, 32, 65, 69, 73], four examined general health status [32-34, 39], two examined breathlessness/dyspnea [29, 32], and three examined constipation [60, 61, 72]. One study examined healthcare use [49], one examined chemotherapy-related symptoms [21], one examined complications of lymphedema [59], one examined ostomy care [30], and one examined provider communication [69].

Table 2 shows the 18 RCTs examining change in fatigue severity/intensity as an endpoint for the intervention. Ten [25, 29, 32, 50, 56, 63-66, 72] of the 18 studies found significant increases in fatigue, while the remaining studies found no such differences.

Four studies examining fatigue used the combination of tailoring the intervention to the needs of the patient, facilitating self-efficacy skills and supporting the patient's understanding and confidence for managing their care, and facilitated uptake of health behaviours through action plans (core elements 1,2,4,7) [31, 50, 56, 65]. Among these, Lee et al. [50] reported overall improvements in fatigue, dietary quality, physical functioning, and appetite loss following a diet and exercise intervention. Likewise, using this same combination of core elements, patients in a supportive care intervention [56] reported significantly less fatigue, compared with the controls; subjects in an exercise group [65] also reported significantly less fatigue along with fewer sleep disturbances, higher exercise self-efficacy, more exercise behaviour, and better exercise capacity compared with those in the usual-care group. The fourth study using this combination had a nonsignificant result for decreases in fatigue [31] (see Table 2 and Appendix D).

Two studies examining fatigue used the combination of facilitating self-efficacy skills, supporting the patient's understanding and confidence for managing their care, and facilitating uptake of health behaviours through action plans (core elements 2,4,7) [61, 63]. Of these, a psychoeducational videotape intervention [63] found a significant difference for fatigue, while a nurse-assisted symptom management intervention [61] found no such decrease. There were no common combinations among the remaining studies examining fatigue.

Table 2. Studies Reporting Change in Fatigue[1] as an Outcome

Authors	Study Description/ # of Core Elements (Core Elements)[2]	Study Duration / Longest Follow-up[3]	Group Differences over Time[4,5]
Aranda et al., 2012 [21]	Novel nurse-led prechemotherapy education intervention / **2** (1,2)	2 CT cycles /2nd CT cycle	CT-related fatigue - NS
Armes et al., 2007 [22]	A brief behaviourally oriented intervention / **4** (1,4,5,7)	9 to 12 wks / 9 mos PI	Cancer-related fatigue - NS
Boesen et al., 2005 [25]	Psychoeducational intervention / **4** (2,6,7,8)	6 wks / 4 mos	T1-T3 Mean change (SD) -0.80 (4.3) versus 0.46 (4.6); p=0.04
Boesen et al., 2011 [24]	Psychosocial group intervention / **4** (1,2,6,7,8)	10 wks / 12 mos	NS
Chan et al., 2011 [29]	Psychoeducational RCT / **4** (2,4,5,7)	12 wks/ 12 wks	Mean (SD) 3.8 (2.6) – 3.2 (2.8) versus 4.4 (2.8) – 3.9 (2.8); p=0.01
Dodd et al., 2010 [31]	PRO-SELF fatigue control program based on self-care and adult learning theory / **4** (1,2,4,7)	4 to 6 mos / 12 wks PT	NS
Dolbeault et al., 2009 [32]	Psychoeducational group intervention (a psychoeducationally structured model based on CBT principles) / **5** (2,3,5,7,8)	8 wks / 1 mo	Mean (SD) 2.24 (0.81) — 2.08 (0.73) versus 2.09 (0.68) — 2.14 (0.77); p=0.04
Lee et al., 2014 [50]	WSEDI aimed at enhancing exercise and dietary behaviours / **4** (1,2,4,7)	12 wks / 12 wks	Group differences 16.9 — 13.5 versus 16.7 — 15.3; p=0.03
Loprinzi et al., 2011 [51]	Stress management and resilience training / **3** (1,2,7)	12 wks / 12 wks	NS
Ream et al., 2006 [56]	Supportive intervention for fatigue in patients undergoing chemotherapy / **4** (1,2,4,7)	3 mos / 4th CT cycle	Fatigue - Mean (SD) 38.8 (28.9) – 30.6 (27.7) versus. 42.6 (28.8) – 41.6 (29.4); p=<0.05 Impact of fatigue on pastimes - Mean (SD) 39.7 (37.4) – 28.7 (28.8) versus 45.1 (34.3) – 43.6 (32.6); p=<0.05 Extent of fatigue - NS Disruption due to fatigue - NS
Ream et al., 2015 [68]	Exploratory trial with an embedded telephone interview element / **1** (5)	Prior to CT / completion of CT	Fatigue intensity - ES=0.18 Fatigue self-efficacy - ES=-0.04
Sikorskii et al., 2007 [61]	NASM vs. automated telephone symptom management (ATSM) / **3** (2,4,7)	6 wks / 10 wks	NS
Stanton et al., 2005 [63]	Psychoeducational videotape intervention for patients with breast cancer / **3** (2,4,7)	NR / 12 mos	Mean (SD) change scores 5.0 (1.5) versus 9.06 (1.54) versus 3.84 (1.58); p=0.049
Strong et al., 2008 [64]	Nurse-delivered complex intervention designed to treat major depressive disorder / **8** (1,2,3,4,5,6,7,8)	3 mos / 12 mos	T0-T3: mean change = 49·7 (27·1) versus 55·4 (27·6);p=0.003
van Waart et al., 2015 [72]	Low-intensity, home-based physical activity program (Onco-Move) and a moderate- to high-intensity, combined supervised resistance and aerobic exercise program (OnTrack) versus UC / **4** (1,2,5,7)	Last CT treatment / 6 mos after CT	OnTrack versus UC T0-T1 – ES=0.63; p<0.001; T0—T2 NS Onco-Move versus UC - NS OnTrack versus Onco-Move ES=0.42; p =0.021; T0-T2 - NS

Table 2. Studies Reporting Change in Fatigue[1] as an Outcome

Authors	**Study Description/ # of Core Elements (Core Elements)[2]**	**Study Duration / Longest Follow-up[3]**	**Group Differences over Time[4,5]**
Vargas et al., 2014 [73]	Cognitive-based stress management intervention trial / **4** (2,3,4,7)	NR / 12 mos	NS
Wang et al., 2011 [65]	Revised exercise program tailored to Taiwanese women with breast cancer / **4** (1,2,4,7)	6 wks / 6 wks	FACIT-F scores 40.5 to 45.8 versus 40.1 to 40.0; p=0.001
Yates et al., 2005 [66]	Psychoeducational intervention in improving cancer-related fatigue / **3** (1,7,8)	NR /6 wks PI	Fatigue management behaviours - NS Fatigue severity change score 1.0 versus. 2.3; p=0.01 Fatigue interference change score 0.5 versus 2.1; p=0.01 Worst fatigue change score 1.0 versus 2.6; p=0.01 Average fatigue change score 1.0 versus 2.3; p=0.02

[1] Outcome described as change in fatigue severity/intensity unless otherwise stated. [2] The eight core elements of self-management patient education: 1) are tailored to the needs of the patient, 2) facilitates self-efficacy skills to give patients confidence to manage their condition, 3) supports the patient to develop effective skills to communicate with primary care physicians and others, 4) facilitates the patient's understanding and confidence/self-efficacy for managing their care, 5) coached by a specially trained instructor, 6) supported by collaboration and guidance of the healthcare team experts, 7) facilitates uptake of health behaviours through action plans, 8) supports development and application of problem solving skills [3] As reported in article [4] Intervention group versus control group unless otherwise stated. [5] Major results shown to longest significant time effect sustained.

ATSM = automated telephone symptom management; CBT = cognitive behavioural therapy; CT = chemotherapy; ES = effect size; FACIT-F = functional assessment of chronic illness treatment-fatigue; mo = month; mos = months; NASM = nurse-assisted symptom management; NR = not reported; NS = not significant; PI=post intervention; PT = post treatment; RCT = randomized controlled trial; SD = standard deviation; UC = usual care; wks = weeks; WSEDI = web-based self-management exercise and diet intervention program.

There were no indications from the studies that any patient characteristics were associated with a significant decrease in fatigue. Likewise, there were no indications, for any other outcomes, that patient characteristics were associated with the strength of the outcome. Thus, Question 3 will not be discussed further in the results section.

Table 3 presents the 11 RCTs examining change in pain severity/intensity as an endpoint for the interventions. A study on a modular transitional nursing intervention [40] found a significant reduction in barriers to pain management, while a study of a tailored education and coaching intervention [46] reported a significant decrease in pain-related impairment among test subjects. The low-intensity, home-based physical activity intervention conducted by van Waart et al. [72] was linked with significant decreases in pain for patients in the two intervention groups compared with the control group. A psychoeducational group intervention study [32] and a psychosocial group intervention study [24] both found non-significant group differences in pain over time for the intervention, compared with the controls. A study of a collaborative management intervention [34], a self-management pilot study [42], a study of an adapted chronic disease self-management intervention [69], a study of a pain control program [58], a fatigue –control program based on self-care [31] and a study of a nurse-delivered complex intervention [64] all found nonsignificant differences in pain between groups over time. There were no common combinations of core elements among the studies examining pain; as such, Question 2 could not be assessed for the outcome of pain.

Table 3. Studies Reporting Change in Pain Severity/Intensity[1] as an Outcome

Authors	Study Description/ # of Core Elements[2] (Core Elements)	Study Duration / Longest Follow-up[3]	Group Differences over Time[4,5]
Boesen et al., 2011 [24]	Psychosocial group intervention / **5** (1,2,6,7,8)	10 wks /12 mos	NS
Dodd et al., 2010 [31]	Fatigue-control program based on self-care and adult learning theory / **4** (1,2,4,7)	4 to 6 mos /12 wks	NS
Dolbeault et al., 2009 [32]	Psychoeducational group intervention modelled on CBT principles / **5** (2,3,5,7,8)	8 wks / 1 mos PI	NS
Ell et al., 2011 [34]	Collaborative care management intervention for patients with cancer / **7** (1,2,4,5,6,7,8)	12 mos / 24 mos	NS
Jahn et al., 2014 [40]	Modular transitional nursing intervention / **5** (1,2,4,5,8)	Duration of hospital stay / 7 days after hospital discharge	Barriers to patient-related pain management: difference in scores -0.49 points (95% CI, -0.87 to 0.12; p=0.02)
Koller et al., 2013 [42]	Pilot study of self-management intervention / **7** (1,2,3,4,5,7,8)	10 wks / 22 wks	NS
Kravitz et al., 2011 [46]	Tailored education and coaching intervention / **3** (2,3,5)	2 wks / 12 wks	Pain severity - NS (after adjustment for analgesic treatment) Pain-related impairment -0.25 point reduction on five-point scale (95% CI, -0.43 to -0.06; p=0.01)
Risendal et al., 2014 [69]	Adapted chronic disease self-management program / **3** (2,7,8)	NR / 6 mos PI	NS
Rustøen et al., 2014 [58]	PRO-SELF pain control program modified for Norwegian patients with cancer / **5** (1,2,3,4,7)	6 wks / 6 wks (end of intervention)	NS
Strong et al., 2008 [64]	Nurse-delivered complex intervention designed to treat major depressive disorder / **8** (1,2,3,4,5,6,7,8)	3 mos / 12 mos	NS
Van Waart et al., 2015 [72]	Low-intensity, home-based physical activity program (Onco-Move) and a moderate- to high-intensity, combined supervised resistance and aerobic exercise program (OnTrack) versus UC / **4** (1,2,5,7)	Last CT treatment / 6 mos after CT	On Track versus UC, T0-T1 ES=0.46; p =.011; T0-T2 NS Onco-Move versus UC ES= 0.60; p=0.003; T0-T2 NS OnTrack versus Onco-move - NS

[1] Outcome described as change in pain severity/intensity unless otherwise stated. [2] The eight core elements of self-management patient education: 1) are tailored to the needs of the patient, 2) facilitates self-efficacy skills to give patients confidence to manage their condition, 3) supports the patient to develop effective skills to communicate with primary care physicians and others, 4) facilitates the patient's understanding and confidence/self-efficacy for managing their care, 5) coached by a specially trained instructor, 6) supported by collaboration and guidance of the healthcare team experts, 7) facilitates uptake of health behaviours through action plans, 8) supports development and application of problem solving skills. [3] As reported in article [4]Intervention group versus control group unless otherwise stated. [5] Major results shown to longest significant time effect sustained.

CBT = cognitive behavioural therapy; CI = confidence interval; CT = chemotherapy; ES = effect size; mos = months; NR = not reported; NS = not significant; PI = post intervention; UC = usual care; wks = weeks.

In regards to other symptom management outcomes (see Appendix D) the study reported by Lee et al. found a significant increase in physical functioning for patients in the exercise and diet group compared with the controls [50]. Conversely, the studies reported by Dodd et al. [31] and Dolbeault et al. [32] found no significant differences in physical functioning, and the studies reported by Boesen et al. [24] and Risendal et al. [69] found no significant differences in physical ability and energy, respectively.

Wang et al. [65] noted significant decreases in sleep disturbance, while Risendal et al. [69] found moderate effect sizes for improvement in sleep. Dolbeault et al. [32], Dodd et al. [31], and Vargas et al. [73] all found nonsignificant results for improvement in quality of sleep.

Aranda et al. found significant decreases in the prevalence of vomiting, in vomiting severity, and in vomiting bother among patients with cancer who were treated with chemotherapy [21]. Likewise, in their physical activity intervention, van Waart et al. found significant decreases over time for chemotherapy-related nausea and vomiting for patients in their two intervention groups, compared with patients in the usual care group [72]. Dolbeault et al. [32] and Boesen et al. [24] both found no differences over time for nausea-related symptoms between groups and Jahn et al. [41] found no significant differences for anorexia, nausea, and emesis.

In a cognitive behavioural intervention for symptom management, Sherwood et al. found a significant decrease in symptom severity in a group of patients with breast cancer [60]. Another cognitive behavioural intervention, conducted by Doorenbos et al., was also linked with a significant decrease in symptom limitations among a group of individuals diagnosed with solid tumour cancers [33]. Likewise, a study of a nursing intervention to assist patients in developing and maintaining self-management skills postoperatively [14] and a study using a self-efficacy enhancing intervention [67] both found a significant decrease in symptom distress. Another study, reported by Børøsund et al., also found a significant decrease in symptom distress for patients in the intervention group [26]. A study reported by Sikorskii et al. found no significant differences in symptom limitations in patients with lung cancer who were enrolled in a multidimensional interactive intervention for symptom management [61].

Doorenbos et al. [33] found no differences in chronic health conditions between groups; likewise, Dolbeault et al. [32] found no differences in health status. Ell et al. [34] and Jacobsen et al. [39] also found nonsignificant differences in physical well-being. The remaining symptom management outcomes are mentioned in Table 2 and 3 and in the study results, available in Appendix D.

None of the studies dealing with other symptom management outcomes had similar combinations of core elements, and thus they not assessed with respect to Question 2. Complete outcome data can be found in Appendix D.

Coping with/Adjusting to Role in Cancer and Quality of Life

Table 4 shows the 16 RCTs examining coping or quality of life as endpoints for the interventions. Overall, 10 of the 16 studies detected significant improvement in behavioural coping, cognitive coping, and avoidance coping [25], interpersonal relationships and role functioning [32], quality of life [36, 41, 51, 52, 54, 65, 71], and social and functional well-being [34].

Two studies examined the combination of building self-efficacy, supporting the intervention by collaboration, facilitating uptake of health behaviours through action plans, and supporting the development and application of problem solving skills (core elements 2,6,7,8) [19, 25]. One of these studies found significant differences in behavioural and cognitive coping [25] while the other found moderate to low effect sizes for prostate-specific quality of life and general quality of life [19]. Two studies used the combination of tailoring the intervention to the needs of the patient, facilitating self-efficacy, facilitating confidence and understanding, and facilitating uptake of health behaviours through action plans (core elements 1,2,4,7) [50, 65]. One found a significant increase in quality of life [65] while the other found nonsignificant results for role functioning, cognitive functioning, social functioning, and global quality of life [50]. No other common combinations of the eight core elements were found for studies examining quality of life.

Table 4. Studies Reporting Quality of Life[1] /Role Function as an Outcome

Authors	Study Description/ # of Core Elements[2] (Core Elements)	Study Duration / Longest Follow-up [3]	Group Differences over Time[4,5]
Ames et al., 2011 [19]	Multidisciplinary QofL Intervention / **4** (2,6,7,8)	9 wks / 6 mos PI	QofL (Prostate cancer specific) ES = 0.10 General QofL (general - physical) ES = 0.10 General QofL (general - mental) ES = -0.04
Boesen et al., 2011 [24]	Psychosocial group intervention / **5** (1,2,6,7,8)	10 wks / 12 mos	Role function - NS
Boesen et al., 2005 [25]	Psychoeducational intervention / **4** (2,6,7,8)	6 wks / 4 mos	Mean change (SD) Behavioural coping - 1.81 (6.5) versus -1.33 (6.4); p=0.0007 Cognitive coping -0.01 (6.9) versus -3.4 (8.6); p=0002 Avoidance coping - NS
Dolbeault et al., 2009 [32]	Psychoeducational group intervention (a psycho-educationally structured model based on CBT principles) / **5** (2,3,5,7,8)	8 wks / 1 mo PI	Mean change (SD) Interpersonal relationships 17.64 (4.17) - 18.80 (3.49) versus 17.79 (3.74) - 17.41 (3.67); p=0.007 Role functioning 1.84 (0.83) - 1.55 (0.66) versus 1.63 (0.74) - 1.59 (0.70); p=0.02
Ell et al., 2011 [34]	Collaborative care management intervention for patients with cancer / **7** (1,2,4,5,6,7,8)	12 mos / 24 mos.	Social well-being p=0.03, Functional well-being p=0.01
Gaston-Johansson et al., 2013 [36]	Self-management comprehensive coping strategy program / **6** (1,2,3,4,6,7)	3 mos / 12 mos	Beta (Adj.R^2) 0.31 (0.08); p<0.01
Jahn et al., 2009 [41]	Structured nursing intervention / **6** (1,2,3,4,5,6)	3 days / 8th day of 2nd CT cycle	HRQofL 10.2 pts on CTCAE scale (95% CI, 1.9 to 18.5; p=0.017) favouring control group
Lee et al., 2014 [50]	WSEDI aimed at enhancing exercise and dietary behaviours / **4** (1,2,4,7)	12 wks / 12 wks	Role functioning – NS Cognitive functioning - NS Social functioning – NS Global QofL - NS
Loprinzi et al., 2011 [51]	Stress management and resilience training / **3** (1,2,7)	12 wks / 12 wks	Score (SE) 38.4±6.1 to 44.5±3.5 versus 41.6 (4.0) to 42.2 (5.5); p=0.002
McCorkle et al., 2009 [52]	Nursing intervention to assist patients in developing and maintaining self-management skills postoperatively and to facilitate their active participation in decisions affecting their subsequent treatment / **3** (1,2,8)	24 to 48 hrs after surgery/ 6 mos PS	General QofL Subgroup of highly stressed individuals Mental QofL p=0.0001 Physical QofL p=<0.0001
Penedo et al., 2006 [54]	CBSM intervention / **3** (2,3,5)	10 wks / 2 to 3 wks PI	Mean (SD) 86.2 (14.29 to 88.7 (13.7) versus 86.8 (14.1) to 86.35 (18.8); p<0.01

Table 4. Studies Reporting Quality of Life[1] /Role Function as an Outcome

Authors	Study Description/ # of Core Elements[2] (Core Elements)	Study Duration / Longest Follow-up [3]	Group Differences over Time[4,5]
Antoni et al., [74] Stagl et al., 2015 [71]	CBSM intervention designed to improve coping and psychosocial adaptation and to reduce stress and negative mood for women undergoing primary breast cancer treatment / **4** (2,3,4,7)	NR / 15 yrs PI	d, 0.58; (95% CI, 0.52 to 0.65)
van Waart et al., 2015 [72]	Low-intensity, home-based physical activity program (Onco-Move) and a moderate- to high-intensity, combined supervised resistance and aerobic exercise program (OnTrack) versus UC / **4** (1,2,5,7)	Last CT treatment / 6 mos after CT	Social functioning - NS
Wang et al., 2011 [65]	Revised exercise program tailored to Taiwanese women with breast cancer / **4** (1,2,4,7)	6 wks / 6 wks	FACT-G scores 75.1 to 84 versus 75 to 66.4; p = 0.01
Yates et al., 2005 [66]	Psychoeducational intervention in improving cancer-related fatigue / **3** (1,7,8)	NR / 6 wks PI	Cancer self-efficacy - NS QofL – NS Psychological well-being - NS
Zhang et al., 2014 [67]	Self-efficacy enhancing intervention / **6** (1,2,5,6,7,8)	6 mos / 6 mos	NS

[1] Outcome described as change in quality of life unless otherwise stated [2] The eight core elements of self-management patient education: 1) are tailored to the needs of the patient, 2) facilitates self-efficacy skills to give patients confidence to manage their condition, 3) supports the patient to develop effective skills to communicate with primary care physicians and others, 4) facilitates the patient's understanding and confidence/self-efficacy for managing their care, 5) coached by a specially trained instructor, 6) supported by collaboration and guidance of the healthcare team experts, 7) facilitates uptake of health behaviours through action plans, 8) supports the development and application of problem solving skills. [3] As reported in article [4] Intervention group versus control group unless otherwise stated [5] Major results shown to longest significant time effect sustained.

CBSM = cognitive–behavioural stress management; CBT = cognitive behavioural therapy; CI = confidence interval; CT = chemotherapy; CTCAE = common terminology criteria for adverse events; d = Cohen's d effect size; ES = effect size; FACT-G = functional assessment of cancer therapy – General; HRQofL = health-related quality of life; hrs = hours; mo = month; mos = months; NR = not reported; NS = not significant; PI = post intervention; pts = points; PS = post-surgery; QofL = quality of life; SD = standard deviation; SE = standard error; UC = usual care; wks = weeks; WSEDI = web-based self-management exercise and diet intervention program; yrs = years.

Management of Emotional Impact of Cancer

Twenty-one studies examined depression as an outcome and 18 examined anxiety. Ten examined stress/distress, five studies examined emotional/cognitive function [24, 29, 32, 50, 72], four examined mood/anger [19, 24, 25, 32] and four examined confusion/preoccupation [24, 25, 27, 32]. Three studies examined positive attitude/problem solving [27, 37, 45], three examined emotional status/well-being [33, 34, 66], and two examined uncertainty [37, 52]. Two studies examined helplessness/hopelessness [27, 32], two examined coping [25, 56], and two examined cognitive avoidance [24, 27]. One study examined resillience [51].

Table 5 shows the 21 studies examining depression as an outcome. Overall, less than half of the studies (n=9) found a significant decrease in depression [26, 32, 34, 39, 56, 64, 67, 71, 77]. Three studies used the combination of tailoring the intervention to the needs of the patient, facilitating self-efficacy, facilitating patient confidence and understanding, and facilitating uptake of health behaviors (core elements 1,2,4,7) to evaluate the effects on depression [31, 50, 56]. One found a significant decrease in depressive symptoms, [56] while the other two found no such differences [31, 50]. There were no other common combinations of core elements among the remaining studies examining depression.

Table 5. Patient self-management interventions measuring depression[1] as an outcome

Authors	**Study Description/ # of Core Elements[2] (Core Elements)**	**Study Duration / Longest Follow-up[3]**	**Group Differences over Time[4,5]**
Boesen et al., 2005 [25]	Psychoeducational group intervention / **4** (2,6,7,8)	10 wks / 12 mos	NS
Boesen et al., 2011 [24]	Psychosocial group intervention / **5** (1,2,6,7,8)	10 wks / 12 mos	NS
Børøsund et al., 2014 [26]	IPPC service compared with a web-based illness management system and UC / 4 (2,3,4,6)	12 mos / 6 mos PI	Mean diff (95% CI) Web-choice versus UC, -0.61 (-1.18 to -0.05); p=0.03 IPPC versus UC, -0.69 (-1.32 to -0.05); p=0.03
Schou Bredal et al., 2014 [27]	Psychoeducational group (PEG) versus support group (SG) intervention / **4** (2,6,7,8)	10 wks / 12 mos PS	NS
Dodd et al., 2010 [31]	Fatigue-control program based on self-care and adult learning theory / **4** (1,2,4,7)	4 to 6 mos /12 wks PI	NS
Dolbeault et al., 2009 [32]	Psychoeducational group intervention modelled on CBT principles / **5** (2,3,5,7,8)	8 wks / 1 mo PI	Change in means (SD) 12.38 (11.45) - 7.86 (8.61) versus 13.46 (11.95) - 11.40 (10.78); p=0.03
Ell et al., 2011 [34]	Collaborative care management intervention for patients with cancer / **7** (1,2,4,5,6,7,8)	12 mos / 24 mos	≥ 50% reduction in depression score, 46% versus 32% (OR, 2.09; 95% CI, 1.13 to 3.86; p=0.02) Depression recurrence rate - NS
Jacobsen et al., 2013 [39]	Stress management training (SM), exercise (EX), combined stress management and exercise (SMEX) / **3** (1,2,7)	NR / 12 wks	UC versus SMEX p=0.02
Korstjens et al., 2011 [45]	Group-based self-management cancer rehabilitation, combining comprehensive physical training (PT) and cognitive-behavioural problem-solving training, compared with PT / **4** (1,5,6,7)	12 wks / 9 mos	NS
Krischer et al., 2007 [48]	Self-administered stress management training / **2** (2,7)	NR / 3 wks after RT	NS
Lee et al., 2014 [50]	WSEDI aimed at enhancing exercise and dietary behaviours / **4** (1,2,4,7)	12 wks / 12 wks	NS
McCorkle et al., 2009 [52]	Nursing intervention to assist patients in developing and maintaining self-management skills postoperatively and to facilitate their active participation in decisions affecting their subsequent treatment / **3** (1,2,8)	24 to 48 hours after surgery / 6 mos PS	NS
Ream et al., 2006 [56]	Supportive intervention for fatigue in patients undergoing chemotherapy / **4** (1,2,4,7)	3 mos / 4th CT cycle	p=<0.05
Ream et al., 2015 [68]	An exploratory trial with an embedded telephone interview element / **1** (5)	Prior to CT / completion of CT	NS
Risendal et al., 2014 [69]	Adapted chronic disease self-management program / **3** (2,7,8)	NR / 6 mos PI	ES = -0.18

Table 5. Patient self-management interventions measuring depression[1] as an outcome			
Authors	**Study Description/ # of Core Elements[2] (Core Elements)**	**Study Duration / Longest Follow-up[3]**	**Group Differences over Time[4,5]**
Rissanen et al., 2015 [70]	Stress management intervention, in a group or individual setting, on self-reported cancer-related traumatic stress symptoms / **4** (2,4,5,7)	NR / 12 mos	NS
Sherwood et al., 2005 [60]	Cognitive behavioural intervention for symptom management / **4** (1,2,7,8)	8 wks / 20 wks PI	NS
Stagl et al., 2015 [71] (an 11-year follow-up of 100 of 200 patients from the study reported by Antoni et al., 2006) [74]	CBSM intervention designed to improve coping and psychosocial adaptation and to reduce stress and negative mood for women undergoing primary breast cancer treatment / **4** (2,3,4,7)	NR / 15 yrs PI	d, 0.63; (95% CI, 0.56 to 0.70)
Stanton et al., 2005 [63]	Psychoeducational videotape intervention for patients with breast cancer / **3** (2,4,7)	NR / 12 mos	NS
Strong et al., 2008 [64]	Nurse-delivered complex intervention designed to treat major depressive disorder / **8** (1,2,3,4,5,6,7,8)	3 mos / 12 mos	Mean differences as effect sizes ES = -0.34; p=0.002
Zhang et al., 2014 [67]	Self-efficacy enhancing intervention / **6** (1,2,5,6,7,8)	6 mos / 6 mos	F=6.96; p=0.003

[1] Outcome described as change in depression unless otherwise stated. [2] The eight core elements of self-management patient education: 1) tailored to the needs of the patient, 2) facilitates self-efficacy skills to give patients confidence to manage their condition, 3) supports the patient to develop effective skills to communicate with primary care physicians and others, 4) facilitates the patient's understanding and confidence/self-efficacy for managing their care, 5) coached by a specially trained instructor, 6) supported by collaboration and guidance of the healthcare team experts, 7) facilitates uptake of health behaviours through action plans, 8) supports the development of and application of problem solving skills. [3] Intervention group versus control group unless otherwise stated [4] As reported in article [5] Major results shown to longest significant time effect sustained.

CBSM = cognitive–behavioural stress management; CBT = cognitive behavioural therapy; CI = confidence interval; CT = chemotherapy; d = Cohen's d effect size ; ES = effect size; EX = exercise; IPPC = internet-based patient provider communication; mo = month; mos = months; NR = not reported; NS = not significant; OR = odds radio; PEG = psychoeducational group; PI = postintervention; PS = postsurgery; PT = physical training; RT = radiotherapy; SD = standard deviation; SG = support group; SM = stress management training; SMEX = stress management and exercise; UC = usual care; wks = weeks; WSEDI = web-based self-management exercise and diet intervention program; yrs = years.

Table 6 shows the 18 studies examining anxiety as an outcome. Eleven of the 18 studies detected significant decreases in anxiety symptoms in the intervention groups, compared to the controls [19, 26, 29, 32, 39, 45, 51, 56, 64, 67, 74].

Three studies used the combination of facilitating self-efficacy, supporting the intervention by collaboration, facilitating uptake of health behaviours through action plans, and supporting the development and application of problem solving skills (core elements 2,6,7,8) [19, 25, 27]. One of the studies found a significant decrease in levels of anxiety [19], while the other two had nonsignificant results [25, 27]. Two studies used the combination of tailoring the intervention to the needs of the patient, facilitating self-efficacy, facilitating confidence and understanding to measure anxiety, and facilitating uptake of health behaviours through action plans (core elements 1,2,4,7); one found a significant decrease in anxiety over time for patients in the intervention group compared with the control group [56], and the other found no such difference [50]. Two studies using the combination of tailoring the intervention to the needs of the patient, facilitating self-efficacy, and facilitating uptake of health behaviours through action plans (core elements 1,2,7); both found significant results for anxiety [39, 51]. Two studies used the combination of facilitating self-efficacy, facilitating patient understanding and confidence, coaching by a trained individual, and facilitating uptake of health behaviours through action plans (core elements 2,4,5,7) [29, 70]. One found a significant change in levels of anxiety [29] and the other found non-significant changes [70]. There were no other common combinations of core elements among the remaining studies examining anxiety.

Table 6. Patient self-management interventions measuring anxiety[1] as an outcome

Authors	**Study Description/ # of Core elements[2] (Core Elements)**	**Study Duration / Longest Follow-up[3]**	**Group Differences over Time[4,5]**
Ames et al., 2011 [19]	Multidisciplinary QofL intervention / **4** (2,6,7,8)	9 wks / 6 mos PI	Anxiety (prostate cancer specific) Mean 88 versus 81; ES=0.45 Mean 87 versus 84; ES=0.23
Antoni et al., 2006 [74]	Cognitive behavioural stress management intervention / **4** (2,3,4,7)	10 wks / 12 mos	Anxiety (cancer specific) F(2,81)=3.86; p<0.05 General Anxiety Z=2.71; p<0.04; Cohen's d=0.74 Intrusive thought about breast cancer Z=3.64; p<0.001; Cohen's d=0.74
Boesen et al., 2005 [25]	Psychoeducational group intervention / **4** (2,6,7,8)	10 wks / 12 mos	NS
Boesen et al., 2011 [24]	Psychosocial group intervention / **5** (1,2,6,7,8)	10 wks / 12 mos	NS
Børøsund et al., 2014 [26]	Internet-based patient provider communication service compared with a web-based illness management system and UC / **4** (2,3,4,6)	12 mos / 6 mos PI	Mean diff (95% CI) -0.79 (-1.49 to -0.09); p=0.03 IPPC versus UC- NS
Schou Bredal et al., 2014 [27]	Psychoeducational group (PEG)versus support group (SG) intervention / **4** (2,6,7,8)	10 wks / 12 mos PS	NS Anxious preoccupation - NS
Chan et al., 2011 [29]	Psychoeducational RCT / **4** (2,4,5,7)	12 wks / 12 wks	F=7.246; p=0.001
Dolbeault et al., 2009 [32]	Psychoeducational group intervention modelled on CBT principles / **5** (2,3,5,7,8)	8 wks / 1 mo PI	Change in means (SD) Scale 20-80: 46.27 (13.9) - 39.8 (10.6) versus 43.85 (12.2) - 43.85 (10.9); p=0.001 Change in means (SD) Scale 20-80: 15.12 (8.11) - 9.90 (6.44) versus 14.69 (7.63) - 12.78 (7.45); p=0.0001
Jacobsen et al., 2013 [39]	Stress management training (SM), exercise (EX), combined stress management and exercise (SMEX) / **3** (1,2,7)	NR / 12 wks	UC versus SMEX *t*=-1.92; p=0.05
Korstjens et al., 2011 [45]	Group-based self-management cancer rehabilitation, combining comprehensive physical training (PT) and CBPT, compared with PT / **4** (1,5,6,7)	12 wks / 9 mos	PT versus UC, p<0.05 PT + CBPT versus UC, p<0.05
Krischer et al., 2007 [48]	Self-administered stress management training / **2** (2,7)	NR / 3wks after RT	NS

Table 6. Patient self-management interventions measuring anxiety[1] as an outcome

Authors	Study Description/ # of Core elements[2] (Core Elements)	Study Duration / Longest Follow-up[3]	Group Differences over Time[4,5]
Lee et al., 2014 [50]	WSEDI aimed at enhancing exercise and dietary behaviours / **4** (1,2,4,7)	12 wks / 12 wks	NS
Loprinzi et al., 2011 [51]	Stress management and resilience training / **3** (1,2,7)	12 wks / 12 wks	49.4±18.2 to 33.3±11.7; p=0.002
Ream et al., 2006 [56]	Supportive intervention for fatigue in patients undergoing chemotherapy / **4** (1,2,4,7)	3 mos / 4th CT cycle	p=<0.05
Ream et al., 2015 [68]	Exploratory trial with an embedded telephone interview element / **1** (5)	3 mos / 4th CT cycle	T0-T1 p=0.31
Rissanen et al., 2015 [70]	Stress management intervention, in a group or individual setting, on self-reported cancer-related traumatic stress symptoms / **4** (2,4,5,7)	Prior to CT / completion of CT	NS
Strong et al., 2008 [64]	Nurse-delivered complex intervention designed to treat major depressive disorder / **8** (1,2,3,4,5,6,7,8)	3 mos / 12 mos	ES = -0.20 (-0.32 to -0.09); p=0.0008
Zhang et al., 2014 [67]	Self-efficacy enhancing intervention / **6** (1,2,5,6,7,8)	6 mos / 6 mos	F=6.04; p=0.006

[1] Outcome described as change in anxiety unless otherwise stated. [2] The eight core elements of self-management patient education: 1) are tailored to the needs of the patient, 2) facilitates self-efficacy skills to give patients confidence to manage their condition, 3) supports the patient to develop effective skills to communicate with primary care physicians and others, 4) facilitates the patient's understanding and confidence/self-efficacy for managing their care, 5) coached by a specially trained instructor, 6) supported by collaboration and guidance of the healthcare team experts, 7) facilitates uptake of health behaviours through action plans, 8) supports development of problem solving skills. [3] As reported in article [4] Intervention group versus control group unless otherwise stated [5] Major results shown to longest significant time effect sustained.

CBT = cognitive behavioural therapy; CBPT = cognitive-behavioural problem-solving training; CI = confidence interval; CT = chemotherapy; ES = effect size; EX = exercise; IPPC = internet-based patient provider communication; mos = months; NR = not reported; NS = not significant; PEG = psychoeducational group; PI = post intervention; PS = post surgery; PT = physical training; QofL = quality of life; RCT = randomized controlled trial; RT = radiotherapy; SD = standard deviation; SG = support group; SM = stress management training; SMEX = combined stress management and exercise; UC = usual care; wks = weeks; WSEDI = web-based self-management exercise and diet intervention program.

Table 7 shows the 10 studies examining stress/distress as an outcome. Six of the 10 studies showed significant improvements in general stress symptoms [39, 51], perceived stress management skills [54], and psychological distress [21, 48, 74].

Two studies using the combination of tailoring the intervention to the needs of the patient, facilitating self-efficacy, and facilitating uptake of health behaviours through action plans (core elements 1,2,7); both found significant results for reduction in stress [39, 51]. None of the other studies dealing with other emotional impacts had similar combinations of core elements and thus could not be assessed for Question 2. Complete outcome data can be found in Appendix D.

Table 7. Patient self-management Interventions measuring stress/distress[1] as an outcome

Authors	Study Description/ # of Core elements[2] (Core Elements)	Study Duration / Longest Follow-up[3]	Group Differences over Time[4,5]
Ames et al., 2011 [19]	Multidisciplinary QofL intervention / **4** (2,6,7,8)	9 wks / 6 mos PI	Stress T0-T1 Mean 79 versus 79; ES=0-.03 T0-T2 Mean 78 versus 78; ES=0.01
Antoni et al., 2006 [74]	Cognitive-behavioural stress management intervention / **4** (2,3,4,7)	10 wks / 12 mos	Emotional distress Z=2.48, p<0.02; Cohen's d=0.33
Aranda et al., 2012 [21]	Novel nurse-led prechemotherapy education intervention / **2** (1,2)	2 CT cycles /2nd CT cycle	Psychological distress :- NS Psychological distress (subgroup distressed at time 1) T1-T2 *b*=2.5 (0.19 to 0.49); p=0.04
Jacobsen et al., 2013 [39]	Stress management training (SM), exercise (EX), combined stress management and exercise (SMEX) / **3** (1,2,7)	NR / 12 wks	Stress reduction T0-T2 UC versus SM *t*=5.48; p<0.001 UC versus SMEX *t*=4.16; p<0.001
Krischer et al., 2007 [48]	Self-administered stress management training / **2** (2,7)	NR / 3 wks after RT	Psychological distress: T0-T1 p=0.02
Loprinzi et al., 2011 [51]	Stress management and resilience training / **3** (1,2,7)	12 wks / 12 wks	Stress T0-T1 22.1±5.9 to 12.8±6.6; p=0.003
Penedo et al., 2006 [54]	CBSM / **3** (2,3,5)	10 wks / 2 to 3 wks PI	Perceived stress management skills T0-T1 coefficient = 0.19, p<0.01
Risendal et al., 2014 [69]	Adapted chronic disease self-management program / **3** (2,7,8)	NR / 6 mos PI	Stress-related problems ES = -0.17
Rissanen et al., 2015 [70]	Stress management intervention, in a group or individual setting, on self-reported cancer-related traumatic stress symptoms / **4** (2,4,5,7)	Prior to CT / completion of CT	Posttraumatic stress response - NS
Stanton et al., 2005 [63]	Psychoeducational videotape intervention for patients with breast cancer / **3** (2,4,7)	NR / 12 mos	Cancer-specific distress - NS

[1] Outcome described as change in anxiety unless otherwise stated. [2] The eight core elements of self-management patient education: 1) are tailored to the needs of the patient, 2) facilitates self-efficacy skills to give patients confidence to manage their condition, 3) supports the patient to develop effective skills to communicate with primary care physicians and others, 4) facilitates the patient's understanding and confidence/self-efficacy for managing their care, 5) coached by a specially trained instructor, 6) supported by collaboration and guidance of the healthcare team experts, 7) facilitates uptake of health behaviours through action plans, 8) supports development of problem solving skills. [3] As reported in article [4] Intervention group versus control group unless otherwise stated [5] Major results shown to longest significant time effect sustained.

CBSM = cognitive–behavioural stress management; CT = chemotherapy; ES = effect size; EX = exercise; mos = months; NR = not reported; NS = not significant; QofL = quality of life; PI = post intervention; RT = radiotherapy; SM = stress management training; SMEX = combined stress management and exercise; UC = usual care; wks = weeks.

DISCUSSION

The evidence base for this document consists of 42 RCTs examining self-management education interventions for patients with cancer. A wide range of studies were identified that were not specifically labelled as self-management education interventions; however, we based our review on common self-management definitions in chronic disease and cancer, and on core elements identified in the literature as key for successful patient self-management. As per the inclusion criteria, all studies had to incorporate at least one of the eight core elements of self-management in their interventions (Table 1).

The most widely used core element in the interventions was the facilitation of self-efficacy skills to build patients' confidence to manage their condition (90% of trials used this element). The second and third most widely used core elements were facilitating uptake of health behaviours through action plans (76%), and tailoring the intervention to the needs of the patient (57%). The least-used core elements were supporting the patient to develop effective skills to communicate with physicians and others (28%), and collaboration and guidance of healthcare team experts (26%). There were 30 different combinations of core elements used by the interventions, with the most common combination of core elements (i.e., tailoring the intervention to the needs of the patients, facilitating self-efficacy skills for managing their condition, supporting patients' understanding and confidence for managing their care, and facilitating uptake of health behaviours through action plans (core elements 1,2,4,7) being used in only four studies [31, 50, 56, 65]. While we specifically mapped the inclusion of these core elements in studies, the detailed processes of how these were operationalized in the interventions were less evident, making it difficult to determine their contribution to efficacy, differences in effect sizes, the causal relationships between educator or patient actions, and changes in health outcomes. There were several strategies, not discussed in this review, used by the interventionists (e.g., cognitive reframing, positive feedback, coaching) as part of their approach to facilitate uptake of the eight core elements and are consistent with approaches identified in the grey literature [2, 6].

A surprising finding of the review was the limited inclusion of the core element identified as "facilitating patients' abilities to effectively communicate with healthcare providers" (core element 3). This was likely due to the wide variation of intervention designs used (e.g., psychoeducational interventions or cognitive behavioural therapy) which do not typically include the core elements for self-management education interventions. A collaborative and interactive relationship between patients and healthcare professionals is considered an important element for empowering patients and "activating" them to take responsibility for managing illness [78]. Effective communication with healthcare providers is also dependent on health literacy, which was not emphasized in any of the studies reviewed or identified as an aspect of tailoring interventions to the individual. Health literacy affects the patient's ability to understand the information needed to engage in effective self-management behaviours, to understand the relationship between behaviours and health risk, and to navigate the health system, and is considered a first step in a stepped care response to the provision of self-management support [6]. Tailoring of self-management support to the individual is dependent on taking into consideration health literacy alongside other patient characteristics that can influence access to care (stage in the cancer trajectory, type of cancer and treatment, age, gender), life circumstances (economic and cultural diversity, living arrangements), and geographic diversity (rural or urban).

Most of the studies (more than 80%) examined outcomes related to management of symptoms and medical regimens, with the most common outcomes studied being fatigue and pain. Eleven of the 18 (62%) studies that examined the severity/intensity of fatigue as an outcome reported a significant decrease in self-reported fatigue among study participants. Conversely, only three of the eleven studies (27%) that examined pain as an outcome reported a significant decrease in self-reported pain severity among study participants. This may suggest that self-management education interventions may not be enough for coping with symptoms of pain and that effective medical treatment (e.g., appropriate prescription), along with self-management strategies may be needed.

Half of the studies focused on the emotional impact of cancer and treatment, with the most common outcomes studied being depression, anxiety, stress/distress, coping, and quality of life. Of the 21 studies examining depression as an outcome, almost half (43%) reported significant decreases in depressive symptoms among study patients. Of the 18 studies targeting anxiety as an outcome, 11 (61%) reported significant decreases in anxiety levels. Likewise, eight of the 10 studies (80%) examining levels of emotional stress/distress detected beneficial results of the interventions. This indicates that, for the most part, self-management education interventions may be beneficial for relieving symptoms of depression, anxiety, and emotional distress. This also suggests that when interventions are designed to target the management of a specific problem (e.g., emotional distress) significant beneficial effects are found. Similarly, since behaviours are situation specific, in those studies that targeted a range of problems, (e.g., overall treatment toxicities), the beneficial effects were nonsignificant [21]. The effects observed may have also been influenced by the measures used. Studies used various validation tools to measure the same outcomes (e.g., Beck Depression Inventory, Personal Health Questionnaire Depression Scale, Centre for Epidemiology Studies Depression Inventory, etc. [See Appendix D – Measurement/Scales]), and thus direct comparisons between studies measuring the same outcomes were not possible. Ten of the 11 studies (91%) examining changes in quality of life found significant improvement in various quality of life domains, such as social well-being, role functioning, adaptive coping behaviours, and general quality of life. This suggests that incorporating core elements of self-management education interventions may help improve quality of life for patients with cancer.

In attempting to answer Question 2 (see research questions at the beginning of this document) we were not able to discern whether the inclusion of any specific core element, or inclusion of core elements in general, were associated with the size of the beneficial effect in studies that detected significant results. Results for specific combinations of core elements were mixed at best. Very few studies used the same combinations of core elements and, among those that did, results were conflicting. However, three of the four studies [26,45,51,60] that examined fatigue as an outcome and that used the combination of tailoring the intervention to the needs of the patient, facilitating self-efficacy skills, supporting the patient's understanding and confidence for managing their care, and facilitating uptake of health behaviours through action plans (core elements 1,2,4,7) detected significant reductions in fatigue. One [63] of the two studies [61, 63] using the combination of facilitating self-efficacy skills, supporting the patient's understanding and confidence for managing their care, and facilitating uptake of health behaviours through action plans (core elements 2,4,7) also found significant reductions in fatigue severity. There were no common combinations of core elements among interventions examining pain and other symptom management outcomes.

One of the two studies investigating quality of life and using the same combination of four core elements (i.e., combination of facilitating self-efficacy, being supported by collaboration, facilitating uptake of health behaviours through action plans, and developing problem-solving skills) (core elements 2,6,7,8) found significant increases in quality of life [25], while the other found moderate to low effect sizes [19]. Two other studies examined quality of life used the combination of tailoring the intervention to the needs of the patient, facilitating self-efficacy skills, supporting the patient's understanding and confidence for managing their care, and facilitating uptake of health behaviours through action plans (core elements 1,2,4,7); one found a significant increase in quality of life [65] and the other found nonsignificant results for role functioning, cognitive functioning, social functioning, and global quality of life [50]. Thus, for quality of life, a definitively successful combination of core elements for self-management educational interventions could not be identified by this study.

Three studies used the combination of tailoring the intervention to the needs of the patient, facilitating self-efficacy, and supporting the patient's confidence and understanding (core elements 1,2,4) to manage depression, with one finding a significant decrease in depressive symptoms [56] and the other two finding no such differences [31, 50]. Only one [25] of the three studies using the combination of facilitating self-efficacy, being supported by collaboration, facilitating uptake of health behaviours through action plans, and supporting the development and application of problem solving skills (core elements 2,6,7,8) found significant differences in anxiety [19, 25, 27]. Two [31, 50] of the three studies that used the combination of tailoring the intervention to the needs of the patient, facilitating self-efficacy, facilitating confidence and understanding to manage symptoms, and facilitating uptake of health behaviours through action plans (core elements 1,2,4,7) found no differences between groups for depression [31, 50, 68]. Two studies using the combination of tailoring the intervention to the needs of the patient, facilitating self-efficacy, and facilitating uptake of health behaviours through action plans (core elements 1,2,7) both found significant results for anxiety [39, 51]. Two studies used the combination of facilitating self-efficacy, facilitating patient understanding and confidence, coaching by a trained individual, and facilitating uptake of health behaviours through action plans (core elements 2,4,5,7), with one finding significant results for anxiety [29] and the other finding no such results [70]. Again, as with the other outcomes of interest, consistently common combinations of core elements could not be determined and results were mixed.

Given the heterogeneity of interventions, we were not able to conduct any subgroup analyses to determine if patient characteristics were associated with the beneficial effects for any of the outcomes. Thus, we were unable to address Question 3 for this review (see research questions at the beginning of this document).

As with other chronic diseases, self-management for cancer encompasses patient engagement in behaviours or tasks related to the medical management of illness, including responding to physical symptoms, adjusting and adapting to changed roles and social relationships, and managing of the psychosocial and emotional sequelae of cancer and treatment. In addition, the core skills fundamental to self-management in other chronic diseases are applicable to cancer populations. In this review, we focused on eight core elements of self-management education interventions that were identified from grey literature [6, 9]. While these core skills have been identified as relevant for all chronic conditions [4], the use of a "one-size-fits-all" approach has been criticized [79] and the need for tailoring chronic disease self-management approaches to cancer has been identified [5]. In addition to the core skills we identified a priori for this review, cancer self-management behaviours must also encompass preventative maintenance (e.g., adhering to lifelong hormonal therapy in breast cancer) and use of healthy lifestyle behaviours to reduce health risks that can occur as late adverse effects of cancer treatment and that can potentially influence health recovery and survival rate [8]. Additionally, competence in coping with relapse seems particularly relevant for some cancer populations who will not be cured of their disease and is part of the ongoing management of cancer as a chronic disease [80]. Finally, a greater emphasis on skills of symptom recognition, self-monitoring, and daily decision making [81], as well as adapting to the losses that can occur with some cancer treatments and finding new goals to engage in [82] will also be essential for inclusion as fundamental elements of cancer self-management education interventions.

Social dimensions of self-management support are also now considered a core component of successful self-management and adoption of healthy behaviours [83]. This may be particularly relevant for cancer populations as social support may buffer the emotional sequelae of cancer and be linked to long-term survival. Moreover, in the acute phase of cancer treatment, self-management skills must include a focus on preventive behaviours in anticipation of treatment toxicities (e.g., acute bone pain due to paclitaxel). A possible adapted definition for cancer self-management that could guide the provision of self-management education support in the cancer system might be as follows: cancer self-management is a set of behaviours that includes applying knowledge of illness and preventive management of anticipated adverse treatment effects; medically managing illness and adhering to treatment regimens; managing symptoms, in particular symptom recognition, self-monitoring, and daily decision-making for tailoring symptom management behaviours; managing the harmful effects of illness on physical, emotional, and social role functioning inclusive of existential distress; navigating transitions and competence in coping with recurrence; using healthy lifestyle behaviours to reduce health risks; and collaborative interactions and effective communication with both health professionals and support networks to optimize recovery and health. Self-management education interventions must also be targeted to the appropriate phases of illness and disease stage [78] because self-management skills may differ according to the phases of the cancer trajectory [2].

There are several limitations to this systematic review. As previously discussed, validation tools to measure a given outcome (e.g., pain, fatigue, depression, anxiety) varied among the studies, making quantitative comparisons among studies impossible. Moreover, these tools were not always validated. Another limitation is that the individual studies that measured similar outcomes varied considerably in their design and execution, also making qualitative comparisons impossible. Also, in many cases, the details of the various interventions were unclear and thus, core elements used by the studies may have been missed. Given the sheer number of patient education RCTs available, it was decided that this systematic review would only include interventions that used at least one of the eight core elements of self-management. Thus, self-management interventions could not be compared with interventions that did not contain elements of self-management. Thus, for Question 1, we can only suggest that self-management interventions *may* help improve fatigue, quality of life, depression, anxiety, and stress. Few studies used the same combinations of core elements and, thus, any conclusions as to the most effective combinations of self-management core elements was not possible, making Question 2 (i.e.,What components or elements of each self-management education intervention are associated with the strength of the benefit?) unanswerable by this review. Finally, since a subgroup analysis by patient characteristics was not presented in most studies, Question 3 could not be answered.

CONCLUSIONS

It is unclear whether self-management education interventions are more suited to fatigue-related outcomes or just that no intervention without direct medical treatments (e.g., medication), regardless of its self-management components, is amenable to measuring or controlling pain symptoms. For the most part, self-management education interventions may help relieve symptoms of depression, anxiety, and emotional distress and improve quality of life. Results for specific combinations of core elements are mixed at best. Very few studies used the same combinations of core elements and, among those that did, result were conflicting and thus, conclusions as to the components or elements of self-management education training associated with the strength of the benefit cannot be assessed by this review.

In conclusion, the endorsement of definitions for cancer self-management education and the fundamental elements for inclusion in supporting self-management will be critical to cancer care policies and to ensure consistent provision of self-management support across the cancer system.

INTERNAL REVIEW

PEBC evidence summaries are reviewed by the director of the PEBC. The Working Group is responsible for considering the changes, and if those changes can be made without substantially altering the conclusions, the altered draft does not need to be resubmitted for approval.

Report Review by the Director of the PEBC

The director of the PEBC reviewed the document on November 10, 2015. During this review the director provided feedback related to simplifying the conceptual framework and removing redundant text.

In response to this feedback, the Working Group revised the conceptual framework into a table format and removed unnecessary text.

CONFLICT OF INTEREST

In accordance with the PEBC Conflict of Interest Policy, the evidence summary authors and the Patient Education Program Committee members were asked to disclose potential conflicts of interest. The authors, members of the PEBC's Patient Education Program Committee, and reviewer reported that they had no conflicts of interest.

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Appendix A. Members of the Working Group.

Name	Affliation	Conflict of Interest
Cathy Bennett	Juravinski Cancer Centre	None declared
Susan Boyko	Northeast Cancer Centre	None declared
Judy Brown	Program in Evidence-Based Care	None declared
Tamara Harth	Provincial Head Patient Education, Cancer Care Ontario	None declared
Doris Howell	University Health Network and the Ontario Cancer Institute	None declared

Appendix B. Literature search strategies.

20-3 - literature search strategy – (Medline)
Self-Management Patient Education for Patients with Cancer

Section A: Disease and/or population	1. exp neoplasms/
	2.(cancer or carcinoma or tumo?r: or malignan: or oncolog:).ti,tw.
	3. *neoplasms/dt
	4. or/1-4
Section B: Intervention or diagnostic test	5. (therapeutic education or therapeutic intervention or self-management or education$ intervention or health education or health knowledge or patient education or education program or therapeutic education program$ or therapeutic patient education or self-monitoring or self-management education programs or educational intervention or self-care or psychoeducational intervention).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
	6. patient education.mp. or exp Patient Education as Topic/
	7. or/5-6
Section C: Study design (this example only focuses on RCTs and Phase II, III, IV trials)	8. meta-Analysis as topic/
	9. meta analysis.pt.
	10. (meta analy$ or metaanaly$).tw.
	11. (systematic review$ or pooled analy$ or statistical pooling or mathematical pooling or statistical summar$ or mathematical summar$ or quantitative synthes?s or quantitative overview).tw.
	12. (systematic adj (review$ or overview?)).tw.
	13. (exp Review Literature as topic/ or review.pt. or exp review/) and systematic.tw.
	14. Or/8-13
	15. (cochrane or embase or psychlit or psyclit or psychinfo or psycinfo or cinahl or cinhal or science citation index or scisearch or bids or sigle or cancerlit).ab.
	16. (reference list$ or bibliograph$ or hand-search$ or relevant journals or manual search$).ab.
	17. (selection criteria or data extraction or quality assessment or jadad scale or methodological quality).ab.
	18. (study adj selection).ab.
	19. 17 or 18
	20. review.pt.
	21. 19 and 20

	22. exp randomized controlled trials as topic/ or exp clinical trials, phase III as topic/ or exp clinical trials, phase IV as topic/
	23. (randomized controlled trial or clinical trial, phase III or clinical trial, phase IV).pt.
	24. random allocation/ or double blind method/ or single blind method/
	25. (randomi$ control$ trial? or rct or phase III or phase IV or phase 3 or phase 4).tw.
	26. or/22-25
	27. (phase II or phase 2).tw. or exp clinical trial/ or exp clinical trial as topic/
	28. (clinical trial or clinical trial, phase II or controlled clinical trial).pt.
	29. (27 or 28) and random$.tw.
	30. (clinic$ adj trial$1).tw.
	31. ((singl$ or doubl$ or treb$ or tripl$) adj (blind$3 or mask$3 or dummy)).tw.
	32. placebos/
	33. placebo? or random allocation or randomly allocated or allocated randomly).tw.
	34. (allocated adj2 random).tw.
	35. or/30-34
	36. 14 or 15 or 16 or 21 or 26 or 29 or 35
Section D: Exclusion strategy	37. (comment or letter or editorial or note or erratum or short survey or news or newspaper article or patient education handout or case report or historical article).pt.
Combining Sections A, B, C, and D	38. (4 and 7 and 36) not 37
Limiting the final search by date and language	39. limit 38 to (English language and humans and yr="2005 -Current")

20-3 - literature search strategy – (Embase)
Self-Management Patient Education for Patients with Cancer

Section A: Disease and/or population	1. exp cancer/
	2. (cancer$ OR neoplasm$ OR adenocarcinom$ OR carcinom$ OR maligan$ OR tumo?r$).mp.
	3. (neoplasm OR oncology OR oncology nursing).mp.
	4. or/1-3
Section B: Intervention or diagnostic test	5. (self management OR Self care OR education program OR self monitoring OR psychoeducation OR patient education OR health education OR patient participation).mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]
Section C: Study design (this example only focuses	6. (meta analy$ or metaanaly$).tw.

on RCTs and Phase II, III, IV trials)	
	7. (systematic review$ or pooled analy$ or statistical pooling or mathematical pooling or statistical summar$ or mathematical summar$ or quantitative synthes?s or quantitative overview).tw
	8. (systematic adj (review$ or overview?)).tw.
	9. (systematic or selection criteria or data extraction or quality assessment or jadad scale or methodological quality).ab.
	10. (study adj selection).ab.
	11. or/6-10
	12. exp randomized controlled trials/ OR exp clinical trials, phase II/ OR exp clinical trials, phase III/ OR exp clinical trials, phase IV/
	13. (randomized controlled trial OR clinical trial, phase III OR clinical trial, phase IV).pt.
	14. random allocation/ OR placebos/ OR double blind method/ OR single blind method/
	15. (random: OR placebo: OR rct OR phase II OR phase 2 OR phase III OR phase 3 OR phase IV OR phase 4).tw.
	16. or/12-15
	17. (phase II or phase 2).tw. or exp clinical trial/ or exp prospective study/ or exp controlled clinical trial/
	18. 17 and random$.tw.
	19. (clinic$ adj trial$1).tw.
	20. ((singl$ or doubl$ or treb$ or tripl$) adj (blind$3 or mask$3 or dummy)).tw.
	21. placebo/
	22. (placebo? or random allocation or randomly allocated or allocated randomly).tw.
	23. (allocated adj2 random).tw.
	24. or/19-23
	25. 11 or 16 or 18 or 24
Section D: Exclusion strategy	26. (case report$ or editorial$ OR comment$ OR letter$).pt.
	27. (editorial OR note OR letter erratum OR short survey OR abstract).pt. OR abstract report/ OR letter/ OR case study/
	28. Animal/ not Human/
	29. or/26-28
Combining Sections A, B, C, and D	30. (4 and 5 and 25) not 29
Limiting the final search by date and language	31. limit 30 to (English language and yr="2005 -Current")

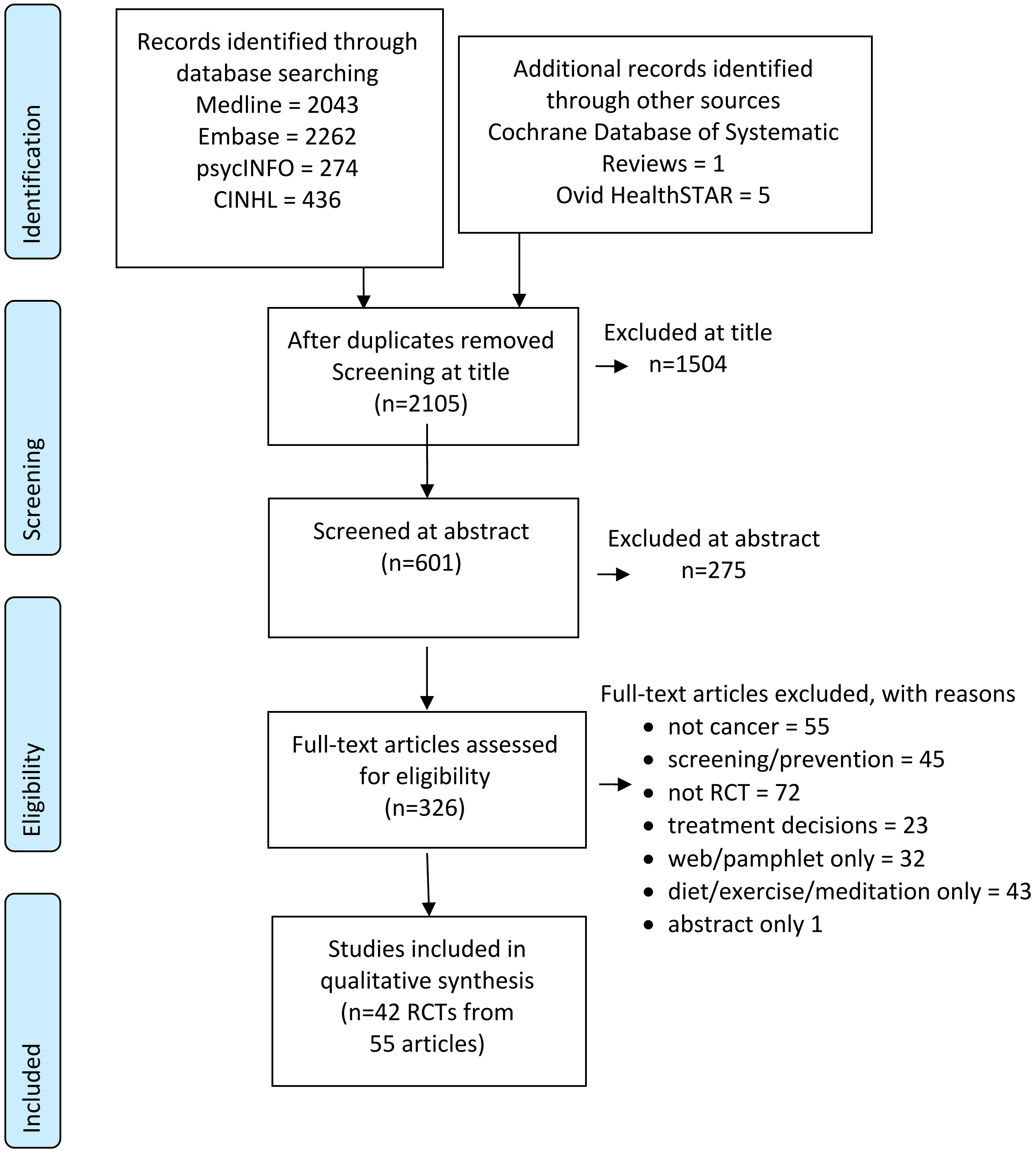
20-3 - literature search strategy – (psycINFO)
Self-Management Patient Education for Patients with Cancer

Section A: Disease and/or population	cancer.mp. or exp Neoplasms/
Section B: Intervention or diagnostic test	(self efficacy or self confidence or skill learning or Client education or therapeutic processes or self management or learning environment or educational background or continuum of care or group intervention or prevention or self monitoring or school-based intervention or educational programs or self care skills or child self care or activities of daily living or illness behaviour or health behaviour or coping behaviour or treatment compliance or recreation or family intervention or psychoeducation or psychoeducation education or health education or disease management or early intervention or prevention).mp. [mp=ti, ab, ot, nm, hw, kf, px, rx, ui, tc, id, tm, sh, tn, dm, mf, dv, kw]
Section C: Study design (this example only focuses on RCTs and Phase II, III, IV trials)	exp Intervention/ or exp Clinical Trials/ or randomized controlled trial.mp.
Combining Sections A, B, C, and D	1 and 2 and 3
Limiting the final search by date and language	limit 4 to (human and english language and adulthood <18+ years> and human and yr="2005 -Current")

20-3 - literature search strategy – (CINAHL)
Self-Management Patient Education for Patients with Cancer

Section A: Disease and/or population	neoplasm OR nursing OR oncology OR oncology care OR oncology care units OR cancer patients OR oncology
Section B: Intervention or diagnostic test	patient education OR health education OR self care OR recreational therapy OR information needs OR play therapy OR psychoeducation OR preventive health care OR self assessment OR early intervention OR outcomes of education
Combining Sections A, B, C, and D	1 and 2
Limiting the final search by date and language	Published Date: 20050101-20150431; English Language; Human; Randomized Controlled Trial; Age Groups: All Adult

Appendix C. Flow diagram of search results for randomized controlled trials (RCTs).



Appendix D. Study characteristics and results.

Self-Management RCTs: Study Characteristics and Results

Author Study Affiliations	**Population**	**Intervention**	**Measurement/ Scales**	**Outcomes**	**Results: Group Differences over Time[1,2,3]**
Ames et al., 2011 (19) Pilot study	57 men with localized prostate cancer with biochemical recurrence Med. age: 76, women: 0%	**Description:** Multidisciplinary QofL intervention tailored for men with biochemical recurrence of prostate cancer **Structure:** 9 wks - eight 1hr, structured sessions conducted in group setting **Groups:** MQOL versus WLC **Follow-up:** T0: Baseline, T1: 9 wks (EofT), T2: 6 mos (PT)	FACT-P	QofL (prostate cancer specific)	T0-T1 Mean 82 versus 80; ES=0.14 T0-T2 Mean 80 versus 79; ES=0.10
			SF-36	General QofL (general - physical)	T0-T1 Mean 44 versus 47; ES=-0.37 T0-T2 Mean 45 versus 44; ES=0.10
			SF-36	General QofL (general - mental)	T0-T1 Mean 57 versus 53 ES=0.52 T0-T2 Mean 55 versus 55; ES=-0.04
			MAX-PC	Anxiety (prostate cancer specific)	T0-T1 Mean 88 versus 81; ES=0.45 T0-T2 Mean 87 versus 84; ES=0.23
			PSS	Stress	T0-T1 Mean 79 versus 79; ES=-0.03 T0-T2 Mean 78 versus 78; ES=0.01
			POMS-B	Mood	T0-T1 Mean 81 versus 82; ES=0.07 T0-T2 Mean 80 versus 81; ES=-0.05
Antoni et al., 2006 (20) See also Phillips et al., 2008, Antoni et al., 2009 (100 women who gave blood samples), Vargas et al., 2014, Stagl et al., 2015 (100 women contacted 11 yrs later)	199 women with Stage I, II, or III breast cancer Mean age: 49.7, women: 100%	**Description:** Cognitive-behavioural stress management intervention **Structure:** 10 wk group-based cognitive-behavioural stress management intervention versus a one day psychoeducational control **Groups:** IV versus CG **Follow-up:** T1: study entry, T2: 6 mos, T3: 12 mos	IOES	Intrusive thoughts about breast cancer	Z=3.64, p<0.001; Cohen's d=1.22
			HAM-Anxiety	Anxiety	Z=2.71, p<0.04; Cohen's d=0.74
			ABSI	Emotional distress	Z=2.48, p<0.02; Cohen's d=0.33
			HAM-Anxiety (see Stagl et al., 2015 – 11-yr follow-up of 100 women)	Anxiety (cancer specific)	T1-T2 NR T1-T3 F(2,81)=3.86, p<0.05
			FACT-B (see Stagl et al., 2015 – 11-yr follow-up of 100 women)	QofL	(d, 0.58; 95% CI, 0.52 to 0.65)
			PSQI (see Vargas et al., 2014, secondary analysis)	Sleep	NS

Self-Management RCTs: Study Characteristics and Results					
Author Study Affiliations	**Population**	**Intervention**	**Measurement/ Scales**	**Outcomes**	**Results: Group Differences over Time^{1,2,3}**
			FSI (see Vargas et al., 2014, secondary analysis)	Fatigue	NS
Aranda et al., 2012 (21) **ChemoEd**	192 prechemotherapy patients with breast, gastrointestinal, or hematologic cancer Mean age: 52.4, women: 70%	**Description:** Novel nurse-led prechemotherapy education intervention to assess impact on patient distress, treatment-related concerns, and the prevalence and severity of, and bother caused by, six chemotherapy side effects. **Structure:** During two CT cycles, patients received a DVD, question prompt list, self-care information, and an education consultation ±24 h before first treatment (intervention 1); telephone follow-up 48 h after first treatment (intervention 2); or a face-to-face review immediately before second treatment (intervention 3). **Groups:** ChemoEd versus routine care	HADS	Psychological distress	NS
			CaTS - SPS	Cancer treatment-related information and support needs – psychological concerns	T1-T3 *b*=0.26 (-0.03 to 0.49); p=0.03
			CaTS - PC	Cancer treatment-related information and support needs – procedural concerns	T1-T3 *b*=0.39 (-0.13 to 0.65) p=0.01
			C-SAS	Chemotherapy-related symptoms (nausea, vomiting infection, hair loss, mouth or throat problems, fatigue)	T1-T3 Vomiting (prevalence) 9% versus 29% OR=0.25 (0.10 to 0.59); p=0.001 T1-T3 Vomiting (severity) mean rank 82.3 versus 99.3 Mann-Whitney U=3278; p=0.001 T1-T3 Vomiting (bother) mean rank 82.6 versus 98.9 Mann-Whitney U=3313; p=0.001

Self-Management RCTs: Study Characteristics and Results

Author Study Affiliations	Population	Intervention	Measurement/ Scales	Outcomes	Results: Group Differences over Time[1,2,3]
		Follow-up: T1: pre-education, T2: preceding treatment cycle 1, T3: preceding treatment cycle 2	HADS	Psychological distress (subgroup of patients distressed at time 1)	T1-T2 *b*=2.5 (0.19 to 0.49) p=0.04
Armes et al., 2007 (22)	60 consecutive patients who were attending for CT treatment at two cancer centres/units in South London Mean age: 59.1, women: 60%	**Description:** A brief behavioural oriented intervention in reducing CRF and improving physical function and associated distress in individuals who were receiving chemotherapy **Structure:** 9 to 12 wk intervention with individual, face-to-face, 1-h sessions at 3- to 4-wkly intervals (coinciding with administration of CT) **Groups:** IG versus UC **Follow-up:** T0: baseline T1: end of CT, T2: 1 mo after CT, T3: 9 mos after recruitment	VAS-GF	Cancer-related fatigue	NS
			EORTC-C30	Physical functioning	T1-T3 Mean diff in group mean scores (control versus experimental) 17.1 (95% CI,31.7 to 2.5; p=0.02)
			FOM	Cancer-related fatigue distress	NS
Boesen et al., 2007 (23) See slso Boesen et al., 2005	262 patients with primary cutaneous malignant melanoma Age range: 40 to 49, women: 64.3%	**Description:** Psychoeducational intervention **Structure:** 6-wk intervention offered between 3 wks and 4 mos after surgery to groups of eight to 10 patients. Organized into six sessions lasting approximately 2.5 hours each **Groups:** IG versus CG **Follow-up:** T1: baseline, T2: 6 mos, T3: 12 mos, T4: 4 to 6 yrs	POMS	Depression, anger, vigour, fatigue, confusion, anxiety	Mean change (SD) T1-T2 Vigour 2.36 (6.6) versus -0.22 (4.5); p=0.003 T1-T3 Fatigue-0.80 (4.3) versus 0.46 (4.6); p=0.04
			POMS-TMD	Total mood disturbance	Mean change (SD) T1-T2 - 8.43 (24.3) versus -2.64 (22.1); p=0.04
			DWI-R	Behavioural coping, cognitive coping, avoidance coping	Mean change (SD) T1-T2 1.81 (6.5) versus -1.33 (6.4); p=0.0007 T1-T2 -.01 (6.9) versus -3.4 (8.6); p=0.0002 NS
			Danish Central Population Register	Overall survival rate	T1-T4 HR=1.30 (95% CI, 0.5 to 3.5)

Self-Management RCTs: Study Characteristics and Results					
Author Study Affiliations	**Population**	**Intervention**	**Measurement/ Scales**	**Outcomes**	**Results: Group Differences over Time**[1,2,3]
			Medical records	Recurrence rate	T1-T4 HR=0.73 (95% CI, 0.3 to 1.9)
Boesen et al., 2011 (24)	210 patients with primary breast cancer Age range: 50 to 59, women: 100%	**Description:** Psychosocial group intervention **Structure:** 10 wk intervention, two wkly 6-h sessions of psychoeducational group psychotherapy and eight wkly 2-h sessions of group psychotherapy **Groups:** IG versus CG **Follow-up:** T0: baseline, T1: 1 mo, 2: 6 mos, T3: 12 mos	POMS T0-T1,T0-T2,T0-T3	TMD, depression, anger, vigour, fatigue, confusion, anxiety	T0-T1 Estimates of changes from baseline (95% CI) Confusion 0.8 (0.2 to 1.4); p=0.01
			MAC T0-T1,T0-T2,T0-T3	Fighting spirit, helplessness/hopelessness, anxious preoccupation, cognitive avoidance, fatalism	NS
			EORTC QLQ-C30 T0-T1,T0-T2,T0-T3	Physical function, emotional function	NS
			EORTC QLQ-BR23 T0-T1,T0-T2,T0-T3	Sexual function, role function, cognitive function, pain, fatigue, nausea, QofL	NS
Børøsund et al., 2014 (26)	167 patients recently diagnosed with breast cancer and undergoing treatment from three Norwegian hospitals Med. age: 52, women: 100%	**Description:** Internet-based patient provider communication service compared with a web-based illness management system and usual care **Structure:** 12-mo trial with nurse-administered Internet-based patient-provider communication intervention (IPPC) that allowed patients to send secure emessages to and receive emessages from healthcare personnel at the hospital where they were treated, along with a WebChoice addition **Groups**: WebChoice versus IPPC versus UC **Follow-up:** T0: baseline, T1: 2 mos, T2: 4 mos, T3: 6 mos PI	MSAS	Symptom distress	T0-T3 Webchoice versus UC Mean diff (95% CI) -0.16 (-0.25 to -0.06) p=0.001 IPPC versus UC=NS
			HADS-A	Anxiety	T0-T3 Webchoice versus UC Mean diff (95% CI) -0.79 (-1.49 to -0.09); p=0.03 IPPC versus UC=NS
			HADS-D	Depression	T0-T3 Webchoice versus UC Mean diff (95% CI) -0.61 (-1.18 -0.05); p=0.03 IPPC versus UC=-0.69 (-1.32 to -0.05); p=0.03
			CBI	Self-efficacy	NS

Self-Management RCTs: Study Characteristics and Results					
Author Study Affiliations	**Population**	**Intervention**	**Measurement/ Scales**	**Outcomes**	**Results: Group Differences over Time[1,2,3]**
Schou Bredal et al., 2014 (27)	367 women with early-stage breast cancer Mean age: 54.7, women: 100%	**Description:** Psychoeducational group (PEG) versus. support group (SG) intervention **Structure:** 10 wk intervention. PEG consists of five wkly 2-h sessions, SG consists of three wkly 2-h sessions. The same four nurses facilitated the SG intervention. Three other nurses facilitated the PEG **Groups:** PEG versus SG **Follow-up:** T0: baseline, T1: 2 mos after intervention, T2: 6 mos after intervention, T3: 12 mos after surgery	HADS	Anxiety, depression, positive attitude	T0-T2 Positive attitude F=15.5, p<0.1
			MAC (mini)	helplessness/hopelessness, anxious preoccupation, cognitive avoidance	T0-T2 helplessness/hopelessness F=8.9, p=0.01
Chan et al., 2011 (29)	140 patients with lung cancer receiving palliative RT Age: NR, women: 17%	**Description:** Psychoeducational RCT **Structure:** 12-wk educational intervention on symptom management and coaching in the use of progressive muscle relaxation were delivered to patients one wk prior to commencing radiotherapy (RT), and repeated three wks after beginning RT. **Groups**: PEI versusUC **Follow-up:** T0: baseline, T1: 3 wks T2: 6 wks, T3: 12 wks	VAS	Breathlessness	T0-T2 F=6.27, p=0.02
			PFS	Fatigue	T0-T2 Mean (SD) 3.8 (2.6) – 3.2 (2.8) versus 4.4 (2.8) – 3.9 (2.8); p=0.01
			STAI	Anxiety	T0-T2 F=7.246, p=0.001
			SF-36	Functional ability	T0-T2 F=8.144, p=0.000
Crawford et al., 2012 (30)	88 adults with newly created ostomies Mean age: 55.3, women: 50%	**Description**: A trial compared two methods of postoperative ostomy education **Structure:** three 1-h sessions: A post-test-only experimental design used to compare a nurse instruction teaching method with a nurse instruction plus DVD video teaching method	Self-reported questionnaire	Knowledge of ostomy care, ostomy care skills confidence in performing ostomy	NS

Self-Management RCTs: Study Characteristics and Results

Author Study Affiliations	Population	Intervention	Measurement/ Scales	Outcomes	Results: Group Differences over Time[1,2,3]
		Groups: Three WOC nurse-led instruction versus two WOC nurse-led instruction **Follow-up:** Only one measurement			
Dodd et al., 2010 (31) **PRO-SELF**	119 women with confirmed diagnosis of breast cancer Mean age: 50.5, women: 100%	**Description:** Pro-self Fatigue Control Program based on self-care and adult learning theory **Structure:** 4 to 6 mos trial with one home-based exercise prescription and wkly phone calls. Group 1: (**EE**) received the exercise prescription throughout the study; Group 2 (**CE**) received their exercise prescription after completing cancer treatment; Group 3 (**CC**) received usual care **Groups:** EE versus CE versus CC **Follow-up:** T0: baseline, T1: 3 wks, T2: 6 wks, T3: 12 wks PI	PFS	Fatigue	NS
			GSDS	Sleep	NS
			CES-D	Depression	NS
			WPIS	Pain	NS
			KPS	Physical ability	NS
Dolbeault et al., 2009 (32)	203 patients after primary treatment for breast cancer Mean age: 53.1, women: 100%	**Description:** Psychoeducational group intervention (a psychoeducationally structured model based on CBT principles **Structure:** 8-wk program of 2-h sessions comprised of thematic discussions, information, and training in stress management techniques **Groups:** PEG versus CG **Follow-up:** T0: baseline, T1: after 8 sessions, T2: 1 mo after program completion	STAI	Anxiety (20 to 80)	T0-T2 Change in means 46.27 (13.9) - 39.8 (10.6) versus 43.85 (12.2) - 43.85 (10.9); p=0.001
			POMS	Anxiety (0 to 36), anger, confusion, depression, fatigue, vigour, interpersonal relationships, global score	T0-T2 Change in means (SD) Anxiety 15.12 (8.11) - 9.90 (6.44) versus 14.69 (7.63) - 12.78 (7.45); p=0.0001 Anger 13.83 (8.71) - 9.49 (6.81) versus 13.29 (8.64) - 11.44 (7.91); p=0.000 Depression 12.38 (11.45) - 7.86 (8.61) versus 13.46 (11.95) - 11.40 (10.78); p=0.03 Fatigue 10.01 (7.38) - 6.86 (5.58) versus 8.78 (6.85) - 8.87 (6.84); p=0.000

Self-Management RCTs: Study Characteristics and Results

Author Study Affiliations	Population	Intervention	Measurement/ Scales	Outcomes	Results: Group Differences over Time[1,2,3]
					Vigour 15.02 (5.29) - 16.31 (5.96) versus 15.21 (6.28) - 15.00 (5.52) p=0.03 Interpersonal relationships 17.64 (4.17) - 18.80 (3.49) versus 17.79 (3.74) - 17.41 (3.67); p=0.007
			MAC	Hopelessness/helplessness, anxious preoccupation	NS
			EORTC-BR23	Body image, future prospects, breast symptoms	NS
			EORTC-C30	Physical functioning role functioning, emotional functioning, cognitive functioning, social functioning, health status, fatigue, nausea, pain, dyspnea, sleep financial difficulties	T0-T2 Emotional functioning 2.19 (0.73) -1.77 (0.61) versus 2.11 (0.70) — 2.06 (0.67); p=0.000 Role functioning 1.84 (0.83) - 1.55 (0.66) versus 1.63 (0.74) - 1.59 (0.70); p=0.02 Health status 4.53 (0.94) — 4.88 (1.11) versus 4.90 (1.09) — 4.81 (1.03); p=0.005 Fatigue level 2.24 (0.81) — 2.08 (0.73) versus 2.09 (0.68) — 2.14 (0.77); p=0.04
Doorenbos et al., 2005 (33)	237 individuals diagnosed with solid tumour cancers Mean age: 60.0, women: 73.8%	**Description:** Cognitive behavioural intervention **Structure:** 10-contact,(5 f-f, 5 tel) 18-wk cognitive behavioural intervention focused on cancer- and chemotherapy-related symptoms **Groups:** IG versus CG **Follow-up:** T0: baseline, T1: 10 wks, T2: 20 wks, T3; 32 wks	PSET	Symptom limitation (range -91)	T0-T1 From 28.8 - 13.5 versus from 24.9 - 18.7; p=0.001 T1-T2 From 13.5 – 5 versus from 18.7 – 10; p=0.004
			CQ	Chronic health conditions	NS
			CES-D	Emotional status	NS

Self-Management RCTs: Study Characteristics and Results

Author Study Affiliations	Population	Intervention	Measurement/ Scales	Outcomes	Results: Group Differences over Time[1,2,3]
Ell et al., 2011 (34) See also Ell et al., 2008 **Alleviating Depression Among Patients With Cancer (ADAPt-C)**	472 low-income Hispanic patients with cancer and with major depression symptoms Mean age: 48.7, women: 85%	**Description:** Collaborative care management for patients with cancer and with depression **Structure:** Intervention whereby patients had access for up to 12 mos to a depression clinical specialist (supervised by a psychiatrist) who offered education, structured psychotherapy, and maintenance/relapse prevention support. Six to 12 wkly sessions and telephone calls **Groups:** IG versus UC **Follow-up:** T0: baseline, T1: 18 mos, T2: 24 mos	PHQ-9	Depression	T0-T2 ≥ 50% reduction in depression score 46% versus 32% OR=2.09 (95% CI, 1.13 to 3.86) p=0.02
			PHQ-9	Depression recurrence rate	NS
			FACT-G	Physical well-being, social and family well-being, emotional well-being, functional wellbeing	T0-T2 Social wellbeing p=0.03 Functional wellbeing p=0.01
			BPI	Pain	NS
Gaston-Johansson et al., 2013 (36)	110 patients with Stage II, III, or IV breast cancer scheduled to receive high dose chemotherapy and autologous hematopoietic stem cell transplantation Age range: 51 to 50, women: 100%	**Description:** Self-management comprehensive coping strategy program **Structure:** 3 mos - four1.5-h face to face sessions with a multimodal coping strategies approach consisting of four components: (i) preparatory education, (ii) cognitive restructuring, (iii) coping skills enhancement, and (iv) relaxation with guided imagery **Groups**: CCSP versus CG **Follow-up:** T0: baseline, T1: 1 yr	QOLI-CV	Overall QofL, health and functioning, socioeconomic aspects, psychological/spiritual, family well-being	T0-T1 Beta(Adj.R^2) Overall QofL 0.31(0.08); p<0.01 Health functioning >24 (0.04); p<0.05 Socioeconomic 0.25 (0.05); p<0.05 Psychological well-being 0.20 (-0.03); p<0.01
Gil et al., 2006 (37) See also Mishel et al., 2005	483 recurrence-free women, five to nine years posttreatment for breast cancer	**Description:** Uncertainty management intervention **Structure:** Four wkly telephone sessions in which survivors were guided in the use of audiotaped cognitive behavioural strategies and self-help manuals **Groups:** IG versus CG	MUIS-S	Uncertainty management (uncertainty, cognitive reframing, problem solving, cancer knowledge, social support, patient-provider communication)	T0-T2 **Uncertainty** F[1, 479]=4.85, p<0.03; **Cognitive reframing** (F[1, 479]=3.94, p<0.05; **Cancer knowledge** F[1, 479]=17.85, p<0.0001

Self-Management RCTs: Study Characteristics and Results

Author Study Affiliations	Population	Intervention	Measurement/ Scales	Outcomes	Results: Group Differences over Time[1,2,3]
	Mean age: 64, women: 100%	**Follow-up:** T0: baseline, T1: 10 mos T2: 20 mos	CSKS	Cancer knowledge (amount and helpfulness of cancer knowledge)	T0-T2 **Amount** F[1,479]=81.88, p<0.0001, d==.43,η2==.146 **Helpfulness** F=79.43, p<0.0001, d==.43,η2=0.142,
			GTUS	Personal growth (growth through uncertainty)	T0-T2 (*F*[1, 479]=5.65, p<0.02
Howell et al., 2014 (abstract) (7) Pilot study	22 patients with Stage II, III, or IV lung cancer Age: NR, women: percentage NR	**Description:** Home-based self-management intervention **Structure:** home-based SMI targeted behaviours such as breathing control, stress/anxiety management and physical activity. Patients with Stage II to IV lung cancer were recruited from ambulatory lung cancer clinics at Princess Margaret Cancer Centre **Groups:** T0: baseline, T1: 4 wks, T2: 8 wks	Not reported	Breathlessness decline	T0-T2 (mean 3.20/SD: 1.32 control versus 3.13/SD: 1.13 for the intervention group)
Jacobsen et al., 2013 (39)	286 patients with cancer who were receiving chemotherapy Mean age: 57.7, women: 68.1%	**Description:** stress management training (SM), exercise (EX), combined stress management and exercise (SMEX) **Structure:** Short face-to-face meetings, booklets and videos **Groups:** SM versus EX versus SMEX versus UC **Follow-up:** T0: baseline, T1: 6 wks T2: 12 wks	SF-36	Mental and physical well-being	NS
			CES-D	Depression	T0-T2 UCO versus SMEX *t*=-2.38; p=0.02
			BAI	Anxiety	T0-T2 UCO versus SMEX *t*=-1.92; p=0.05
			LTEQ	Exercise	T0-T2 UCO versus SMEX *t*=2.75; p=0.01
			SRC	Stress reduction	T0-T2 UCO versus SM *t*=5.48; p<0.001 UCO versus SMEX *t*=4.16; p<0.001

Self-Management RCTs: Study Characteristics and Results

Author Study Affiliations	Population	Intervention	Measurement/ Scales	Outcomes	Results: Group Differences over Time[1,2,3]
Jahn et al., 2014 (40) **SCION**	263 patients with diagnosed malignancy, pain >3 days and average pain ≥3/10 Mean age: 56.8, women: 42.5%	**Description:** Modular transitional nursing intervention **Structure:** Initial face-to-face session 24 h after trial inclusion, booster session 1 day after first session, and booster sessions every 3 days thereafter until sufficient self-management skills acquired. Follow-up telephone counselling session **Groups:** SCION-PAIN Group versus CG **Follow-up:** T0: baseline, T1: 7 days after hospital discharge	BQ11	Barriers to patient-related pain management	T0-T1 -0.49 points (95% CI, -0.87 to -0.12; p=0.02).
			MAS	Adherence to pain medication	T0-T1 OR= 8.58 (95% CI, 1.7 to 44.4) p=0.02
Jahn et al., 2009 (41) **SCION**	208 patients undergoing chemotherapy Mean age: 51.9, women: 60.1%	**Description**: Structured nursing intervention **Structure:** four modules delivered as interactive workshops: advisory consultation, optimizing emesis prophylaxis, nutrition counseling, and relaxation. **Groups:** IG versus CG **Follow-up:** T0: 5th day of first 2 chemo cycles, T1: eighth day of the 2nd chemo cycle	CTCAE	Anorexia, nausea, and emesis	NS
				Patients' knowledge of side effects, self-care, interventions, and agency	NS
				HRQofL	T0-T1 10.2 pts (95% CI, 1.9 to 18.5) p=0.017 favouring control group
Koller et al., 2013 (42) Pilot study **PROSELF**	39 German oncology outpatients Mean age: 59.5, women: 48.7%	**Description:** Pilot study of self-management intervention **Structure:** PRO-SELF_ Plus pain control program in 6 visits and 4 phone calls in a 10-wk period. **Groups:** PRO-SELF versus CG	PPQ	Pain knowledge	T0-T2 23% versus 2%, p=0.04 T0-T3 29% versus 3%, p<0.01

Self-Management RCTs: Study Characteristics and Results

Author **Study** **Affiliations**	**Population**	**Intervention**	**Measurement/ Scales**	**Outcomes**	**Results: Group Differences over Time^{1,2,3}**
See also Koller et al., 2013		**Follow-up:** T0: 1 wk prior to intervention T1: 6 wks T2: 10 wks T3: 14 wks T4: 22 wks		Pain, opioid intake, self-efficacy	NS
Korstjens et al., 2011 (45) See also Korstjens et al., 2008	147 patients with cancer who had successfully completed curative cancer treatment + 62 wait-list controls Mean age: 48.8, women: 83.7%	**Description:** Group-based self-management cancer rehabilitation, combining comprehensive physical training (PT) and cognitive-behavioural problem-solving training (CBT), compared with PT **Structure:** physical training (twice wkly) and cognitive behavioural training (once wkly) versus a 12-wk group-based physical training (twice wkly) **Groups:** PT+CBT versus PT versus UC (nonrandomized T0 & T1) **Follow-up:** T0: baseline, T1: 12 wks, T3: 3 mos, T4: 9 mos	SPSI-R	Negative problem-solving	NS
			HADS	Depression	NS
			HADS	Anxiety	T0-T3 PT versus UC p<0.05 PT+CBT versus UC p<0.05
Kravitz et al., 2012 (47) **Ca-HELP** See also Kravitz et al., 2011	258 patients with cancer with baseline ‘‘worst pain’’ of P4 on a 0 to 10 scale, or at least moderate functional	**Description:** Tailored education and coaching intervention **Structure:** Intervention was delivered in a private space just before the index visit. Patients were surveyed at enrollment (by phone), before and after the index visit (using self-administered questionnaires, with assistance from the	Self-reported questionnaire	Change in analgesic treatment	60% versus 36%, OR=2.61 (95% CI, 1.54 to 4.4 p<0.01)
			MOSPIS	Pain severity	NS (after adjusted for analgesic treatment)

Self-Management RCTs: Study Characteristics and Results

Author Study Affiliations	Population	Intervention	Measurement/ Scales	Outcomes	Results: Group Differences over Time[1,2,3]
	impairment due to pain Mean age: 58.0, women: 78.7%	research assistant as needed), and again at 2, 6, and 12 wks (by phone) **Groups:** TEC versus CG Follow-up: T0: baseline, T1: 2 wks, T2: 6 wks,T3: 12 wks		Pain-related impairment	T0-T1 -0.25 point reduction on 5-point scale (95% CI, -0.43 to -0.06); p=0.01
Krischer et al., 2007 (48)	101 patients undergoing radiotherapy Mean age: 61.0, women: 71.6%	**Description:** Self-administered stress management training **Structure:** 15-minute prerecorded videotape, a 12-page booklet modified for patients receiving radiation, and a 35-minute prerecorded audiotape **Groups:** SM versus UC **Follow-up:** T0: baseline, T1: 3 wks after beginning of RT	SF-36	Mental health summary scale, mental health index	NS
			CES-D	Depressive symptoms	NS
			STAI-S	Anxiety	NS
			SF-36 Mental Health subscale	Psychological distress (subgroup of highly stressed individuals)	T0-T1 p=0.02
			CES-D	Depressive symptoms (subgroup of highly stressed individuals)	T0-T1 p=0.004
Kurtz et al., 2006 (49)	222 patients with cancer currently undergoing chemotherapy Mean age: 59.0, women: 74.5%	**Description:** A cognitive behavioural nursing intervention directed towards controlling symptoms in patients with cancer **Structure:** 10-contact (5 in person,5 telephone) 20, wk experimental intervention **Groups:** Symptom management versus CG **Follow-up:** T0: baseline, T1: 10 wks T2: 20 wks (end of trial)	Medical records	Healthcare services – emergency room visits	T0-T2 Mean(SD) 0.21(0.63)-0.18(0.63) versus 0.37(1.16)-0.57(1.97); p=0.05
			Medical records	Physician visits, hospital visits, symptom severity	T0-T1 NS
			Medical records	Hospital visits (subgroup of individuals reporting above average symptom severity)	T0-T2 p=0.023

Self-Management RCTs: Study Characteristics and Results

Author Study Affiliations	Population	Intervention	Measurement/ Scales	Outcomes	Results: Group Differences over Time[1,2,3]
Lee et al., 2014 (50) Pilot study	59 breast cancer survivors who had received curative surgery and completed primary cancer treatment within 12 mos prior to study Mean age: 42.3, women: 100%	**Description:** Web-based self-management exercise and diet intervention (WSEDI) aimed at enhancing exercise and dietary behaviours tailored according to the principal constructs of the transtheoretical model (TTM)-based strategies **Structure:** 12wk web-based WSEDI at least twice wkly **Groups:** IG versus CG **Follow-up:** T0: baseline, T1: 12 wks	DQI HADS BFI	Aerobic exercise ±150 minutes/wk	T0-T1 Group differences n(%) 10 (33.3) to 19 (65.5) versus 10 (34.5) to 10 (35.7); p<0.0001
			CAN Pro 4.0	Daily intake of fruits and vegetables = servings	T0-T1 Group differences n(%) 13 (43.3) to 16 (55.2) versus 14 (48.3) to– 9 (32.1); p=0.001
			EORTC QLQ-C30 (range 0-100)	Physical functioning	T0-T1 Scores 75.5 to 75.9 versus 75.4 to 83.6; p=0.023
			BFI	Fatigue severity	T0-T1 16.9 to 13.5 versus 16.7 to 15.3; p=0.03
				Role functioning, cognitive functioning, social functioning, global QofL, magnitude of existing symptoms, anxiety, depression	NS
Loprinzi et al., 2011 (51) Pilot study **Stress Management and resilience Training SMART**	21 breast cancer survivors Med. age: 61, women: 100%	**Description:** Stress Management and Resiliency Training (SMART) program for enhancing resilience and well-being and for decreasing stress and anxiety **Structure:** 12 wk intervention consisting of two 90-minute group training sessions, a brief individual session, and three follow-up telephone calls **Groups:** SMART versus CG **Follow-up:** T0: baseline, T1: 12 wks	CD-RISC	Resilience	T0-T1 73.6±10.1 to 81.3±9; p=0.010
			PSS	Stress	T0-T1 22.1±5.9 to 12.8±6.6; p=0.003
			SAS	Anxiety	T0-T1 49.4 ±18.2 to 33.3 ±11.7; p=0.002
			VAS-Fatigue	Fatigue	T0-T1 NS
			LASA QofL	QofL	T0-T1 Score (SE) 38.4 ± 6.1 to 44.5±3.5 versus 41.6 (4.0) to 42.2 (5.5); p=0.002
McCorkle et al., 2009 (52)	123 women with a primary diagnosis of ovarian cancer	**Description:** Nursing intervention to assist patients in developing and maintaining self-management skills postoperatively and to facilitate their	MUIS	Uncertainty	T0-T3 p=0.0006

Self-Management RCTs: Study Characteristics and Results

Author Study Affiliations	Population	Intervention	Measurement/ Scales	Outcomes	Results: Group Differences over Time[1,2,3]
	(61.8%) or other cancers with metastasis to the ovaries and abdomen who were scheduled and received chemotherapy. Mean age: 60.3, women: 100%	active participation in decisions affecting their subsequent treatment, which included chemotherapy. **Structure:** 6 mos of specialized care by an Advanced Practice Nurse (APN); women with high distress were evaluated and monitored by a psychiatric consultation–liaison nurse (PCLN). **Groups:** APN versus AC **Follow-up:** T0: baseline (24 to 48 h after surgery, T1: 1 mo, T2: 3 mos T3: 6 mos postsurgery	CES-D, SDS, SF-12	Depressive symptoms, symptom distress, QofL	NS
			MUIS	Uncertainty (subgroup - highly distressed individuals)	T0-T3 p=0.0181
			SDS	Symptom distress (subgroup - highly distressed individuals)	T0-T3 p<0.0001
			SF-12	Mental and physical QofL (subgroup - highly distressed individuals)	T0-T3 Mental p=0.0001 Physical p=<0.0001
Penedo et al., 2006 (54)	191 men treated with radiation or radical prostatectomy for clinically localized (i.e., Stage I or II) prostate cancer. Mean age: 65.1, women: 0%	**Description:** cognitive–behavioural stress management (CBSM) intervention **Structure:** 10-wk group-based cognitive-behavioural stress management intervention or a half-day educational seminar as a control condition. **Groups:** CBSM versus CG **Follow-up:** T0: baseline, T1: 2 to 3 wks after intervention	Self-reported questionnaire	Perceived stress management skills	T0-T1 coefficient=0.19, p<0.01
			FACT-G	QofL	T0-T1 Mean(sd) 86.2 (14.29 to 88.7 (13.7) versus 86.8 (14.1) to 86.35 (18.8); p<0.01
Ream et al., 2006 (56)	103 chemotherapy-naïve patients	**Description:** supportive intervention for fatigue in patients undergoing chemotherapy	VASs	Fatigue	T0-T3 Mean (SD) 38.8 (28.9) to 30.6 (27.7) versus 42.6 (28.8) to 41.6 (29.4); p=<0.05

Self-Management RCTs: Study Characteristics and Results

Author Study Affiliations	Population	Intervention	Measurement/ Scales	Outcomes	Results: Group Differences over Time[1,2,3]
	with cancer due to commence 1st cycle Mean age: 56.5, women 45%	**Structure:** Over three months, recipients were provided with an investigator-designed information pack and Fatigue Diary that they completed during the week following each treatment. Additionally, support nurses visited them, mostly at home **Groups:** Supportive intervention EC versus CG **Follow-up:** T0: baseline, T1: 2nd CT cycle, T2: 3rd CT cycle, T3: 4th CT cycleT0-T3	SF-36	Distress associated with fatigue	T0-T3 Mean (SD) 28.4 (30.1) to 24.0 (27.1) versus 33.3 (33.3) to 38.4 (31.0); p=<0.01
			SF-36	Impact of fatigue on valued pastimes	T0-T3 Mean (SD) 39.7 (37.4) to 28.7 (28.8) versus 45.1 (34.3) to 43.6 (32.6); p=<0.05
			SF-36	Extent of fatigue	NS
			SF-36	Disruption due to fatigue	NS
			HADS	Anxiety	T0-T3 p=<0.05
			HADS	Depression	T0-T3 p=<0.05
			HADS	Active coping	T0-T3 p=<0.05
Ream et al., 2015 (68)	44 patients with cancer undergoing chemotherapy Mean age: 53.3, women: 61%	**Description:** An exploratory trial was undertaken comprising a small randomized controlled trial with an embedded telephone interview element. The trial was designed to explore treatment effect while interviews enabled intervention recipients to discuss the feasibility and acceptability of the intervention, and the intervention processes **Structure:** delivered by telephone using motivational interviewing Groups: IG versus UC **Follow-up:** T0: baseline T1: completion of CT	BFI	Fatigue intensity	T0-T1 ES=0.18
			FDS	Fatigue distress	T0-T1 ES=0.62
			Developed by authors	Fatigue self-efficacy	T0-T1 ES=-0.04
			HADS	Anxiety	T0-T1 ES=0.31
			HADS	Depression	NS
Risendal et al., 2015 (69)	244 cancer survivors Age: NR, women: percentage NR	**Description:** Adapted version of the chronic disease self- management program for cancer survivors called Cancer Thriving and Surviving **Structure:** 27 workshops consisting of six 2.5-h sessions led by facilitators.	Developed by authors	Provider communication	ES=0.23
			PHQDS	Depression	ES=-0.18
			Developed by authors	Energy	NS

Self-Management RCTs: Study Characteristics and Results

Author Study Affiliations	Population	Intervention	Measurement/ Scales	Outcomes	Results: Group Differences over Time[1,2,3]
		Groups: IG versus CG **Follow-up:** T0: baseline, T1: 6 mos post program	Developed by authors	Sleep problems	ES=-0.20
			Developed by authors	Stress-related problems	Es=-0.17
			Developed by authors	Pain	NS
Rissanen et al., 2015 (70)	304 women newly diagnosed with breast cancer and receiving standard oncology care Age: NR, women: 100%	**Description:** a stress management intervention, in a group or individual setting, on self-reported cancer-related traumatic stress symptoms **Structure:** GSM: 10 2-h group sessions, ISM: four to eight 1-h sessions **Groups**: group versus individual settings **Follow-up**: T0: baseline; T1 3 mos, 12 mos	IES	Posttraumatic stress response	NS
			HADS	Anxiety, depression	NS
Rustøen et al., 2014 (58) **PRO-SELF Pain Control Program** See also Rustøen et al., 2012	179 oncology outpatients with pain from bone metastasis Mean age: 65.6, women: 48.6%	**Description:** a study to evaluate the efficacy of the PRO-SELF Pain Control Program that was modified for Norwegian patients with cancer who were in decreasing pain and increasing opioid intake compared with control care **Structure:** nurses visited patients in the PRO-SELF group in their home at weeks 1, 3, and 6 and conducted telephone interviews at weeks 2, 4, and 5. Patients in both groups completed a daily diary of pain intensity ratings and analgesic intake. **Groups:** PRO-SELF versus CG **Follow-up:** T0: baseline, T1: 6 wks	Self-report pain intensity scores	Pain intensity	T0-T1 NS

Self-Management RCTs: Study Characteristics and Results

Author Study Affiliations	**Population**	**Intervention**	**Measurement/ Scales**	**Outcomes**	**Results: Group Differences over Time**[1,2,3]
Schmitz et al., 2009 (59) **physical activity and lymphedema (PAL) trial** See also Brown et al., 2014	141 women with breast cancer-related lymphedema Mean age: 57.0, women: 100%	**Description:** weightlifting trial to assess change in arm and hand swelling **Structure:** 1 yr twice wkly progressive weightlifting intervention **Groups:** Progressive weightlifting versus no exercise (NE) Follow-up: T0: baseline, T1: 3 mos,T2: 6 mos, T3: 12 mos	Displaced water volume of the affected and unaffected limbs	Change in arm and hand swelling	NS
			Assessed by trainer	Exacerbations of lymphedema	T0-T3 Mean diff.=0.47 (0.23 to 0.97); p=0.04
			Assessed by trainer	Number and severity of lymphedema symptoms	T0-T3 Mean diff.=-0.29 (-0.54 to -0.03); p=0.03
			Assessed by trainer	Muscle strength	T0-T3 14% versus 29%, p=0.04
Sherwood et al., 2005 (60) See also Sikorskii et al., 2015	124 patients with advanced cancer Mean age: 62, women: 58%	**Description:** Cognitive behavioural intervention for symptom management **Structure:** Nurses with experience in oncology delivered a 5-contact, 8-wk intervention aimed at teaching patients problem solving techniques to affect symptom severity **Groups:** SMI versus CC **Follow-up:** T0: baseline T1: 10 wks after randomization T2: 20 wks after randomization	Severity of 12 symptoms scored by patents on a scale ranging from not present (0) to severity as it possibly could be (10) added together for a range of 0 to 120	Symptom severity (pain, fatigue, nausea, vomiting, insomnia, dyspnea, weakness, anorexia, fever, dry mouth, constipation, mouth sores)	T0-T2 22.1 (SD=15.2) versus 28.2 (SD=19.6); p=0.02
			CES-D (ranging 1 to 4 – higher score = higher depression)	Depressive symptoms	NS
Sikorskii et al., 2007	435 patients with lung cancer who had solid	**Description:** multidimensional interactive interventions for symptom management	Severity of 17 symptoms scored by patents on a	Symptom severity (fatigue, pain, dyspnea, insomnia, distress,	NS

Self-Management RCTs: Study Characteristics and Results

Author Study Affiliations	Population	Intervention	Measurement/ Scales	Outcomes	Results: Group Differences over Time[1,2,3]
See also Sikorskii et al., 2015	tumours and were undergoing chemotherapy Mean age: 57.2, women: 74.6%	**Structure:** 8-wk, 6-contact either nurse-assisted symptom management (NASM) or automated telephone symptom management (ATSM). **Groups:** NASM versus ATSM **Follow-up:** T0: baseline, T1: each of 6 contact, T2: 10 wks	scale ranging from absence (0) to worst severity possible (10)	nausea, fever, difficulty remembering, lack of appetite, dry mouth, vomiting, numbness and tingling, diarrhea, cough, constipation, weakness, alopecia)	
Stanton et al., 2005 (63) **Moving Beyond Cancer Trial** **MBC**	418 patients with breast cancer who were registered within 6 wks after surgery Mean age: 58.1, women: 100%	**Description:** psychoeducational videotape intervention for patients with breast cancer **Structure:** standard National Cancer Institute print material (CTL); standard print material and peer-modeling videotape (VID); or standard print material, videotape, two sessions with a trained cancer educator, and informational workbook (EDU). **Groups:** ETU versus VID versus CTL **Follow-up:** T0: baseline, T1: 2 mos, T2: 6 mos, T3: 12 mos	SF-36	Energy/fatigue	T0-T2 Mean (SE) change scores 5.0 (1.54 versus 9.06 (1.54) versus 3.84 (1.58); p=0.049
			IES-R	Cancer-specific distress	NS
			CES-D (range 0 to 60)	Depressive symptoms	NS
Strong et al., 2008 (64) **Symptom Management Research Trial** **SMaRT oncology 1**	197 outpatients who had cancer with a prognosis of >6 mos and major depressive disorder Mean age: 56.6, women: 71%	**Description:** Nurse-delivered complex intervention designed to treat major depressive disorder among patients with cancer **Structure:** Max. 10 one-to-one sessions over 3 mos. **Groups:** IG versus UC **Follow-up:** T0: baseline, T1: 3 mos, T2: 6 mos, T3: 12 mos	SCL-20 (scale 0 to 4)	Depression, anxiety	T0-T3 Mean differences as effect sizes ES -0.34(-0.55 to 0.13); p=0.002 ES -0.20(-0.32 to -0.09); p=0.0008
			SCL-90 (range 0 to 100)	Fatigue	T0-T3 ES -9.4 (-15.5 to -3.4); p=0.003

Self-Management RCTs: Study Characteristics and Results					
Author Study Affiliations	**Population**	**Intervention**	**Measurement/ Scales**	**Outcomes**	**Results: Group Differences over Time[1,2,3]**
			EORTC QoL-C30 (range 0-100)	Pain, physical functioning	T0-T3 NS
van Waart, et al., 2015 (72)	230 patients who were scheduled to undergo adjuvant chemotherapy Mean age 50.7; women 99%	**Description:** low-intensity, home-based physical activity program (Onco-Move) and a moderate- to high-intensity, combined supervised resistance and aerobic exercise program (OnTrack) versus usual care (UC) **Structure:** home-based, low-intensity, individualized, self-managed physical activity program **Groups:** Onco-Move versus OnTrack versusUC **Follow-up:** T0: prior to chemotherapy; T1: end of chemotherapy, T2: 6-mo follow-up	MFI, FQL Fatigue Quality List	Fatigue	OnTrack vs UC T0-T1 –ES=0.63 p<0.001; T0—T2 NS Onco-Move versus UC NS OnTrack versus Onco-move ES=0.42 Pp=0.021; T0-T2 NS
			EORTC QLQ-C30	Physical functioning	OnTrack versus UC T0-T1 ES=0.81, p≤0.001; T0—T2 NS Onco-Move versus UC T0-T1 ES=0.68, p=0.001; T0—T2 NS OnTrack versus Onco-move NS
			EORTC QLQ-C30	Cognitive functioning	OnTrack versus UC T0-T1 ES=0.32 p=0.033; T0—T2 NS Onco-Move versus UC NS OnTrack versus Onco-move NS
			EORTC QLQ-C30	Nausea and vomiting	On Track versus UC T0-T1 ES=0.89p =0.031; T0-T2 NS Onco-Move versus UC ES=1.0 p=0.029; T0-T2 NS OnTrack vs Onco-move NS
			EORTC QLQ-C30	Pain	On Track versus UC T0-T1 ES=0.46 p=0.011; T0-T2 NS Onco-Move versus UC ES=0.60 p=0.003; T0-T2 NS OnTrack versus Onco-move NS
			EORTC QLQ-C30	Social functioning	NS

Self-Management RCTs: Study Characteristics and Results					
Author Study Affiliations	**Population**	**Intervention**	**Measurement/ Scales**	**Outcomes**	**Results: Group Differences over Time[1,2,3]**
			EORTC QLQ-C30	Constipation	On Track versus UC T0-T1 ES=0.98 p=0.001; T0-T2 NS Onco-Move versus UC NS OnTrack versus Onco-move ES=0.61 p<0.001; T0-T2 NS
Wang et al., 2011 (65)	62 women newly diagnosed with Stage I or II breast cancer Mean age: 50.4, women: 100%	**Description:** revised exercise program tailored to Taiwanese women with breast cancer **Structure:** 6-wk home-based walking program **Groups**: Exercise versus UC **Follow-up:** T0: baseline, T1: 2-3 wks after surgery, T2: CT midcycle, T3: end of 6-wk intervention	FACT-G (range 0 to 100)	QofL – functional assessment of cancer treatment	T1-T4 FACT_G scores 75.1 to 84.versus 75 to 66.4; p=0.01
			FACIT-F (range 0 to 52)	Fatigue	T1-T4 FACIT-F scores 40.5 to 45.8 versus 40.1 to 40.0; p=0.001
			PSQI (global sum of 5 or greater=poor sleep quality)	Sleep disturbance	T1-T4 PSQI scores 9.2 to 7.5 versus 9.3 to 11.2; p<0.001
			ESES (range 0 to 100)	Exercise self-efficacy	T1-T4 ESES scores 60.5 to 76.8 versus 44.8 to 47.6; p<0.001
			6MWD (metres walked in 6 minutes)	Exercise capacity	T1-T4 6MWD scores 504 to 517.8 versus 472 to 462.3; p=<0.01
Yates et al., 2005 (66)	109 women commencing adjuvant chemotherapy for stage I or II breast cancer Mean age: 49.4, women: 100%	**Description:** psychoeducational intervention in improving cancer-related fatigue **Structure:** Individualized fatigue education and support program delivered in the clinic and by phone over three 10- to 20-minute sessions one week apart. **Groups:** PEI versus CG **Follow-up:** T1: baseline, T2: 1 to 2 wks after intervention, T3: 3 to 4 wks after	Self-reported questionnaire	Fatigue management behaviours	NS
			Self-reported questionnaire	Confidence with managing cancer	NS
			PFS	Fatigue experience (severity, interference, worst, average, best, current, distress from)	T1-T2 Severity: MCSc 1.0 versus 2.3; p=0.01 Interference MCSc 0.5 versus 2.1; p=0.01

Self-Management RCTs: Study Characteristics and Results

Author Study Affiliations	Population	Intervention	Measurement/ Scales	Outcomes	Results: Group Differences over Time[1,2,3]
		intervention, T4: 5 to 6 wks after intervention			Worst fatigue MCSc 1.0 versus 2.6; p=0.01 Average fatigue MCSc 1.0 versus 2.3; p=0.02
			Self-reported questionnaire	Cancer self-efficacy, QofL, psychological well-being	NS
			EORTC QLQ-C30 -	QofL	NS
Zhang et al., 2014 (67)	152 Chinese adult patients with a diagnosis of colorectal cancer Mean age: 53, women: 35.5%	**Description:** Self-efficacy enhancing intervention **Structure:** six-mos nurse-led self-efficacy-enhancing intervention for patients with colorectal cancer, compared with routine care over a six mos follow-up. **Groups:** IG versus SC **Follow-up:** T0: baseline, T1: 3 mos, T2: 6 mos	SICPA	Self-efficacy	T0-T2 (F=7.26, p=0.003
			MDASI	symptom distress	T0-T2 symptom severity =5.30, p=0.01 symptom interference F=4.06, p=0.025
			HADS	anxiety, depression	T0-T2 anxiety F=6.04, p=0.006 depression F=6.96, p=0.003
			FACT-G	QofL	NS

[1] Baseline assessment at time of randomization unless otherwise stated.

[2] Intervention group vs. control group unless otherwise stated.

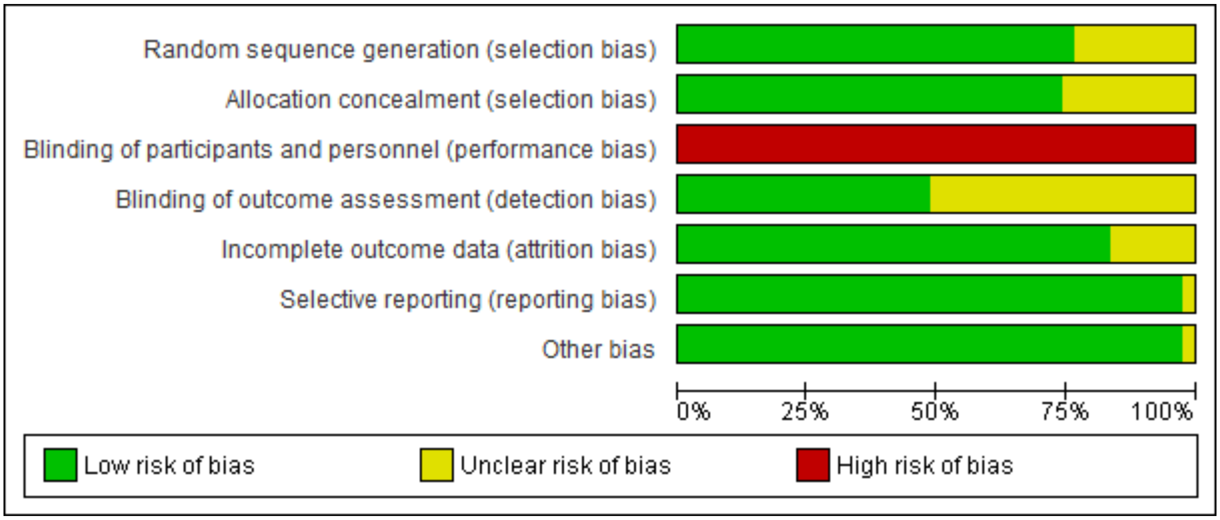
[3] Major results shown to longest significant time effect sustained (T0 [baseline] to T1,T2,T3).

6MWD = 6-minute walking distance; ABSI = Affects Balance Scale Index; AC -=attention control (group); APN = advanced practice nurse; ASA-A = Appraisal of Self-Care Agency; ATSM = automated telephone symptom management; BAI = Beck Anxiety Inventory; BDI = Beck Depression Inventory; BFI = brief fatigue inventory; BQ11 = barriers questionnaire - 11; BPI = Brief Pain Inventory, short form; CAN Pro 4.0 = Korean Nutrition Society computer-assisted nutritional analysis program; CaTS = Cancer Treatment Scale; CaTs-SPC = cancer treatment scale - sensory–psychological concerns; CaTS-PC = cancer treatment scale – protocol concerns; CBI –=Cancer Behavioural Inventory (scale); CBI = cognitive behavioural intervention; CBSM = cognitive-behavioural stress management; CBT = cognitive behavioural therapy; CC = onventional care (group); CCSP = Comprehensive Coping Strategies Program; CCNDT = Comprehensive Cancer Network Distress Thermometer; CD-RISC = Connor-Davidson Resilience Scale; CE = (cancer and exercise (group); CES-D = Centre for Epidemiological Studies Depression Inventory; CG = control group; CLCSS = Cataldo Lung Cancer Stigma Scale; CMF = confidence with managing fatigue; CQ = comorbidity questionnaire; CQoLQ-30 = Cancer Quality of Life Questionnaire C30; CRF = cancer-related fatigue; C-SAS = Chemotherapy Symptom Assessment Scale; CSKS = Cancer Survivor Knowledge Scale; CSQ = coping strategies questionnaire; CT = chemotherapy; CTCAE = Common Terminology Criteria for Adverse

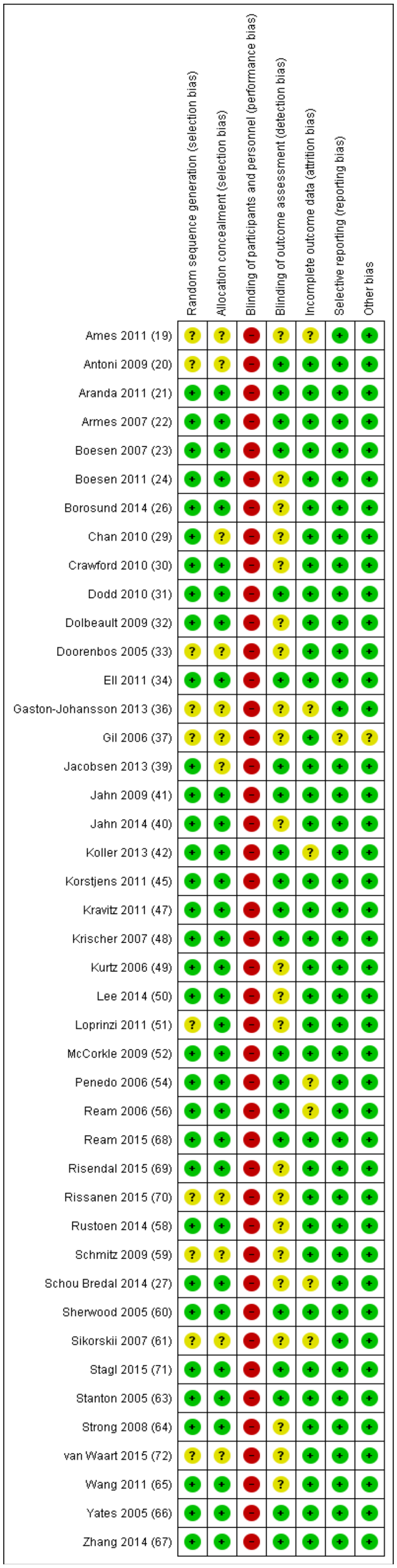
<table>
<tr><th colspan="6">Self-Management RCTs: Study Characteristics and Results</th></tr>
<tr><th>Author
Study
Affiliations</th><th>Population</th><th>Intervention</th><th>Measurement/ Scales</th><th>Outcomes</th><th>Results:
Group Differences over Time[1,2,3]</th></tr>
<tr><td colspan="6">Events; CTL = control; DAS = Spanier Dyadic Adjustment Scale; DQI = diet quality index; DWI-R = Dealing with Illness Inventory (revised edition); EofT = end of treatment; EC = exercise and regular follow-up; EDU = education; EE = exercise only (group); EORTC = European Organization for Research and Treatment of Cancer; ESES = Exercise Self-efficacy Scale; ES = expected shortfall; EX = exercise; FACT-B = functional assessment of cancer therapy - Breast; FACT-G = functional assessment of cancer therapy – general; FACT-P = functional assessment of cancer therapy - prostate; FAOCT = Functional Assessment of Cancer Therapy; FACIT-F = Functional Assessment of Chronic Illness Treatment Fatigue; FDS = fatigue distress symptoms; FOM = fatigue outcome measure; FQL = fatigue quality list; FSI = fatigue symptom inventory; GSM – group stress management; h = hour(s); GSDS = General Sleep Disturbance Scale; GTUS = Growth Through Uncertainty Scale; HAM = hamilton rating scale; HADS = hospital anxiety and depression scale; HADS-A = hospital anxiety and depression scale - anxiety; HADS-D = hospital anxiety and depression scale - depression; HRQofL = health-related quality of life; IES = Impact of Events Scale; IES-R = The psychometrically adequate Revised Impact of Events Scale; IG = intervention group; IOES = Impact of Events Scale; IPPC = Internet-based patient provider communication; ISM = individual stress management; IV = intervention group; KPS = karnofsky performance status scale; LASA = linear analog self-assessment scale; LTEQ = Godin Leisure-Time Exercise Questionnaire; MAC = mental adjustment measurement; MAS = medication adherence scale; MAX-PC = Memorial Anxiety Scale for Prostate Cancer; MCS = measure of current status; MCSc = mean change score; MDASI = M.D. Anderson Symptom Inventory; Med. = median; MFI = Multidimensional Fatigue Inventory; mo, mos = month(s); MOSPIS = Medical Outcomes Study Pain Impairment Scale; MQOL = multidisciplinary quality of life; MSAS = memorial symptom assessment scale; MUIS = Mishel Uncertainty in Illness Scale; MUIS-S = Mishel Uncertainty in Illness Scale-Survivor; M-W U Test = Mann-Whitney U Test - a nonparametric test that used to test whether two population means are equal or not; NASM = nurse-assisted symptom management; NE = no exercise; NR = not reported; NS = not significant; PCLN = psychiatric consultation-liaison nurse; PCS = Positive Contributions Scale; PEG = psychoeducational group; PEI = psychoeducational intervention; PFS = piper fatigue scale; PHQ-9 = patient health questionnaire-9; PHQDS = Personal Health Questionnaire Depression Scale; POMS = profile of mood states; POMS-B = profile of mood states – breast; POMS-TMD = profile of mood states – total mood disturbance; PPQ = patient pain questionnaire; PSI = psychosocial intervention; PSET = Physical Symptom Experience Tool; PSQI = Pittsburgh Sleep Quality Index; PSS = perceived stress scale; PT = physical training; QofL = quality of life; QOLI-CV = quality of life – cancer version; RCT = randomized controlled trial; RT = radiotherapy; SAS = smith anxiety scale; SCUMNI = Cancer Survivors Unmet Needs instrument; SCI = Survivor Concerns instrument; SCL-20- symptom checklist 20 depression scale; SCL-90 = symptom checklist; SD = standard deviation; SDS = symptom distress scale; SF-12 = Short form (mental health study)-12; SF-36 = Short form (mental health study)-36; SG = support group; SICPA = Stanford Inventory of Cancer Patient Adjustment; SM = stress management; SMEX = stress management and exercise (group); SMI = symptom management intervention; SP = support group; SPSI-R = Social Problem-Solving Inventory-Revised; SRC = stress reduction checklist; STAI = state-trait anxiety inventory; STAI-S = spielberger state-trait anxiety inventory; TEC = tailored education and coaching (group); TMD = total mood disturbance; TTM = transtheoretical model; UC = usual care (group); VAS = visual analog scale; VAS-GF = visual analog scale – general fatigue; VID = videotape; WLC = wait list control (group); WSEDI = web-based self-management exercise and diet intervention; wk, wkly, wks = week, weekly, weeks; WOC = wound, ostomy and continence (group); WPIS = worst pain intensity scale; yr, yrs = year(s).</td></tr>
</table>

Appendix E. Risk of bias graphs

Review authors' judgments about each risk of bias item, presented as percentages across all full-text included studies.



Review authors' judgments about each risk of bias item by individual study



	Random sequence generation (selection bias)	Allocation concealment (selection bias)	Blinding of participants and personnel (performance bias)	Blinding of outcome assessment (detection bias)	Incomplete outcome data (attrition bias)	Selective reporting (reporting bias)	Other bias
Ames 2011 (19)	?	?	−	?	?	+	+
Antoni 2009 (20)	?	?	−	+	+	+	+
Aranda 2011 (21)	+	+	−	+	+	+	+
Armes 2007 (22)	+	+	−	+	+	+	+
Boesen 2007 (23)	+	+	−	+	+	+	+
Boesen 2011 (24)	+	+	−	?	+	+	+
Borosund 2014 (26)	+	+	−	?	+	+	+
Chan 2010 (29)	+	?	−	?	+	+	+
Crawford 2010 (30)	+	+	−	?	+	+	+
Dodd 2010 (31)	+	+	−	+	+	+	+
Dolbeault 2009 (32)	+	+	−	?	+	+	+
Doorenbos 2005 (33)	?	?	−	?	+	+	+
Ell 2011 (34)	+	+	−	+	+	+	+
Gaston-Johansson 2013 (36)	?	?	−	?	?	+	+
Gil 2006 (37)	?	?	−	?	+	?	?
Jacobsen 2013 (39)	+	?	−	+	+	+	+
Jahn 2009 (41)	+	+	−	+	+	+	+
Jahn 2014 (40)	+	+	−	?	+	+	+
Koller 2013 (42)	+	+	−	+	?	+	+
Korstjens 2011 (45)	+	+	−	+	+	+	+
Kravitz 2011 (47)	+	+	−	+	+	+	+
Krischer 2007 (48)	+	+	−	+	+	+	+
Kurtz 2006 (49)	+	+	−	?	+	+	+
Lee 2014 (50)	+	+	−	?	+	+	+
Loprinzi 2011 (51)	?	+	−	?	+	+	+
McCorkle 2009 (52)	+	+	−	+	+	+	+
Penedo 2006 (54)	+	+	−	+	?	+	+
Ream 2006 (56)	+	+	−	+	?	+	+
Ream 2015 (68)	+	+	−	+	+	+	+
Risendal 2015 (69)	+	+	−	?	+	+	+
Rissanen 2015 (70)	?	?	−	?	+	+	+
Rustoen 2014 (58)	+	+	−	?	+	+	+
Schmitz 2009 (59)	?	?	−	?	+	+	+
Schou Bredal 2014 (27)	+	+	−	?	?	+	+
Sherwood 2005 (60)	+	+	−	+	+	+	+
Sikorskii 2007 (61)	?	?	−	?	?	+	+
Stagl 2015 (71)	+	+	−	+	+	+	+
Stanton 2005 (63)	+	+	−	+	+	+	+
Strong 2008 (64)	+	+	−	?	+	+	+
van Waart 2015 (72)	?	?	−	?	+	+	+
Wang 2011 (65)	+	+	−	?	+	+	+
Yates 2005 (66)	+	+	−	+	+	+	+
Zhang 2014 (67)	+	+	−	+	+	+	+

Appendix F. Combinations of the eight core elements of self-management interventions

Combinations of the Eight Self-management Core Elements Used			
No. Core Elements Used	**Core Element Used ***	**No. Studies Using Core Elements (References)**	**Total Studies**
One	5	1 (Ream 2015)	**1**
Two	1,2	1 (Aranda)	**3**
	2,7	2 (Krischer, Schmitz)	
Three	1,2,7	3 (Gil, Jacobsen, Loprinzi)	**10**
	1,2,8	1 (McCorkle)	
	1,7,8	1 (Yates)	
	2,3,5	2 (Kravitz, Penedo)	
	2,4,7	2 (Sikorskii, Stanton)	
	2,7,8	1 (Risendal)	
Four	1,2,4,7	4 (Dodd, Lee, Ream 2006, Wang)	**17**
	1,2,5,7	1 (van Waart)	
	1,2,7,8	1 (Sherwood)	
	1,4,5,7	1 (Armes)	
	1,5,6,7	1 (Korstjens)	
	2,3,4,6	1 (Borosund)	
	2,3,4,7	1 (Antoni)	
	2,3,4,8	1 (Kurtz)	
	2,4,5,7	3 (Chan, Crawford, Rissanen)	
	2,6,7,8	3 (Ames, Boesen, 2007, Bredal)	
Five	1,2,3,4,7	1 (Rustoen)	**4**
	1,2,4,5,8	1 (Jahn 2014)	
	1,2,6,7,8	1 (Boesen 2011)	
	2,3,5,7,8	1 (Dolbeaults)	
Six	1,2,3,4,5,6	1 (Jahn 2009)	**4**
	1,2,3,4,5,8	1 (Doorenbos)	
	1,2,3,4,6,7	1 (Gaston-Johansson)	
	1,2,5,6,7,8	1 (Zhang)	
Seven	1,2,3,4,5,7,8	1 (Koller)	**2**
	1,2,4,5,6,7,8	1 (Ell)	
Eight	1 ,2, 3, 4, 5, 6,7, 8	1 (Strong)	**1**
Total Core Element combinations		**30** **Total Studies**	**42**

* 8 core elements of self-management patient education are: 1) tailored to the needs of the patient, 2) facilitate self-efficacy skills to give patients confidence to manage their condition, 3) support the patient to develop effective skills to communicate with primary care physicians and others, 4) facilitate the patient's understanding and confidence/self-efficacy for managing their care, 5) be coached by a specially trained instructor, 6) be supported by collaboration and guidance of the health care team experts, 7) facilitate uptake of health behaviours through action plans, 8) support development and application of problem solving skills.

Appendix G. Assessment of the Eight Core Elements of Self-Management Interventions by study

Author **Trial Name** **Intervention** **Core Elements**	**1)** Tailored to patient's needs, **2)** Facilitates self-efficacy, **3)** Helps develop communciation skills, **4)** Assesses knowledge/confidence, **5)** Provided by specially trained instructor(s), **6)** Supported by collaboration/multidisciplinary team, **7)** Facilitates uptake of health behaviours through action plans, **8)** Supports development of problem-solving skills.
Ames et al., 2011 (19) **Pilot** Multidisciplinary quality of life (QofL) intervention tailored for men with biochemical recurrence of prostate cancer Core elements 2,6,7,8	**Intervention Group (IG):** Nine weeks - eight 1-hour, structured, sessions conducted in group setting. Group sessions focused on 1) program overview and medical education regarding prostate cancer; 2) goal setting, problem solving, and relaxation training; 3) nutrition and prostate cancer; 4) physical activity and conditioning; 5), 6), and 7) mood management (i.e., cognitive therapy for management of negative emotions); and 8) social support and maintenance of positive health behaviour change. Also included written treatment manual, home practice assignments, manualized and semistructured treatment, sessions 5, 6, and 7 led by clinical health psychologist, psychologist also cofacilitated treatment sessions in conjunction with a multidisciplinary team of healthcare providers. **Control Group (CG):** Wait list control.
Antoni et al., 2006 (20) A 10-week cognitive behavioural stress management intervention See also Phillips et al., 2008, Antoni et al., 2009 (a follow-up of 100 women who gave blood samples), Vargas et al., Stagl et al. 2015 (a follow-up of 100 women, contacted eight years later) Core elements 2,3,4,7	**IG**: 10-week group-based cognitive behavioural stress management intervention versus a one day psychoeducational control. Sessions delivered in a closed, structured group format, weekly. Cognitive-behavioural stress management (CBSM) techniques presented using didactic explanations, in-session experiential exercises (role-playing) and out-of session assignments Focused on teaching stress reduction techniques such as rational thought replacement, with specific modules to assist women in learning to reframe their appraisals of stressful situations, to improve their coping strategies and better match their coping choices to the nature of these situations, and to learn interpersonal skills to optimize their communication skills and use of social resources. Patients received recordings of group leaders reciting relaxation and guided imagery exercises, which they were strongly encouraged to use on a daily basis. Facilitators encouraged emotional expression; taught methods to replace doubt appraisals with more confident appraisals; honed skills in anxiety reduction (by muscle relaxation and relaxing imagery); and taught skills in conflict resolution and emotional expression (via assertion training and anger management). **CG:** The intervention, lasting five to six hours, at approximately the midpoint of the 10-week period of the intervention group within their cohort.

Appendix G. Assessment of the Eight Core Elements of Self-Management Interventions by study

Author **Trial Name** **Intervention** **Core Elements**	**1)** Tailored to patient's needs, **2)** Facilitates self-efficacy, **3)** Helps develop communciation skills, **4)** Assesses knowledge/confidence, **5)** Provided by specially trained instructor(s), **6)** Supported by collaboration/multidisciplinary team, **7)** Facilitates uptake of health behaviours through action plans, **8)** Supports development of problem-solving skills.
Aranda et al., 2012 (21) **ChemoEd** Novel nurse-led prechemotherapy education intervention to assess impact on patient distress, treatment-related concerns, and the prevalence and severity of, and bother caused by, six chemotherapy side effects Core elements 1,2	**IG:** During two chemotherapy (CT) cycles, patients received a DVD, question prompt list, self-care information, an education consultation ±24 hours before first treatment (intervention 1), telephone follow-up 48 hours after first treatment (intervention 2), and a face-to-face review immediately before second treatment (intervention 3). Four key domains: preparing patients for potentially threatening procedures, tailoring to the specific needs of individuals, emphasizing evidence-based self-care, and psychosocial support. Four key resources: a chemotherapy educational DVD, a DVD question-prompt list to facilitate educational tailoring, one-page drug information sheets that contained sensory and procedural information, and one-page evidence-based self-care brochures on 16 different topics, outlining strategies to lessen common chemotherapy side effects. Utilised within a structured delivery framework. Sessions focused on eliciting and responding to patient-identified concerns/fears, delivery of tailored evidence-based messages about chemotherapy side effects, and discussion and coaching of relevant self-care strategies to manage toxic effects/side effects and psychological distress. **CG:** Routine care and prechemotherapy education.
Armes et al., 2007 (22) A brief behavioural oriented intervention in reducing cancer-related fatigue (CRF) and improving physical function and associated distress in individuals who were receiving chemotherapy Core elements 1,4,5,7	**IG:** Nine- to 12-week intervention with individual, face-to-face, 60-minute sessions at intervals of three to four weeks (coinciding with administration of CT).The intervention consisted of three individual, face-to-face, 60-minute sessions at intervals of three to four weeks (coinciding with administration of chemotherapy). Each one-hour session had a cognitive (clarifying current and future coping and goal setting behaviours), behavioural (self-monitoring, task management), and general (education on CFR) approach/strategy. Research fellow trained to deliver intervention. Skeleton plan for each session was devised so it could be modified to meet individual needs. Written information on management of symptoms. Individual supervision was conducted throughout the trial, depending on need and to ensure that treatment was conducted according to the manual. **CG:** Usual care.

Appendix G. Assessment of the Eight Core Elements of Self-Management Interventions by study

Author **Trial Name** **Intervention** **Core Elements**	**1)** Tailored to patient's needs, **2)** Facilitates self-efficacy, **3)** Helps develop communciation skills, **4)** Assesses knowledge/confidence, **5)** Provided by specially trained instructor(s), **6)** Supported by collaboration/multidisciplinary team, **7)** Facilitates uptake of health behaviours through action plans, **8)** Supports development of problem-solving skills.
Boesen et al., 2007 (23) See also Boesen et al., 2005 Psychoeducational intervention Core elements 2,6,7,8	**IG:** Six-week intervention offered between three weeksand four months after surgery to groups of eight to 10 patients. Organized into six sessions lasting approximately 2.5 hours each. Physicians provided a health education component consisting of information about malignant melanoma and proper follow-up routines. Two nurses provided patients with information on cancer-preventive behaviour, particularly regarding the hazards of exposure to the sun. Group therapist (psychologist) provided a method for stress management and a coping method. The stress-management component was divided into two sections: stress awareness, during which the participants were provided with stress monitor questionnaires to increase their awareness about stress, and actual management of stress, during which patients were taught simple relaxation exercises (relaxation followed by guided imagery) and encouraged to use this technique daily (by using a complimentary compact disk with relaxation and imagery exercises). In the coping method component, the participants were introduced to the concepts of active and avoidance coping and effective problem solving, and asked to apply these methods in specific situations. Psychological support was available from two perspectives: the supportive climate provided by discussions among patients, and the presence of a group therapist throughout all sessions. **CG:** No intervention administered.
Boesen et al., 2011 (24) Psychosocial group intervention Core elements 1,2,6,7,8	**IG:** Ten week, two-part intervention. Two weekly six-hour sessions of psychoeducational instruction and eight weekly two-hour sessions of group psychotherapy. The first part was 12 hours of education at the outpatient clinic, conducted as two weekly sessions. Two medical breast cancer specialists and two nurses specializing in breast cancer gave lectures about the treatment modalities. A social worker talked about the social rights of women undergoing long treatment and rehabilitation. A dietician gave a lecture on healthy diets, went through each woman's daily nutrition from a diet diary collected before the intervention, and gave advice about changing the diet if necessary and how to lose or gain weight. A psychologist talked about stress management, problem-solving, coping and cognitive reframing to examine and deal with negative thoughts, from cognitive-behavioural theory. Sexual problems were discussed by a specially trained nurse, and a physiotherapist taught the women how to avoid lymphedema and how to train the shoulder and arm if their mobility had been limited by the breast operation. She also gave advice on how to keep the body in shape, In the second part of the intervention, groups of eight women met eight times over eight weeks for 2.5-hour sessions in a cancer counselling clinic. An experienced clinical psychologist led the group, in cooperation with two nurses, to be able to respond to questions about treatment and its side effects that were often asked by the women in the group, to clear up any misunderstandings or worries, and to keep the focus of the group on psychological matters. The main purpose of the group was to share "cancer stories" and, in doing so, to reveal negative thinking and to integrate the elements of cognitive therapy smoothly into the group work. Homework was added where appropriate and the results were shared in the group. **CG:** No intervention administered.

Appendix G. Assessment of the Eight Core Elements of Self-Management Interventions by study

Author **Trial Name** **Intervention** **Core Elements**	1) Tailored to patient's needs, 2) Facilitates self-efficacy, 3) Helps develop communciation skills, 4) Assesses knowledge/confidence, 5) Provided by specially trained instructor(s), 6) Supported by collaboration/multidisciplinary team, 7) Facilitates uptake of health behaviours through action plans, 8) Supports development of problem-solving skills.
Børøsund et al., 2014 (26) Internet-based patient provider communication service compared with a web-based illness management system and usual care Core elements 2,3,4,6	**IG1:** A 12-month trial with nurse-administered Internet-based patient-provider communication intervention (IPPC) allowed patients to send secure emessages to and receive emessages from healthcare personnel at the hospital where they were treated, along with a webChoice addition. IPPC allowed patients to seek help from healthcare personnel at their treatment hospital. They could ask questions of, share experiences with, or get advice from oncology nurses. If needed, the nurse could pass on their question to physicians and social workers The system had a high security level, where both patients and health care providers logged into the system with strong authentication keys. Care providers had access to the patients' medical records at the hospital. The patient questions were asynchronous and were answered within two working days (usually within one day). **IG2:** WebChoice version contained the following components in addition to the IPPC service: assessment, advice, information, communication. It included an electronic diary where patients could keep personal notes. **CG:** Usual care.
Schou Bredal et al., 2014 (27) Psychoeducational (PEG) versus support group (SG) intervention Core elements 2,6,7,8	Both intervention and control offered to groups of four to six patients a 10-week intervention. PEG consisted of five weekly, two-hour sessions, SG consisted of three weekly, two-hour sessions. The same four nurses facilitated the SG intervention. **IG:** Three other nurses facilitated the PEG intervention. It included health education (a surgeon discussed surgery, two nurses provided management of adverse effects information, a physiotherapist provided information on lymphedema and physical activity, and information on breast cancer society was provided by a society representative), stress management (nurse-provided method for stress management and coping, education regarding impact of stress, stress awareness, and actual management using progressive muscle relaxation with guided imagery, enhancement of problem-solving skills, concepts of active and avoidance coping and effective problem solving skills, encouragment to discuss strategies), and psychological support (staff and peer group). Patients were encouraged to practice at home. All three nurses received same training. **CG:** SG to decrease feelings of alienation and isolation by creating a valued atmosphere that provided feelings of unconditional acceptance.
Chan et al., 2011 (29) Psychoeducational randomized controlled trial (RCT) Core elements 2,4,5,7	**IG:** A 12-week education program on symptom management and coaching in the use of progressive muscle relaxation (PMR) was delivered to patients one week prior to commencing radiotherapy (RT), and repeated three weeks after beginning RT. A 40-minute educational package plus coaching of PMR was delivered to patients within one week prior to the beginning of the course of RT, and reinforced three weeks after commencing RT. The education package consisted of leaflets and discussion on the selected symptoms and their self-care management. The intervention was delivered by registered nurses with two years of clinical experience. A two-day training session was given to the intervention nurses, focusing on the educational package and the practice of PMR. An audiotape in Chinese and educational leaflets were provided to patients. Patients were encouraged to practice PMR daily and as required. Patients in the intervention group were given a telephone reminder at the end of the second week to enhance participation in the Week 3 sessions. Intervention activity log to detect problems encountered. Diary to record adherence to program. **CG**: Usual care.

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Crawford et al., 2012 (30) A trial compared two methods of postoperative ostomy education Core elements 2,4,5,7	**IG:** Nurse-provided instruction method provided by a certified wound ostomy and continence nurse (CWOCN) in three separate bedside sessions, each lasting approximately one hour. The CWOCN provided verbal instruction and hands-on skills training, and furnished each patient with printed reference materials. Patients were encouraged to practice between sessions 2 and 3 with pouching products and a stoma model, and to review the printed materials. The nurse instruction plus DVD method occurred in a similar fashion, except that session 2 was provided by self-paced viewing of an instructional DVD. The DVD was conceived, scripted, acted, and produced by the authors. The DVD provided a step-by-step tutorial of pouch emptying, ostomy sizing, and product application techniques, with a "follow along" participation technique that encouraged hands-on learning. It also provided information about recommended diet, possible medical complications, and practical information related to living with an ostomy. **CG:** Three nurse-led instructional sessions.
Dodd et al., 2010 (31) **PRO-SELF** Pro-self Fatigue Control Program based on self-care and adult learning theory Core elements 1,2,4,7	**IG1&2:**A six-month trial with home-based exercise prescription and weekly phone calls. Three groups: (**EE**) received their exercise prescription throughout the study; (**CE**) received their exercise prescription after completing cancer treatment; and (**CC**) received usual care. Exercise prescription was comprehensive and individualized to the participants' fitness level, based on the baseline exercise treadmill test. Adjusted by the exercise physiologist through weekly follow-up phone calls to maintain the exercise prescription, which consisted of a mode of cardiovascular/aerobic exercise (e.g., walking, jogging, or bicycling), a frequency (three to five times per week), an intensity (training heart rate corresponding to 60% to 80% volume of oxygen [VO2] peak), and a duration (20 to 30 minutes of continuous exercise). Patients were instructed on how to obtain their pulse by the exercise trainer and the pulse was counted at least twice during each exercise session to monitor their exercise Intensity. Participants were supported in their exercise through weekly telephone calls from the exercise trainers who provided support and encouragement as well as help in problem-solving potential barriers to exercise. **CG:** Usual care.
Dolbeault et al., 2009 (32) Psychoeducational group intervention (a psychoeducationally structured model based on CBT principles Core elements 2,3,5,7,8	**IG:** An eight-week program of two-hour sessions comprised of thematic discussions, information, and training in stress management techniques . Patients were taught to routinely use thought records, to practice problem solving and cognitive restructuring, to communicate better with caregivers and health professionals through role-play, and to practice relaxation. Unlike a comprehensive CBT approach, instructors were trained in group therapy and BCT. All PEG exercises were initiations combined with general medical information and peer exchanges on defined themes (causes and significance of cancer, impact of treatments on body image, managing uncertainty, improving communication with loved ones, etc.). The program included eight weekly two-hour sessions. The groups were composed of eight to 12 participants led by two therapists, either psychologists or psychiatrists. **CG:** Waiting list.
Doorenbos et al., 2005 (33) A 10-contact (five face to face, five by telephone), 18-week cognitive behavioural intervention focused on	**IG:** A 10-contact (five face-to-face, five by telephone), 18-week cognitive behavioural intervention focused on cancer- and chemotherapy-related symptoms. Up to four symptoms, mutually selected by the nurse and participant, were addressed at each visit. Of the 10 contacts, five were in person and five occurred over the telephone. Using a computer documentation protocol, symptoms were matched with specific problem-solving strategies: self-care management, information and decision-making, counseling and support, and communication with providers. Evaluation of the success of the problem-solving strategies occurred at subsequent contacts, where participants rated problems as resolved, improving, unchanged, or deteriorating. Fidelity to the intervention was checked by nurse interveners requesting participants to report whether or not they attempted the problem-solving strategies.

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cancer- and chemotherapy-related symptoms Core elements 1,2,3,4,5,8	Strategies were modified if rated ineffective or unsuccessful by the participant. Where strategies were not attempted, participants were questioned about barriers to implementation. **CG:** Conventional care.
Ell et al., 2011 (34) See also Ell et al, 2008 **Alleviating Depression Among Patients With Cancer (ADAPt-C)** Collaborative care management for patients with cancer and with depression Core elements 1,2,4,5,6,7,8	**IG:** Intervention whereby patients had access for up to 12 months to a clinical specialist in depression (supervised by a psychiatrist) who offered education, structured psychotherapy, and maintenance/relapse prevention support. Six to 12 weekly sessions and telephone calls in a stepped-care model, including the following key evidence-based components: cancer depression clinical specialists (CDCS) (bilingual social workers with master's degrees) who provided psychotherapy; community services navigation by the CDCS or a patient navigator under CDCS direction; a psychiatrist who supervised the CDCS and prescribed medications; a personalized treatment plan that included patient AM or problem-solving therapy (PST) preferences; a structured algorithm for stepped-care management and protocol for PST; and CDCS telephone maintenance/relapse prevention and outcomes monitoring over 12 months. Weekly sessions ranging from six to 12 weeks were highly structured. Homework materials were linguistically and idiomatically adapted. Each CDCS received structured training in PST (and the study algorithms), and an independent expert conducted quality assurance structured assessments on five audiotaped patient sessions. After acute treatment, patients received a treatment maintenance and relapse prevention program, including CDCS monthly telephone contacts up to 12 months after treatment initiation to monitor symptoms (with additional in-person visits if indicated), behavioural activation support for engaging in pleasant activities, and motivational support for ongoing use of PST skills and medication adherence. **CG:** Enhanced usual care.
Gaston-Johansson et al., 2013 (36) Self-management comprehensive coping strategy program (CCSP) Core elements 1,2,3,4,6,7	**IG**: Three-month intervention. Four 1.5-hour face-to-face sessions. Multimodal coping strategies approach consisting of four components: (i) preparatory education, (ii) cognitive restructuring, (iii) coping skills enhancement, and (iv) relaxation with guided imagery. Specific content areas were matched with the most appropriate teaching strategy (e.g., presentations, PowerPoint presentations, handouts, and relaxation tapes) and with the needs of the learner (e.g., communication style and computer or telephone reinforcement). Implemented by study social worker. The CCSP intervention was taught two weeks before hospital admission with reinforcement at specified times during treatment and three months after discharge. A trained advanced practice study nurse reinforced the sessions at five time points for 20 minutes at a time (hospital admission, after high-dose chemotherapy (HDC), midpoint of hospitalization, at discharge, at three months follow-up. Included a participant diary, handouts and tapes to reinforce sessions, and observation of patients performing relaxation exercises. **CG:** No intervention administered.

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Gil et al., 2006 (37) See also Mishel et al., 2005 Uncertainty management intervention Core elements 1,2,7	**IG:** Two main components: a cognitive-behavioural component delivered via audiotapes, and a self-help manual. Using a structured protocol, nurses guided women through the intervention over the course of four weekly 30-minute telephone calls. Each telephone session focused on one of four skills—relaxation, pleasant imagery, calming self-talk, and distraction. During the third and fourth sessions, nurses also guided the women through the use of the self-help manual using a specific outline that could be individualized depending on each woman's concerns. The manual contained educational material and resources about long-term treatment side effects including lymphedema, pain, stiffness, and other health concerns. Application was emphasized, meaning that women were encouraged to use the skills when dealing with their own personal triggers of uncertainty such as going for a medical check-up. Sample vignettes were used for this purpose. Information in the manual also emphasized application to each woman's personal situation. **CG:** Usual care.
Jacobsen et al., 2013 (39) Stress management training (SM), exercise (EX), combined stress management and exercise (SMEX) Core elements 1,2,7	**IG1: (SM)** In addition to usual care, SM participants met with the interventionist for approximately 10 minutes before the first infusion. Provided with a 15-minute video, 12-page booklet, and 30-minute audio recording titled "Coping with Chemotherapy." The video and booklet included information, demonstrations, and instructions regarding paced breathing, progressive muscle relaxation with guided imagery, and use of coping self-statements to manage stress. Comments by patients who were undergoing chemotherapy about benefits of using stress management techniques were interspersed throughout the video and booklet. Participants were instructed to follow directions for how to learn and practise the techniques and use them during chemotherapy. Directions included listening to the audio recording, which led participants through an abbreviated form of progressive muscle relaxation training. **IG2: (EX)** In addition to usual care, EX participants met with the interventionist for approximately 10 minutes before the first infusion. They were provided with a 12-minute video and 14-page booklet titled "Stepping Forward: A Guide to Exercise During Chemotherapy" developed for this study. The video and booklet included information and instructions on engaging in regular exercise while undergoing chemotherapy. The emphasis was on walking because it is well suited to home-based exercise. For this reason, participants were also provided with electronic pedometers (Digi-Walker SW-651-04, New-Lifestyles Inc., Lees Summit, MO, USA) on the basis of evidence suggesting that self monitoring with pedometers promotes greater physical activity. Topics covered in the materials included warming up and cooling down, pulse and exertion monitoring, and use of the pedometer to monitor numbers of steps taken and exercise duration. Comments by patients who were undergoing chemotherapy about benefits of exercising were interspersed throughout the video and the booklet. Participants were advised to exercise three to five times per week for 20 to 30 minutes at approximately 50% to 75% of their estimated heart rate reserve, a goal consistent with exercise recommendations for patients with cancer published prior to study initiation. The interventionist calculated and provided each participant with an exercise heart rate "training zone," based on age and resting heart rate, and demonstrated how to use pulse rate to monitor exercise intensity. Participants were also instructed how to monitor intensity using the Rating of Perceived Exertion (RPE) scale and were advised to achieve a level between light (RPE=11) and somewhat hard (RPE=13). **IG3: (SMEX)** SM and EX combined In addition to usual care, SMEX participants met with the interventionist for approximately 15 minutes before the first infusion. They were provided with a 20-minute video and a 20-page booklet titled "Stepping Forward: A Guide to Stress Management and Exercise During Chemotherapy" developed for this study that combined content from SM and EX videos and brochures. Participants also received the same audio recording provided to SM participants and the pedometer provided to EX participants. Instructions for exercising and for learning, practicing, and using stress management techniques mirrored those in the SM and EX conditions

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	CG: Usual-care-only participants had access to the full range of psychosocial services provided to patients.

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Jahn et al., 2014 (40) **SCION** Modular transitional nursing intervention Core elements 1,2,4,5,8	**IG**: The intervention consisted of a nurse-led counseling program to patient-related cognitive barriers, such as misconceptions about opioid use, because they crucially interfere with establishing and maintaining proper pain-related self-management. In the intervention group, the SCION-PAIN program was administered by specially trained ward nurses in cooperation with a study nurse. Counseling sessions were carried out in three modules, supplemented by a teaching booklet for patients tailored to meet patients' needs, a pain diary, a discharge-preparation checklist for patients, and a compact disc with progressive muscle relaxation (PMR) exercises. The first module, ''Pharmacologic Pain Management,'' addressed reliable pain assessment, effective communication about pain, and administration of pain medication. The second module, ''Nonpharmacologic Pain Management,'' included information on the effectiveness of complementary pain treatment methods, and patients were given a compact disc with instructions to carry out PMR independently. The third module, ''Pain-Related Discharge Management,'' aimed to prepare patients to appropriately counteract potential problems. in pain-related self-management during transition to outpatient care. Advice on how to maintain the self-management strategies learned in modules 1 and 2 after discharge was provided, and a checklist to ensure adequate discharge management was administered. This checklist contained seven essential questions to be answered during hospitalization. For example, who will prescribe pain medication after discharge or who will provide advice in case of inappropriate pain management. The study nurse checked the list for completeness one day before discharge. The content of all three modules was summarized within the 33-page patient education booklet, ''Leaving the Pain Behind''. Each pain-related topic was specially enriched with information regarding patient-related barriers to pain management. The basic counseling included standardized information for all patients across all three modules. The follow-up counseling was tailored to the patients' individual needs, thus, content and frequency varied in an algorithm-based manner. The algorithms were part of the intervention book handed out to each SCION-PAIN intervention ward. To ensure counseling tailored to patients' individual needs but standardized according to the basic model, the authors provided an assessment of patients' resources regarding knowledge, skills, attitudes, or perceptions, with indication questions (for example, ''Do you know your pain medication plan?'') for the assessment of knowledge in the pharmacological pain treatment module. Each question was related to an intervention. **CG:** Usual care.

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Jahn et al., 2009 (41) **SCION** Structured nursing intervention Core elements 1,2,3,4,5,6	**IG**: The SCION program aimed to reduce the side effects and to improve patients' knowledge related to side effects, and to increase self-care behaviour and influence quality of life. The SCION program included four modular algorithm-based protocols summarized in a clinical practice guideline for the professionals supplemented by teaching booklets tailored to the patients' need. All patients from the intervention group received modules 1 and 2. Module 1, "Information leaflet and advisory consultation," included a 20- to 30-minute structured advisory consultation delivered by trained oncology nurses using a 14-page education booklet. The booklet contained information about chemotherapy, side effects, (non) pharmacological treatment, self-care actions, nutrition, and relaxation exercises. It was developed by some of the authors based on a literature review and checked for the applied setting with a prestudy. The booklet guided the counseling session and was handed out to each patient at the beginning of the session. The counseling session was held within 24 hours after trial entrance. Further informational needs were addressed in daily assessment and treated by booster sessions. Module 2, "Optimizing emesis treatment," was applied on a daily basis during each chemotherapy cycle. This module included an algorithm-driven feedback process to physicians to adjust emesis prophylaxis based on a daily assessment of symptom intensity using Common Terminology Criteria for Adverse Events (CTCAE) scale v3.0. The physician was informed if a patient developed significant nausea or emesis symptoms on the CTCAE scale (cutoff≥1). Module 3, "Nutrition counseling," and module 4, "Relaxation," were applied according to intensity of ANE symptoms. Module 3 targeted prevention or relief of symptoms by nutritional interventions and nutritional counseling, encouraging each patient to counteract imminent anorexia. The intervention consisted of instrumental activities (consistency of nutrition, application) and communicative activities (informational and educational). Module 4 included 90-minute sessions, twice weekly. Both modules 3 and 4 were applied if a patient developed significant nausea, emesis symptoms, or weight loss according CTCAE scale (module 3 cutoff>1 and module 4 cutoff>0). The intervention period for each module was 20 to 30 minutes for the first session followed by booster sessions if symptoms continued. Prior to the implementation on intervention wards, all modules of the program were approved by written review using feedback from nurses from the participating hospitals, and from scientific experts. The SCION program was administered by regular ward nurses in the intervention group. Nurses were trained with a 15-hour course on how to carry out the intervention. The training was organized as interactive workshops. **CG:** Standard care.

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Koller et al., 2013 (42) See also Koller et al., 2013 **Pilot** **PROSELF** Pilot study of self-management intervention Core elements 1,2,3,4,5,7,8	**IG:** Patients in the intervention group received six visits and four phone calls over 10 weeks by the intervention nurse, who was specifically trained for the study and who followed a detailed intervention protocol. Visits were designed to last no more than 1 hour. Phone calls lasted five to 10 minutes. The German PRO-SELF_ Plus xxx (PCP) includes a structured and a tailored intervention and is based on three key strategies: provision of information using academic detailing, skills building, and ongoing nurse coaching. In the academic detailing portion, the Patient Pain Questionnaire (PPQ) was used to determine knowledge and attitudes of patients regarding nine common barriers to pain self-management. Identified knowledge deficits were approached in a discussion to reduce the participants' fears and misconceptions by contrasting and reframing each patient's thoughts in relation to structured scientific and expert information. Patients and FCs received corresponding print materials and individualized information (e.g., dose ranges, common side effects of prescribed analgesic medications). Skills building was integral to the visits. It included teaching on how to titrate prescribed analgesics to individual needs, individual goal setting (e.g., "Iwant to be able to go for a walk with tolerable pain for 10 minutes each day"), and a mutual agreement on self-management strategies to reach these goals (e.g., "I am going to take one dose of my 'as needed' medication 20 minutes before I plan to go for a walk"). Nurse coaching was performed as part of an ongoing dialogue during each visit and phone call about successes and failures with the pain self-management strategies. Individual information was reinforced and the effectiveness of the pain and side effect management plan was evaluated in conjunction with the patient and FC. Patients and FCs were provided a weekly pill-box, and coached on how to use a script to communicate effectively with their physician about unrelieved pain and the need for changes in their analgesic prescriptions. Sessions and phone calls were audio-recorded and checked by the last author in order to ensure that protocol adherence was maintained. **CG:** Standard education and care.
Korstjens et al., 2011 (45) See also Korstjens et al., 2008 Group-based self-management cancer rehabilitation, combining comprehensive physical training (PT) and cognitive-behavioural problem-solving training (CBT), compared with PT Core elements 1,5,6,7	**IG1 (PT), IG2 (CBT):** The two interventions were (1) a 12-week (twice weekly, two-hour sessions) comprehensive group-based self-management PT program and (2) the same PT program (twice weekly, two-hour sessions) plus CBT (weekly, two-hour sessions). Self-management was defined as patients coping with the physical and psychosocial consequences of their disease and their treatment in a circular process of goal selection, information collection, information processing and evaluation, decision-making, action, and self-reaction. The group format for both PT and CBT provided opportunities for social comparison, social support and modelling. PT and CBT were tailored by fitting the activities to individual participants. PT was guided by two physical therapists and CBT was guided by a psychologist and either a nurse, a physical therapist, or a social worker. All therapists received group training in applying the standardized self-management protocols: PT therapists for one day; CBT therapists for two days. **CG:** Wait list controls.

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Kravitz et al., 2012 (47) **Ca-HELP** See also Kravitz et al., 2011 Tailored education and coaching (TEC) intervention Core elements 2,3,5	**IG (TEC):** Patients were asked to arrive one hour before their scheduled oncology appointment. On arrival, they were greeted by a health educator (HE) (lay individuals who had undertaken 30 to 40 hours of study-specific training), escorted to a quiet space, and assisted in completing written informed consent and the pre-visit/pre-intervention questionnaire. The HE administered the assigned intervention (TEC or enhanced usual care [EUC]), which was audiotaped for quality control purposes. TEC comprised six components: 1) Assess current knowledge, attitudes, and preferences; 2) Correct misconceptions; 3) Teach in two domains (pain control and patient physician communication); 4) Plan by identifying goals and brainstorming about suitable patient-physician communication strategies; 5) Rehearse using role-play exercises; and 6) Portray learned skills. In the EUC intervention, the HE verbally reviewed selected aspects of a National Cancer Institute booklet on pain control. This booklet also was provided to patients in the TEC group. Thus, both interventions supplied knowledge but TEC corrected specific misconceptions, taught in the communication domain, facilitated planning, and encouraged rehearsal of new skills. After the intervention, patients completed the pre-visit/post-intervention questionnaire, had their doctor visit, and filled out the post-visit questionnaire. **CG (EUC):** Enhanced usual care.
Krischer et al., 2007 (48) Self-administered stress Mmnagement training Core elements 2,7	**IG:** Patients met with a clinician for approximately five minutes. Instructional materials consisted of a 15-minute prerecorded videotape and a 12-page booklet modified for patients receiving radiation therapy. In addition, participants received a 35-minute prerecorded audiotape titled "Active Relaxation." The videotape and booklet presented the sources and manifestations of stress during radiotherapy and the potential benefits of stress management training. Also included was instruction on paced breathing, active relaxation, and positive thinking. Patients were directed to repeatedly tense and relax a standard set of muscle groups, then assisted in visualizing a tranquil nature scene to enhance and sustain feelings of relaxation. A positive thinking exercise provided participants with brief instruction in the use of coping self-statements. Participants were encouraged to identify specific coping self-statements they might use during radiotherapy treatment. **CG:** Usual care.

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Kurtz et al., 2006 (49) A cognitive behavioural nursing intervention directed towards controlling symptoms in patients with cancer Core elements 2,3,4,8	**IG:** The 10-contact (five in person, five by telephone), 20-week nursing intervention was guided by a cognitive behavioural change model drawing heavily on Bandura's framework, which posits that self-management strategies are learned through practice and skills mastery based on verbal persuasion that a strategy will work, for example, to reduce symptom severity. If a strategy is effective it can be continued; if not, then modifications must be made. For example, the nurse and patient identified problems, the nurse proposed interventions, and together they evaluated the patient's ability to undertake appropriate cognitive and behavioural strategies that, if performed successfully, could address the symptom management problem. More specifically, patients who received the experimental intervention were queried at each contact regarding the severity and impact on dimensions of their quality of life of 15 symptoms (nausea, vomiting, trouble sleeping, difficulty breathing, diarrhea, coordination problems, poor appetite, fever, cough, dry mouth, constipation, mouth sores, inability to concentrate, pain, and fatigue). Severity of the symptoms was rated by patients on a 10-point scale, ranging from one (not present) to 10 (worst possible). When severity was rated as five or higher, that symptom was transferred to the plan of care for problem resolution. As an example, if a patient reported severity of pain at level five, the nurse would determine what medications were being taken, and if they were being taken at appropriate intervals and at the prescribed dosage. The nurse might suggest a pain diary to capture the pattern and level of severity, would encourage the patient to communicate the level of pain to the oncologist, and might suggest other strategies for pain management to complement the pain medication. All recommended intervention strategies were recorded in a computer-guided documentation. At subsequent interviews, previously recommended strategies were assessed to determine if they had been tried, and if they were successful. If the strategy had not been tried, the nurse worked with the patient to determine why the strategy was not implemented, and might suggest revisions. If a strategy was effective, it was retained. Plans were adjusted based on intervention effectiveness and problem resolution. Quality assurance was completed for all nurses on a monthly basis to ensure that they followed protocol at all sites. **CG:** Conventional-care control group.

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Lee et al., 2014 (50) **Pilot** Web-based elf-management exercise and diet intervention (WSEDI) aimed at enhancing exercise and dietary behaviours tailored according to the principal constructs of transtheoretical model (TTM)-based strategies Core elements 1,2,4,7	**IG:** A 12-week WSEDI aimed at enhancing exercise and dietary behaviours and tailored according to the principal constructs of the TTM theory such as the stage of change, process of change, decisional balance, or self-efficacy. No intervention-related interactions (i.e., exercise and diet behaviour) between patients in the intervention group and the research nurse, or among intervention group members, occurred while processing the intervention. The intervention group members were encouraged to use WSEDI regularly (at least twice weekly) through automated text messages. The WSEDI contained four portions including assessment, education (tailored information provision), action planning (goal setting, scheduling, keeping a diary), and automatic feedback. The educational content was as follows: enhancing exercise and dietary behaviour in cancer survivors; the importance of normal weight management; barriers to sustainability of exercise and diet behaviour; considerations when planning exercise and diet; consequences such as QofL and survival rate for regular exercise and a balanced diet; and exercise and dietary guidelines for cancer survivors. The educational content was arranged based on TTM theory. Thus, the educational portion was subdivided into five modules that were based on each patient's current stage of change (e.g., precontemplation, contemplation, preparation, action, maintenance). The action-planning portion began at the preparation stage. Each participant was advised to plan their exercise behaviour in line with American Cancer Society (ACS) guidelines. However, the type, intensity, duration, and frequency of aerobic exercise could be self-adjusted as necessary according to individual preferences. In the dietary planning portion, each patient was advised to plan their optimal number of units per recommended food group to achieve a balanced diet. Dietary recommendations were based on daily caloric requirements in accordance with individual body mass index (BMI) values, normal body weights, and daily level of activity. In a diary, participants recorded daily exercise behaviour (type, intensity, and duration) and the daily number of units of each food group consumed. The data on actual behaviours and what had been recommended were compared visually online. This information was used to give daily feedback on goal achievement as part of the automatic feedback portion (text message module) of the intervention. **CG:** A 50-page educational booklet on exercise and diet.
Loprinzi et al., 2011 (51) **Pilot** **Stress Management and Resilience Training SMART** Method for enhancing resilience and well-being and for decreasing stress and anxiety Core elements 1,2,7	**IG:** Two 90-minute group sessions, teaching the SMART program. The second of these sessions reinforced concepts discussed during the first session as well as answering any questions. One component of the first 90-minute session was training in a brief structured relaxation intervention (paced breathing meditation). Participants were taught to practice deep diaphragmatic breathing at five breaths per minute for five or 15 minutes, once or twice a day. Participants were also offered optional, one-on-one, 30 to 60-minute follow-up session with a physician, depending on individual needs. After the first 90-minute intervention, participants received follow-up telephone calls from an investigator at four-week intervals. If a subject was not reached during the initial telephone call, then up to two additional calls were placed to the subject within a week's time in an attempt to reach them. The purpose of these telephone calls was to remind the subjects to practice the skills shared in the intervention. In addition, the calls served to answer any questions that the subjects had regarding the study. **CG:** Wait-list control.

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McCorkle et al., 2009 (52) Nursing intervention to assist patients in developing and maintaining self-management skills postoperatively and to facilitate their active participation in decisions affecting their subsequent treatment, which included chemotherapy Core elements 1,2,8	**IG:** Patients in both intervention and control groups received a Symptoms Management Toolkit (SMT) with information on 16 symptoms commonly experienced post-surgically or with chemotherapy. Each section described causes of symptoms, strategies for managing symptoms, and when to call the oncologist. Patients in the intervention group received six months of tailored specialized care by an oncology advanced practice nurse to assist patients in developing and maintaining self-management skills postoperatively, and to facilitate their active participation in decisions affecting their subsequent treatment (which included chemotherapy). Activities included symptom management and monitoring, emotional support, patient education, coordination of resources, referrals, and direct nursing care. Also, 18 patient contacts were made during the first six months after hospital discharge. Plan-of-care and intervention strategies were individually tailored to each patient's needs and personal priorities and were determined jointly by the nurse and patient. A subgroup of highly stressed individuals was identified and screened for psychiatric disorders. **CG**: Patients were assigned to a consistent research assistant trained in the use of SMT (and received an initial contact plus telephone call).
Penedo et al., 2006 (54) Cognitive–behavioural stress management (CBSM) intervention Core elements 2,3,5	**IG:** A 10-week, group-based cognitive-behavioural stress management program. Each group was composed of four to eight participants and met once each week for two hours over a period of 10 weeks. Each weekly module included 90 minutes of CBSM didactic instruction and discussion, and 30 minutes of relaxation training. The intervention was generally designed to provide participants with skills to manage day-to-day stressors, as well as to manage prostate cancer-associated physical and emotional challenges, by providing individuals with effective coping and stress-management techniques as well as with practical information regarding prostate cancer treatment and recovery. Participants were encouraged to engage one another in discussion regarding their experience with cancer, and engage in weekly between-session homework and relaxation exercises. Led by master's level clinical health psychology students or doctoral-level, licensed clinical psychologists trained in the CBSM protocol. **CG**: Met once for four hours and received basic educational materials on the stress management techniques presented in the 10-week intervention.

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Ream et al., 2006 (56) Supportive intervention for fatigue in patients undergoing chemotherapy Core elements 1,2,4,7	**IG:** Over three months, recipients were provided with an investigator-designed information pack and fatigue diary that they completed during the week following each treatment. Additionally, support nurses visited them, mostly at home. Four principle components: assessment/monitoring of fatigue; education on fatigue; coaching in self-care; and provision of emotional support. Intervention provided over the first three treatment cycles. Information pack presented information on exercising, balancing activity with rest, prioritizing and delegating activities, dietary supplements, relaxation, diversion, and sleep-enhancement techniques. Assessment of fatigue was aided by patients' completion of a fatigue diary developed for use in this study. Participants completed this diary for the first seven days of each of the three treatment cycles over which the intervention ran. Diary entries were reviewed by support nurses who visited patients at home once during each treatment cycle. They assessed and discussed the extent to which fatigue impeded patients' lives and reviewed the efficacy of the self care that patients adopted in an attempt to relieve it. Strategies promoted in the information pack were reviewed at these meetings, and the support nurse coached patients in the use of these strategies. Furthermore, these meetings allowed patients to explore the meaning of fatigue in the lives, their hopes, and future goals. The aim was to tailor the intervention to deal with particular concerns around fatigue that subjects expressed, and help them find the most suitable approach to managing it. **CG:** Not reported (NR).
Ream et al., 2015 (68) Designed to explore treatment effect while interviews enable intervention recipients to discuss the feasibility and acceptability of the intervention, and the intervention processes Core element 5	**IG:** Beating Fatigue by Telephone was delivered by a cancer nurse with experience of working on a cancer helpline. In preparation, the nurses underwent a postqualification module in motivational interviewing for health professionals at King's College London. This 10-week module comprised four elements: overview of motivational interviewing; developing core skills; developing advanced skills; and using motivational interviewing in chronic disease settings. It entailed computer-based distance learning alongside three college-based days that comprised practice interviews and skills assessment. Integrity of intervention delivery – and adherence to motivational interviewing principles and strategies – was assessed through reviewing a random sample of 20% of intervention calls. All calls were recorded for this purpose, a checklist guided the process and results were fed back to the nurse. **CG:** Usual care.

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Risendal et al., 2015 (69) Adapted version of the Chronic Disease Self-Management Program (CDSMP) for cancer survivors called Cancer Thriving and Surviving Core elements 2,7,8	**IG:** Developed by researchers from the Stanford Patient Education Research Center at Stanford University, the model for the CDSMP program entailed a series of six weekly small-group sessions led by trained facilitators. The model was based on social cognitive theory and focused on building skills and sharing experiences and support among the participants to maximize engagement. Sessions followed a standardized curriculum detailed in a program manual to promote fidelity to the following program elements: brainstorming, action plan formulation, action plan feedback,problem solving, and decision making. In brief, adaptations to the CDSMP for cancer survivors and the subsequent conceptual model to include restoration of self-confidence, adjustment to changed self, and confidence to self-manage cancer-related problems. The resultant curriculum was initially developed by Macmillan Cancer Support in the U.K and subsequently modified by the Stanford Patient Education Center to incorporate language more common to the U.S. Researchers at the Colorado School of Public Health (CSPH) partnered with the Consortium for Older Adult Wellness (COAW) to deliver the program. COAW is a community-based agency with state-wide license to deliver the evidence-based CDSMP. Individuals who were already trained and licensed to provide the CDSMP workshops, and who were also cancer survivors, completed a two-day cross-training program led by the Stanford Patient Education Center to ensure fidelity to the model. **CG:** Usual care.
Rissanen et al., 2015 (70) A stress management intervention, in a group or individual setting, on self-reported cancer-related traumatic stress symptoms Core elements 2,4,5,7 .	Although the two intervention arms, group stress management (GSM) and individual stress management (ISM), differed in their frequency and setup, both the GSM and the ISM interventions were designed to contain the same core components, the same relaxation techniques and homework assignments, and were manual-based treatments. The core components comprised an introduction to stress and stress responses, both physical and psychological. Furthermore, discussions were held regarding quality of life, focusing on expectations of life postdiagnosis. A stress diary, a worksheet to monitor one's actions to change inappropriate behaviours/reactions (for example, negative thoughts), and a short relaxation exercise called the "the stop button" were introduced as techniques to manage stress. These techniques, derived from CBT, were practiced at home between sessions. The home assignments were discussed at the beginning of each session, and time was allocated for feedback. **IG1:** The group intervention (GSM) consisted of 10 two-hour sessions, and each session covered a specific component that was introduced by case illustrations, written texts, and exercises tailored for the intervention. Social support within the group was important and allowed the study authors to facilitate the therapeutic progression. **IG2:** The individual intervention (ISM) consisted of four to eight one-hour sessions, where one to three specific components, similar to the ones in the GSM intervention, were introduced at the beginning of each session. The first four sessions comprised the six components of the intervention. At the end of the fourth session, the nurse and the ISM participant together decided whether further sessions were warranted. The main reason for continuation was the presence of problems that the individual wanted to address in either of the components covered by the intervention. **No control group.**

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Rustøen et al., 2014 (58) See also Rustøen et al., 2012 **PRO-SELF Pain Control Program** Uses Orem's self-care theory, as well as the principles of academic detailing and nurse coaching to change patients' self-care behaviours regarding cancer pain management Core elements 1,2,3,4,7	**IG:** PRO-SELF: Patients were seen by a specially trained oncology nurse. The nurse visited the patients in their home at weeks 1, 3, and 6 and conducted telephone interviews at weeks 2, 4, and 5. At the week 1 visit, the PRO-SELF nurse conducted an academic detailing session that addressed the knowledge deficits identified based on patients' responses to the individual items on the Pain Experience Scale. The educational information was tailored to meet the specific needs of each of the patients. In addition, patients were given written instructions regarding pain and adverse effect management, were taught how to use a weekly pill box, and were taught how to use a script to assist them in communicating with their physician about unrelieved pain and the need for a change in their analgesic prescription. At weeks 2, 4, and 5, the PRO-SELF nurse contacted patients in the intervention group by phone and reviewed their pain intensity scores and analgesic intake. **CG:** Patients were given a booklet about cancer pain management developed by an anesthesiologist from the cancer clinic. Patients received home visits at weeks 1, 3, and 6 and nurse telephone interviews at weeks 2, 4, and 5. Patients in the control group were seen and called with the same frequency as patients in the intervention group, thereby receiving nurse coaching in behaviour change.
Schmitz et al., 2009 (59) See also Brown et al., 2014 **Physical Activity and Lymphedema (PAL) trial** Weightlifting trial to assess change in arm and hand swelling Core elements 2,7	**IG:** Participants assigned to the weightlifting group received a one-year membership at a community fitness centre (e.g., a YMCA) near their home. For the first 13 weeks, women were instructed, in small groups in a 90-minute session, twice weekly. Certified fitness professionals employed by the fitness centres led these sessions, which included stretching, cardiovascular warm-up, abdominal and back exercises, and weightlifting exercises. Upper-body exercises included seated rows, chest presses, lateral or front raises, bicep curls, and tricep pushdowns. Lower-body exercises included, e.g., presses, back extensions, leg extensions, and leg curls. Weightlifting exercises were introduced with little-to-no resistance. One to three new exercises were taught per session. During the first five weeks, participants increased their number of sets of each exercise per session from two to three, with 10 repetitions per set. If no changes in symptoms were noted for a particular exercise after two sessions at a given weight, the resistance was increased by the smallest possible increment. If fatigue prevented the completion of a third set of 10 repetitions of a given exercise with proper biomechanical form, resistance for that exercise would remain the same at the next session. After two sessions at which three sets of 10 repetitions could be performed with proper form at a given level of resistance, without changes in arm and hand symptoms, the trainer guided the participant to increase the resistance by the smallest possible increment at the next session. No upper limit was placed on the weight to which women could progress in any exercise. During lymphedema exacerbations, women continued all exercises except the upper body exercises, which were resumed only after the approval of their lymphedema therapist, with resistance reset to the lowest possible level and then increased again as described above. After the first 13 weeks, participants continued twice-weekly unsupervised exercise for 39 additional weeks. Throughout the study, fitness trainers telephoned women who missed more than one session per week. **CG**: Patients were asked not to change their exercise level during study participation.

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Sherwood et al., 2005 (80) See also Sikorskii et al., 2015 Cognitive behavioural intervention for symptom management Core elements 1,2,7,8	**IG:** Nurses with experience in oncology delivered a five-contact, eight-week intervention aimed at teaching patients problem solving techniques to affect symptom severity. Five contacts with an oncology nurse during an eight week period. Based on CBT principles designed to help patients understand the nature of symptoms, improve patients' belief in their ability to control symptoms, and teach patients problem-solving skills. First and last session were face-to-face; the middle three sessions were by telephone. Sessions were scheduled at two-week intervals. At aach visit, nurses and patients assessed pain, fatigue, fever, dry mouth, constipation, mouth sores, and depressive symptoms. Once patients identified symptom severity, a nurse helped patients reframe their attitudes and beliefs with regard to controlling symptoms. Nurses proposed cognitive and behavioural self-care strategies and assisted patients with plans to carry them out. Nurses and patients reviewed severity scores that were five or higher on a previously given test and patients then selected what symptoms they wanted to focus on for the next two weeks. Together with each patient, nurses tailored a list of interventions, which patients agreed to implement, to decrease the severity or impact of the symptoms. Interventions were grouped according to the following domains: prescribe, teach-assess-evaluate, communicate, and counsel. **CG:** No intervention.
Sikorskii et al., 2007 (61) See also Sikorskii et al., 2015 Multidimensional interactive interventions for symptom management Core elements 2,4,7	An eight-week, six-contact intervention with either nurse-assisted symptom management (NASM) or automated telephone symptom management (ATSM). **IG1**: Nurses delivered up to four strategies for each symptom At each subsequent contact, assigned strategies were evaluated: the nurse inquired if the strategy was tried, and if tried, was it helpful in managing the symptom. While each intervention strategy was assessed as to whether or not it was tried and if tried, was successful, rehearsal or practice were not emphasized. If a strategy was not tried, or tried but not found helpful, then patients were counseled as to how they might fit strategy into their daily activities or were offered different strategies. Successful strategies were reinforced and continued. **IG2:** In the ATSM arm, a prerecorded pleasant female voice queried patients regarding their severity for the 17 symptoms. To rate severity, patients pressed the appropriate numbers on their telephone keypads. For symptoms rated at four or higher, patients were directed to the section of the SMG that informed them about strategies to manage each symptom. **CG: usual care**

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Stanton et al., 2005 (63) **Moving Beyond Cancer Trial (MBC)** psychoeducational videotape intervention for patients with breast cancer Core elements 2,4,7	Groups received materials as follows: standard National Cancer Institute print material (control [CTL]); standard print material and peer-modeling videotape (video [VID]); or standard print material, videotape, two sessions with a trained cancer educator, and informational workbook (education [EDU]). **IG1: VID:** A booklet plus videotape titled "Moving Beyond Cancer" addressed reentry challenges in four life domains: physical health, emotional well-being, interpersonal relations, and life perspectives. Designed to promote adaptive peer modeling, the film observed four breast cancer survivors as they described their experience in each of the four domains, as well as the active coping skills they used to meet associated challenges. The film also depicted a breast cancer support group for African-American women in which the members discussed the experiences of reentry and modelled active coping. It included commentary by an oncologist expert in breast cancer on the reentry experience and on active methods for approaching problems during reentry. **IG2: EUD:** Patients received the above materials plus one individually conducted in-person 80-minute session and one 30-minute telephone session with trained medical cancer educators using a detailed manual. In the first session of approximately 80 minutes, women reviewed their cancer-related concerns in the four life domains described previously, identified a primary concern and their associated goals, developed an approach-oriented action plan to address that concern (e.g., getting more information, seeking social support), and addressed barriers to their plan. The manual provided information on what to expect during reentry, encouraged an active approach, and offered a list of cancer-related resources specific to that study site. Conducted two weeks later by the same educator for individual participants and lasting approximately 30 minutes, the second telephone-delivered session was designed to focus on reactions to and questions about the videotape and manual, evaluate progress on and revise the action plan, and address generalization of strategies to other reentry challenges. **CG: CTL:** Patients were mailed a copy of the 1994 National Cancer Institute publication "Facing Forward." This 43-page booklet contains general information for cancer survivors and focuses on health care after cancer treatments, managing emotions, and financial issues.
Strong et al., 2008 (64) **Symptom Management Research Trial** **SMaRT oncology 1** Nurse-delivered complex intervention designed to treat major depressive disorder among cancer patients Core elements 1,2,3,4,5,6,7,8	**IG:** A maximum 10 one-to-one sessions over three months. Face-to-face education about depression. A Care for People with Cancer program comprised education about depression and its treatment (including antidepressant medication); problem-solving treatment to teach the patients coping strategies designed to overcome feelings of helplessness; and communication about management of major depressive disorder with each patient's oncologist and primary-care doctor. For three months after the treatment sessions, progress was monitored by monthly telephone calls. Each 45-minute treatment session was delivered by one of three cancer nurses, who followed a detailed manual (available from the corresponding author). Nurses had no previous experience of psychiatry, and were trained to deliver the intervention using written materials, tutorials, and supervised practice over at least three months. A psychiatrist reviewed patients' progress with the nurses every week. Nurses presented each patient's scores on the Patient Health Questionnaire, their antidepressant dose, and their progress with problem-solving treatment. The patient's management was then briefly discussed. If necessary, video recordings of sessions were reviewed. Primary-care doctors prescribed all antidepressant medication. If the patient decided, during discussions with the nurse, to start or change antidepressant medication, they were encouraged to contact their primary care doctor for this purpose. **CG:** Usual care.

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van Waart et al., 2015 (72) Low-intensity, home-based physical activity program (Onco-Move) and a moderate- to high-intensity, combined supervised resistance and aerobic exercise program (OnTrack) versus usual care (UC) in maintaining or enhancing physical fitness, minimizing fatigue, enhancing health-related quality of life, and optimizing chemotherapy completion rates in patients undergoing adjuvant chemotherapy for breast cancer Core elements 1,2,5,7	**IG1**: Onco-Move is a home-based, low-intensity, individualized, self-managed physical activity program, as proposed by Mock, to which behavioural reinforcement techniques were added in this study. These comprised written information that was tailored to the individual's preparedness to exercise according to the transtheoretical model, and an activity diary that was discussed at each chemotherapy cycle. Specially trained nurses encouraged participants to engage in at least 30 minutes of physical activity per day, five days per week, with an intensity level of 12 to 14 on the Borg Scale of perceived exertion. **IG2:** OnTrack is a moderate- to high-intensity, combined resistance and aerobic exercise program. It was supervised by specially trained physical therapists. The participants attended two sessions per week. Six large-muscle groups were trained for 20 minutes per session, with two series of eight repetitions at 80% of the one-repetition maximum. One-repetition maximum testing was repeated every three weeks. Each session incorporated 30 minutes of aerobic exercise, with an intensity of 50% to 80% of the maximal workload as estimated by the Steep Ramp Test. The intensity was adjusted using the Borg Scale, with a threshold of less than 12 for increase and more than 16 for decrease of intensity. Participants in this group were also encouraged to be physically active five days each week for 30 minutes per session and to keep an activity diary. Both interventions started with the first cycle of chemotherapy and continued until three weeks after the last cycle. UC varied according to hospital guidelines and preferences, but did not involve routine exercise. **CG:** Usual care.
Wang et al., 2011 (65) Revised exercise program tailored to Taiwanese women with breast cancer Core elements 1,2,4,7	**IG:** A six-week home-based walking program. The key components of the BSET included person, efficacy beliefs, behaviour, outcome expectations, and outcome. Determinants of encouraging self-efficacy beliefs were enactive mastery experiences, vicarious experiences, verbal persuasion, and emotional/physical arousal. Sources of outcome expectations flow from a given course of action, which takes the form of positive or negative physical, social, and self-evaluative effects. Applying the BSET to this intervention program included use of (a) the heart rate (HR) ring monitor (functioning as a heart rate monitor; participants in the exercise group were educated to put this ring on the index finger when walking; (b) a pedometer; (c) a weekly phone call; (d) a weekly exercise diary; (e) a weekly meeting; and (f) a role model story, which advanced the subjects' exercise, encouraging self-efficacy, and confirmed the subjects' compliance in the exercise group. The fidelity of the walking program was confirmed by the weekly exercise log recorded by the subjects, the weekly phone call made by the researcher, and the weekly meeting held between the subject and the researcher. **CG**: A weekly phone call used to get information from patients in the usual-care group.
Yates et al., 2005 (66)	**IG:** Individualized fatigue education and support program delivered in the clinic and by phone over three 10- to 20-minute sessions one week apart. THree individualized sessions tailored to the patients' specific needs and circumstances, designed to target these influencing factors. The first session incorporated the techniques of information giving, problem solving, rehearsal, and reinforcement. It was 20 minutes in length and delivered face to face in the clinic at the patient's second course of chemotherapy. The second and

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Psychoeducational intervention in improving cancer-related fatigue Core elements 1,7,8	third sessions were conducted by telephone one week apart and were, on average, 10 minutes in length. The initial session focused on identifying individual fatigue-management needs and the meaning and impact of fatigue on the patients' lives. Protocols were developed to guide the specific questioning and the strategies used by nurses in response to individual fatigue and included patient booklets. **CG**: Cancer education sessions equivalent in number and timing to the sessions that were provided for patients in the intervention group.
Zhang et al., 2014 (67) Self-efficacy enhancing intervention Core elements 1,2,5,6,7,8	**IG:** A six-month, nurse-led, self-efficacy-enhancing intervention for patients with colorectal cancer, compared with routine care over a six-month follow-up. The intervention included: (a) a one-hour face-t- face educational session conducted by an oncology nurse; (b) a handbook that contained educational information regarding ways to increase self-efficacy, the core components of self-management during chemotherapy, and common problems faced by colorectal cancer patients such as managing the adverse effects of chemotherapy, exercise, and diet; (c) a 30-minute audiotape providing information on relaxation techniques to manage chemotherapy-related symptoms; and (d) four monthly health-coaching telephone follow-up sessions (20 to 40 minutes for each session) delivered by an oncology nurse. The first session focused on identifying individual symptom self-management needs and strategies. Telephone sessions aimed to strengthen participants' self efficacy in symptom management and were guided by a protocol. Each session included a discussion of symptom distress, chemotherapy adherence, and self-management strategies. The nurse provided encouragement and reinforcement to the participants' efforts and successes, and empowered them through support. Participants were provided with an audiotape containing instructions on relaxation techniques (such as deep breathing and muscle relaxation) to manage chemotherapy related symptoms and reduce stress. The participants were asked to listen to the audiotape 12 to 24 hours before the start of a chemotherapy cycle and as often as they desired during the entire course of their treatment. Mastery experiences included the discussed self-care strategies for managing common symptoms related to cancer chemotherapy, the use of the audiotape to practice relaxation techniques, and the booklet for reinforcing knowledge. Vicarious experiences included providing examples of patients who had experienced similar symptoms and successfully used self-management skills to reduce their distress. Verbal persuasion included providing encouragement and acknowledging the participants' ability to manage their symptoms. Physiological monitoring included the explanation that symptoms might occur during chemotherapy and the discussion of management strategies. A four-hour training session was provided to the nurses by the principal investigator before the study The content and protocol of the self-efficacy-enhancing intervention were validated by a panel of experts that included three oncology nurse specialists and three oncology physicians. **CG:** Received routine care which included routine information provided by the nurse on knowledge of chemotherapy and the side effects before patients started the treatment (about 30 minutes). Patients could also obtain further information from their doctor or nurses when there was a need in the ward, and also during follow-up visit.