Ontario Health
Cancer Care Ontario

**Evidence-Based Series 20-2 REQUIRES UPDATING**

A Quality Initiative of the
Program in Evidence-Based Care (PEBC), Cancer Care Ontario (CCO)

# Effective Teaching Strategies and Methods of Delivery for Patient Education

*The Expert Panel on Effective Teaching Strategies and Methods of Delivery for Patient Education*

**December 10, 2009**

**Evidence-Based Series (EBS) 20-2 was reviewed in 2020 and determined to REQUIRE UPDATING by the Expert Panel on Effective Teaching Strategies and Methods of Delivery for Patient Education. It is still appropriate for this document to be available while this updating process unfolds. See Section 4: Document Assessment and Review for details.**

**EBS 20-2 is comprised of 4 sections. You can access the summary and full report here:**
**https://www.cancercareontario.ca/en/guidelines-advice/types-of-cancer/851**

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## PUBLICATIONS RELATED TO THIS REPORT

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### Guideline Report History

| GUIDELINE VERSION | SYSTEMATIC REVIEW | | PUBLICATIONS | NOTES and KEY CHANGES |
|---|---|---|---|---|
| | Search Dates | Data | | |
| Original December 10, 2009 | 1995 to May 2009 | Full Report | Web publication | N.A. |
| Original Reviewed August 21, 2020 | 2009 to May 2019 | New data found in Section 4: Document Assessment and Review | Updated web publication | 2009 recommendations REQUIRE UPDATING |

## Evidence-Based Series 20-2: Section 1

# Effective Teaching Strategies and Methods of Delivery for Patient Education: Guideline Recommendations

*The 2009 guideline recommendations*

*REQUIRE UPDATING*

*It is still appropriate for this document to be available while this updating process unfolds*

**QUESTION**

What are the most effective teaching strategies and methods of delivery for patient education?

**TARGET POPULATION**

The target population for this intervention is any individual who seeks services from the cancer system covering the entire continuum of care (prevention, screening, diagnosis, treatment, survivorship, and palliative care).

**INTENDED USERS**

The intended users of this guidance document are healthcare professionals involved in patient education. This may include patient education specialists and healthcare administrators and managers. Physicians, nurses and allied healthcare professionals with an interest in patient education may also be interested in this document.

**RECOMMENDATIONS**

The following recommendations are informed by the currently available evidence (see Section 2). The recommendations are not meant to provide specific details with respect to the content provided through patient education. These recommendations are meant to provide an overview concerning the efficaciousness of the teaching strategies and methods of delivery that have been evaluated in the literature.

**Teaching Strategies**

- Computers can be an effective patient education teaching strategy, especially when patients are given information specific to their own situation rather than general information.
- Audiotapes of patient consultations can be effective for patient recall of verbal education.
- Videotapes (or more modern formats such as CDs and DVDs) can be an effective teaching strategy in delivering patient education.
- The provision of written materials, and, especially, tailored print materials, can also be an effective patient education teaching strategy. All written information should be prepared at a reading level appropriate for the general population. New patient information packages provided to patients prior to their first clinic visit are very useful to them.
- Verbal instruction should only be used in conjunction with another teaching method.
- Demonstrations, if appropriate for the situation, can be a very effective teaching strategy.
- The use of multiple teaching strategies is a good option for patient education.
- Use visual aids appropriately. Pictures and illustrations are useful for enhancing printed materials especially in those with low literacy skills. The illustrations should be non-ambiguous and should be accompanied by text written in simple language.

**Methods of Delivery**

- Patient-specific information (i.e., information specific to the individual's actual clinical situation) should be provided to patients, rather than general information about their cancer.
- Patient education should be structured. An ad hoc random question and answer format session is not sufficient.
- Patient education should involve multiple teaching strategies.
- Patient education for minority groups should be culturally sensitive.

## KEY EVIDENCE

- The evidentiary base is composed of 19 systematic reviews (1-19) and four meta-analyses (20-23).
- In the summaries of the evidence that follows, the range of the standardized effect sizes reported in the primary literature is presented, as is the range of p-values. When p-value or effect size has not been reported, this is also indicated. Standardized effect sizes greater than zero reflect an improvement.
- Computer interventions increase patient knowledge (Effect Size [ES], 0.12-1.03; p, Not Reported [NR]), reduce anxiety and increase satisfaction (ES, -0.05-0.40; p, NR) (1,6,7,11,12,15,18-20,23). ES is explained in the Methods section in Section 2 of this evidence-based series.
- Audiotapes of consultations increase patient knowledge. (ES, NR; p-values from individual studies, <0.001-0.05) (17).
- Videotape interventions increase patient knowledge (ES, 0.12-1.03; p=NR) (7,15,19,20) and satisfaction (ES, 0.05-0.40; p, NR) (7,20).
- New patient information packages improve patient knowledge, especially if provided prior to the first clinic appointment (ES, NR; p, NR) (4).
- Verbal instruction is the least effective teaching strategy and should not be used alone (ES, 0.28; p, NR) (23).

- Demonstrations are a good teaching strategy with a large effect size (ES, 0.79; p, NR) (23).
- The use of multiple methods is a good teaching strategy with a moderate effect size (ES= 0.44; 67% of patient receiving patient education by multiple methods had better outcomes than did patients receiving standard care; p=NR) (23).
  - Illustrations to complement text result in greater patient comprehension than text alone especially in those with low literacy skills (ES, NR; p-values from individual studies, 0.033-0.05) (14).
  - Patient-specific information is better than general information with respect to patient knowledge, anxiety and satisfaction (ES, NR; p, NR) (4).
  - Culturally sensitive patient education for minorities improves patient knowledge (ES, NR; p, NR) (8,13,21).

## QUALIFYING STATEMENTS

- The clinic should make any necessary equipment (e.g., computer, audiotape player, videotape player, DVD player) available, in the clinic or patient care areas, for patients who do not have that equipment at home.
- Much of the evidence available is based on effect size meta-analysis. Therefore it is difficult to estimate magnitude of effect.
- The evidence underpinning these recommendations is complex and not easily summarized; please refer to Section 2 of this report for more details.
- This guideline articulates the best evidence on effective teaching strategies in providing a structured patient education program. The learning relationship between patients, families, and healthcare providers; tailoring teaching interventions; readiness to learn; individual's learning style; and information seeking behaviours, i.e., the influence of monitoring versus blunting behaviours are critical in patient teaching. While beyond the scope of this guideline, these are important considerations in a patient-centered approach to patient education. Further, as the prevalence of cancer increases and as cancer is seen as a chronic disease, guidance for self-management/self-care and therapeutic patient education interventions are recommended.

## FUTURE RESEARCH

More research is needed on methods of delivery for patient education. In addition, there is a growing patient education literature on health outcomes and changes of behaviour that should be evaluated systematically.

## RELATED GUIDELINES

PEBC Evidence-Based Series Reports (EBS):

- EBS Special Report: *Establishing Comprehensive Cancer Patient Education Services: A Framework to Guide Ontario Cancer Education Services* (https://www.cancercareontario.ca/en/guidelines-advice/types-of-cancer/301).
- EBS 19-2 *Provider-Patient Communication: A Report of Evidence-Based Recommendations to Guide Practice in Cancer* (https://www.cancercareontario.ca/en/guidelines-advice/types-of-cancer/2256).

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## Evidence-Based Series 20-2: Section 2

# Effective Teaching Strategies and Methods of Delivery for Patient Education: Evidentiary Base

***The 2009 guideline recommendations***

***REQUIRE UPDATING***

***It is still appropriate for this document to be available while this updating process unfolds***

### QUESTION

What are the most effective teaching strategies and methods of delivery for patient education?

### INTRODUCTION

Patient education is any set of planned educational activities, using a combination of methods including teaching, counselling and behaviour modification that is designed to improve patients' knowledge and health behaviours (1). Patient education practices within cancer programs and centres in Ontario vary according to institution. Currently, there is no provincial standard for how patient education is delivered in Ontario. However, as our healthcare system becomes more cost-conscious, health professionals will need to become more aware of their need to demonstrate that they are effectively meeting patient educational needs with respect to patient outcomes and cost (2).

Studies have established the informational needs of cancer patients (3-5). Psycho-educational interventions, which include education, exercise and psychosocial support, have been demonstrated to improve clinical outcomes in adult patients with a variety of diseases (6,7). This guidance document evaluates the effect of various teaching strategies and methods of delivery for patient education on patient outcomes. The teaching strategies of patient education that were targeted were taken from a framework outlined by the University Health Network (UHN) Patient Education Task Forum[1] (8). That resource includes traditional lectures, discussions, simulated games, computer technology, written material, audiovisual sources, verbal recall, demonstration and role playing. The targeted methods of delivery, which were taken from this same resource (8), involve how the teaching strategy is delivered and include instructor-centred, interactive, individualized learning and experiential learning. By using this guidance document, cancer programs will be better able to use limited resources when designing patient education programs and delivering patient information.

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[1] Permission to cite this reference was received from Audrey Friedman on March 11, 2009. For more information regarding this reference, please contact Audrey Friedman.

## METHODS

The evidence-based series (EBS) guidelines developed by Cancer Care Ontario's Program in Evidence-Based Care (PEBC) use the methods of the Practice Guidelines Development Cycle (9). For this project, the core methodology used to develop the evidentiary base was the systematic review. Evidence was selected and reviewed by one PEBC methodologist. The reference lists from those sources were also searched for additional publications.

This systematic review is a convenient and up-to-date source of the best available evidence on effective teaching strategies and methods of delivery for patient education. The body of evidence in this review is primarily comprised of systematic review data with and without meta-analysis. That evidence forms the basis of the recommendations developed by the Patient Education Working Group of the Patient Education Panel (Appendix 1). The systematic review and companion recommendations are intended to promote evidence-based practice in Ontario, Canada. The PEBC is supported by the Ontario Ministry of Health and Long-Term Care through Cancer Care Ontario. All work produced by the PEBC is editorially independent from its funding source.

### Literature Search Strategy

The scientific and clinical literature was systematically searched for publications pertaining to patient education teaching strategies and methods of delivery. The MEDLINE (1995 through November 2006), EMBASE (1995 through November 2006), CINAHL (1995 through November 2006), and HealthSTAR (1995 through November 2006) databases were searched for relevant publications using search terms pertaining to patient education, teaching strategies and methods of delivery. The full search strategy can be found in Appendix 2. The original search targeted several publication types including guidelines, systematic reviews, meta-analyses and randomized controlled trials. When the search was completed it was apparent that there were enough of the highest levels of evidence (i.e., systematic reviews and meta-analyses) that it was unnecessary to include the individual trials.

The literature searches were updated in May 2009 for MEDLINE to May (week two) 2009, for EMBASE to week 19 2009, for HealthSTAR to April 2009 and for CINAHL to May 2009.

### Study Selection Criteria

#### *Inclusion Criteria*

Articles were selected for inclusion in this systematic review if they were published English-language reports involving human participants that were practice guidelines, systematic reviews or meta-analyses that examined teaching strategies and methods of delivery for patient education. The search was not limited to publications of patient education in oncology since patient education teaching strategies and methods in all health disciplines may be similar. Specific reported outcome measures were not used as part of the selection criteria. It was not expected a priori that any cancer clinical outcome data would be located. However, any such sources of evidence were explicitly included. The comparisons considered were teaching intervention versus standard care (control) and teaching intervention versus another teaching intervention.

### *Exclusion Criteria*

Letters, editorials, notes, case-reports, commentaries, comparative trials, non-randomized trials, randomized controlled trials and non-systematic reviews were not included in this systematic review.

### Synthesizing the Evidence

The evidence used in this guidance document was drawn from systematic reviews, with or without meta-analysis, and did not support data pooling using meta-analytic techniques.

### Effect Sizes in Meta-Analysis

In meta-analysis, effect sizes (ES) are calculated for each study such that the mean of the control group is subtracted from the mean of the experimental group and then divided by the within-group standard deviation, as follows:

$$Effect\ Size = \frac{\text{Mean (treatment group)} - \text{Mean (control group)}}{\text{Standard Deviation (within group)}}$$

In this way, the results of each study are converted to a standard ES score, which allows comparison of the results of several studies on a common scale. ESs are interpreted as small (ES=0.20), moderate (ES=0.50) or large (ES=0.80) (10). It is important to remember, however, that these descriptors of small, moderate and large effect sizes are arbitrary conventions and should be considered as such. At the same time, these proposed conventions are considered reasonable (10).

## RESULTS

### Literature Search Results

The database searches yielded 23 systematic reviews and meta-analyses (11-33) that met the selection criteria. Of these 23 papers, five [one meta-analysis (13) and four systematic reviews (11,12,14,15)] pertained to patient education and methods of delivery in oncology exclusively and 18 [15 systematic reviews (17,18,20-32) and three meta-analysis (16,19,33)] pertained to patient education and methods of delivery in a variety of health settings. Because the identified literature was poor with respect to outcomes other than patient knowledge, anxiety and satisfaction, data for these three outcomes was targeted. Table 1 shows the topic areas covered by each of the included papers. The teaching strategies evaluated are not necessarily mutually exclusive. Therefore studies were categorized into the teaching strategy that was most applicable.

## Table 1: Evidence included in this report by topic area covered.

| | | TEACHING STRATEGIES | | | | | | | | | | | METHODS OF DELIVERY | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUPING | STUDY, Year (Ref) | Traditional Lectures | Discussions | Simulated Games | Computer Technology | Written Materials | Audiotapes | Videotapes | Verbal | Demonstration | Role Playing | Other | Patient-specific vs. General Information | Structured vs. Unstructured Teaching | Group vs. Individual Teaching | Culturally Specific vs. Not Culturally Specific Information |
| PATIENT EDUCATION IN ONCOLOGY | Ranmal et al., 2008 (11) | | | | ● | | | | | | | | | | | |
| | van der Meulen et al., 2008 (12) | | | | | ● | ● | | | | | | | | | |
| | Gysels & Higginson, 2007 (13) | | | | ● | | | ● | | | | | | | | |
| | Gaston & Mitchell, 2005 (14) | | | | | ● | ● | | | | | | | | | |
| | McPherson et al. 2001 (15) | | | | ● | ● | ● | | | | | | ● | | | |
| PATIENT EDUCATION IN VARIOUS HEALTH SETTINGS | Bailey et al., 2009 (16) | | | | | | | | | | | | | | | ● |
| | Duke et al., 2009 (17) | | | | | | | | | | | | | | ● | |
| | Meilleur & Littleton-Kearney, 2009 (18) | | | | ● | | | ● | | | | | | | | |
| | Hawthorne et al., 2008 (19) | | | | | | | | | | | | | | | ● |
| | Jeste et al., 2008 (20) | | | | ● | | | ● | | | | | | | | |
| | Khunti et al., 2008 (21) | | | | | | | | | | | | | | | ● |
| | Ryan et al., 2008 (22) | | | | | | | ● | | | | | | | | |
| | Yankova, 2008 (23) | | | | | | | | | | | | | ● | | |
| | Beranova & Sykes, 2007 (24) | | | | ● | | | | | | | | | | | |
| | Bussey-Smith & Rossen, 2007 (25) | | | | ● | | | | | | | | | | | |
| | Whittemore, 2007 (26) | | | | | | | | | | | | | | | ● |
| | Houts et al. 2006 (27) | | | | | | | | | | | ● | | | | |
| | Trevena et al. 2006 (28) | | | | ● | ● | ● | ● | ● | | | ● | | | | |
| | Johnson & Sandford, 2005 (29) | | | | | ● | | | ● | | | | | | | |
| | Santo et al. 2005 (30) | | | | | | ● | | | | | | | | | |
| | Wofford et al. 2004 (31) | | | | ● | | | | | | | | | | | |
| | Chelf et al. 2001 (32) | | | | ● | | ● | ● | | | | | ● | | | |
| | Theis & Johnson, 1995 (33) | ● | ● | | ● | ● | ● | ● | ● | ● | | | | ● | ● | |

Abbreviations: vs.= versus.

### *Study Design and Quality*

The quality of each systematic review was assessed using the 'assessment of multiple systematic reviews' or 'AMSTAR' tool. The tool began with 37-items that combined the 10 items of the Overview Quality Assessment Questionnaire (OQAQ) (34), the 24 items of the Sacks et al. (35) checklist and three items judged to be methodologically important. Factor analysis identified 11 components from these 37 items, and one item from each component was chosen for the final 11-item AMSTAR instrument. The resulting instrument was deemed to have good face and content validity (36). AMSTAR was recently validated externally (37,38). Table 2 shows how each of the included systematic reviews and meta-analyses scored on each of the 11 AMSTAR items.

Although there are no rules about what constitutes a 'good' or 'acceptable' AMSTAR score, some general observations can be made about the systematic reviews and meta-analyses that comprise this document. All included papers had an a priori design, all conducted comprehensive literature searches, and all either appropriately pooled or did not pool the individual study findings. All studies provided a list of included studies, but very few provided lists of excluded studies. Almost all studies provided the characteristics of the included studies, assessed and documented the quality of the included studies and used the study quality in formulating conclusions. None of the studies assessed the likelihood of publication bias, and only a few studies made any statements regarding conflict of interest.

The systematic reviews and meta-analyses retrieved for this document included studies that reported on a wide array of measures of patient outcomes. Examples include the Spielberger State-Trait Anxiety Inventory, the Patient Satisfaction with Consultation Scale and investigator-designed knowledge questionnaires. However, the systematic reviews and meta-analyses did not provide details on the actual measures of patient outcomes used in each study and generally only provided information on the standardized ES.

## Table 2: Evaluation of included publications using AMSTAR.

| | STUDIES OF PATIENT EDUCATION IN ONCOLOGY | | | | | STUDIES OF PATIENT EDUCATION IN VARIOUS HEALTH DISCIPLINES | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ITEM | Ranmal et al., 2008 (11) | van der Meulen et al., 2008 (12) | Gysels & Higginson, 2007 (13) | Gaston & Mitchell, 2005 (14) | McPherson et al. 2001 (15) | Bailey et al., 2009 (16) | Duke et al., 2009 (17) | Meilleur & Littelon-Kearney, 2009 (18) | Hawthorne et al., 2008 (19) | Jeste et al., 2008 (20) | Khunti et al., 2008 (21) | Ryan et al., 2008 (22) | Yanknova, 2008 (23) | Beranova & Sykes, 2007 (24) | Bussey-Smith & Rossen, 2007 (25) | Whittemore, 2007 (26) | Houts et al. 2006 (27) | Trevena et al. 2006 (28) | Johnson & Sandford, 2005 (29) | Santo et al. 2005 (30) | Wofford et al. 2004 (31) | Chelf et al. 2001 (32) | Theis & Johnson, 1995 (33) |
| **1.** Was an 'a priori' design provided? | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| **2.** Was there duplicate study selection and data extraction? | Y | Y | N | Y | N | Y | Y | N | Y | N | Y | Y | N | Y | Y | N | N | Y | Y | N | Y | Y | Y |
| **3.** Was a comprehensive literature search performed? | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| **4.** Was the status of publication (i.e. grey literature) used as an inclusion criterion? | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| **5.** Was a list of studies (included and excluded) provided? | Y | N | N | N | N | Y | Y | N | Y | N | N | Y | N | N | N | N | N | N | Y | N | N | N | N |
| **6.** Were the characteristics of the included studies provided? | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | N | Y | Y | Y | Y | Y | N |
| **7.** Was the scientific quality of the included studies assessed and documented? | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | N | Y | Y | N | Y | N | Y |
| **8.** Was the scientific quality of the included studies used appropriately in formulating conclusions? | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | N | Y | Y | N | Y | N | Y |
| **9.** Were the methods used to combine the findings of the studies appropriate? | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| **10.** Was the likelihood of publication bias assessed? | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N | N |
| **11.** Was the conflict of interest stated? | Y | N | N | N | N | Y | Y | N | Y | N | Y | Y | N | N | Y | N | N | N | N | N | N | N | N |
| TOTAL AMSTAR POINTS | 10 | 8 | 7 | 8 | 7 | 10 | 10 | 7 | 10 | 7 | 9 | 10 | 7 | 8 | 9 | 7 | 4 | 8 | 9 | 5 | 8 | 6 | 7 |

Abbreviations: N = no; Y = yes

**Outcomes**

The patient education teaching strategies that were targeted came from the framework developed by the Patient Education Task Force of the UHN (8). The strategies identified in this report are traditional lectures, discussions, simulated games, computer technology, written material, audiovisual sources, verbal recall, demonstration, and role playing. For this review, audiovisual sources were split into audiotapes and videotapes, as it became apparent that these two types of strategies each had their own body of evidence.

The methods of delivery considered were centred on how to deliver the teaching strategies including but not necessarily limited to instructor-centred, interactive, individualized learning and experiential learning. They were taken from the same framework used to inform the teaching strategies that were targeted (8). However, these will be discussed together as there was limited evidence found regarding the various methods of delivering patient education.

***Teaching Strategies***

***(a) Traditional Lectures (including personal instruction)***

One meta-analysis (33) evaluated the effect of traditional lectures compared to routine care on outcomes related to patient education. In this meta-analysis, effect sizes and 95% confidence intervals were calculated for 'patient outcomes' in general (i.e., not specifically defined). Based on the pooling of 12 individual studies, the effect size for traditional lectures was 0.48 (95% confidence interval [CI], 0.29-0.67), which is considered to be a moderate effect size as defined by Cohen (10).

***(b) Discussions***

One meta-analysis (33) evaluated the effect of discussions compared to routine care on outcomes related to patient education. Based on the pooling of 39 individual studies, discussions had a small to moderate effect size of 0.34 (95% CI, 0.25-0.43) for 'patient outcomes' in general (i.e., not specifically defined).

***(c) Simulated Games***

No systematic reviews or meta-analyses were found that evaluated the effect of simulated games on patient knowledge, anxiety, or satisfaction.

***(d) Computer Technology***

Eleven systematic reviews or meta-analyses (11,13,15,18,20,24,25,28,31-33) were found that evaluated the effect of computer technology on outcomes related to patient education. These systematic reviews were checked for overlap with respect to the individual studies used within them. One systematic review (15) was excluded because its one computer study was included in a more recent systematic review (13). Because the systematic reviews by Jeste et al. (20), Wofford et al. (31), Chelf et al. (32) and Gysels and Higginson (13) had some of the same studies, only the information from the unique set of studies in each was included in this review. In this way, any individual study that appeared in more than one systematic review was discussed only in the context of the more recent systematic review.

Bussey-Smith and Rosen (25) evaluated the effectiveness of interactive, computerized asthma patient education programs and found that asthma knowledge increased in four of the nine individual studies examined. However, these improvements were limited to older children and did not apply to younger children or adults. Beranova and Sykes (24) reviewed five individual studies of computer-based software programs for educating patients with coronary heart disease. They reported that, in all five studies, both intervention and control (standard education) groups demonstrated increased knowledge. However, the increase was significantly improved in those receiving computer based education, even six months after the intervention. In addition, patients were more satisfied with computer-based learning than with standard educational methods in three individual studies.

Ranmal et al. (11) looked at various methods of improving communication with children and adolescents about their cancer and evaluated one study of computer-assisted patient education. The knowledge level increased immediately after the intervention but retention over time was not evaluated. In a systematic review of patient education in genetic conditions, Meiller and Littleton-Kearney (18) found that computer interventions resulted in increased knowledge (p values, <0.0001-0.03) and decreased anxiety (p values, <0.005-0.06). In the four individual studies that were unique to Jeste et al. (20), all were positive with respect to knowledge, one was positive with respect to satisfaction and one was negative with respect to satisfaction.

Gysels and Higginson (13) did a meta-analysis of six computer studies and three videotape studies. Overall, they found that patients receiving personalized information (i.e., information based on their own situation) by computer were more satisfied than those receiving general information. They also found that anxiety was not increased by computer interventions and that it was actually decreased in some studies. For the purposes of pooling the data, these authors combined the computer and videotape studies together. The ES for individual studies of computer *and* videotape interventions ranged from 0.12 to 1.03 for knowledge and -0.05 to 0.40 for satisfaction. Theis and Johnson (33) calculated ES for computer interventions compared to routine care for 'patient outcomes' in general (i.e., not specifically defined) to be 0.55 (95% CI, 0.22-0.88), based on three studies.

Trevena et al. (28) evaluated three randomized controlled trials of computer interventions and concluded that knowledge was increased in comparison results with audio-booklet or written material alone. Of the 21 individual studies that were unique to Wofford et al. (31), nine assessed knowledge, and one assessed anxiety. Of the nine studies evaluating knowledge, seven resulted in increased knowledge. In the one study evaluating anxiety, anxiety was increased in the group receiving general information by computer but not in the group receiving personalized information by computer. Chelf et al. (32) evaluated computer assisted learning (CAL) with respect to decision-making programs and found that knowledge increased even in pediatric populations. They also found some evidence that CAL resulted in higher patient satisfaction.

### *(e) Written Material*

Six systematic reviews or meta-analyses (12,14,15,28,29,33) were found that evaluated the effect of written material on outcomes related to patient education. These publications were checked for overlap with respect to the individual studies used within them. As a result of this check, one systematic review (12) was excluded from use in this section as it did not contribute any unique studies that were not already covered in the other systematic reviews and meta-analyses used. Gaston and Mitchell (14) reported that written material in the form of summary letters written to the patient by the physician or information booklets were effective patient education strategies with respect to satisfaction and information recall. However they noted that writing individual letters to patients does increase the workload of busy clinicians. They also concluded that written material must be prepared at a reading level that is suitable for the general population.

Written information in the form of new patient information packages or booklets improved patient knowledge and reduced confusion especially if it was provided to the patient prior to the first clinic appointment, rather than at the first appointment (15). The use of tailored print material resulted in better information recall than did general print materials, and evidence-based leaflets increased knowledge compared to no leaflet (28). Johnson and Sandford (29), in their systematic review of two trials comparing written and verbal information with verbal information only, found that knowledge significantly improved when written materials were combined with verbal health information in comparison to verbal information only. They also found that satisfaction was high overall but not statistically different between intervention and controls in one trial and higher in the intervention group compared to controls in the other trial (p<0.0001).

Theis and Johnson (33) determined that the ES for written material compared to routine care for 'patient outcomes' in general (i.e., not specifically defined), based on 22 studies, was 0.43 (95% CI, 0.33-0.53), which is a small to moderate ES.

### *(f) Audiotapes*

Seven systematic reviews or meta-analyses (12,14,15,28,30,32,33) were found that evaluated the effect of audiotapes on outcomes related to patient education. These publications were checked for overlap with respect to the individual studies used within them. As a result of this check, five systematic reviews (12,14,15,28,32) were excluded from use in this section as they were either studies already included in a systematic review that focussed on audiotapes exclusively or the audiotape information was grouped with other information and could not be parsed out.

Santo et al. (30) exclusively evaluated the use of audiotapes in patient education. They found that most studies of audiotapes of patient consultations resulted in increased patient knowledge, at least within the short term. The addition of an audiotape recording of a patient consultation to written recommendations also resulted in increased patient knowledge. They reported that audiotapes of general information might result in decreased recall, possibly because these tapes overwhelmed patients with too much information.

Santo et al. (30) found seven audiotape studies that measured anxiety as an outcome. They reported that audiotapes decreased anxiety in three studies, made no difference in anxiety in three studies and increased anxiety in one study. With respect to satisfaction, patients reported appreciation of the audiotapes, especially when the information was tailored to their specific situation (30).

Theis & Johnson (33) determined that the effect size for audiotapes, compared to routine care, was 0.58 (95% CI, 0.31-0.85) for 'patient outcomes' in general (i.e., not specifically defined), based on the pooling of five studies, which was a moderate ES.

### *(g) Videotapes*

Seven systematic reviews or meta-analyses (13,18,20,22,28,32,33) evaluated the effect of videotapes on outcomes related to patient education. Meilleur and Littleton-Kearnery (18) evaluated two studies of video interventions, of which one measured knowledge and both measured anxiety and satisfaction. In the study that evaluated knowledge, knowledge was increased in the intervention group (p=0.000) compared to controls. In the studies that measured anxiety and satisfaction as outcomes, anxiety was not significantly different between the groups in both of the studies, whereas satisfaction was significantly higher in the video intervention group in both studies (p<0.05 and p=0.000).

Jeste et al. (20) found 22 studies of video patient education interventions. Of these, 13 reported increased knowledge for the intervention group, and nine reported negative results. Video interventions were also associated with greater satisfaction in general.

Ryan et al. (22) found that audiovisual interventions did not significantly increase knowledge consistently. Of the four studies they evaluated, two found no significant differences in knowledge, one reported increased knowledge but did not test it statistically, and one study reported no significant differences between groups in knowledge immediately after the intervention but did report significantly better knowledge retention in the intervention group two to four weeks following the intervention.

Gysels and Higginson (13) performed a meta-analysis including six computer and three videotape studies. Overall, they found that, with respect to knowledge, videotape was better than the same information given verbally, but the combination of videotape and verbal discussion was no better than videotape alone. Other systematic reviews also reported that videotapes increased patient knowledge (28,32).

Videotape interventions had no effect on anxiety (13,28). As reported in the section on computer technology above, Gysels & Higginson (13) combined the computer and videotape studies together when they pooled the data. The ES for individual studies of videotape *and* computer interventions ranged from 0.12 to 1.03 for knowledge and -0.05 to 0.40 for satisfaction. Theis and Johnson (33) calculated ES for videotape interventions compared to routine care for ‘patient outcomes’ in general (i.e., not specifically defined) to be 0.41 (95% CI, 0.29-0.53) based on 23 studies.

### *(h) Verbal*

Three systematic reviews or meta-analyses (28,29,33) were found that evaluated the effect of verbal information on outcomes related to patient education. These publications were checked for overlap with respect to the individual studies used within them. As a result of this check, one systematic review (28) was excluded from use in this section as it was made up of studies already included in another systematic review or because the verbal information was grouped with other information and could not be parsed out. Johnson and Sandford (29) found that the combination of written and verbal information was significantly better than verbal information alone with respect to knowledge. However, this was based on 2 studies only. Theis and Johnson (33) found verbal teaching to be the least effective strategy among all the strategies they looked at and recommended that it not be used alone. Based on 30 studies, they report a small effect size for ‘patient outcomes’ in general (i.e. not specifically defined) of 0.28 (95%CI: 0.19-0.37) for verbal teaching compared to routine care.

### *(i) Demonstration*

One meta-analysis (33) evaluated the effect of demonstrations on outcomes related to patient education. Based on the pooling of nine individual studies, demonstrations had a large ES of 0.79 (95% CI, 0.55-1.03) for ‘patient outcomes’ in general (i.e., not specifically defined) compared to routine care.

### *(j) Role Playing*

No systematic reviews or meta-analyses were found that evaluated the effect of role playing on patient knowledge, anxiety, or satisfaction.

### *(k) Other Types of Teaching Strategies*

Information was found about types of teaching strategies other than those included in the UHN framework. Houts et al. (27) reviewed the role of pictures in improving health communication. They reported that five of six studies found that illustrated materials resulted in greater patient comprehension than did non-illustrated material. This was especially true among those with low literacy skills. The sixth study found no difference between illustrated and non-illustrated materials with respect to comprehension (94% versus 97% accuracy). Because accuracy was so high in both groups in this particular study, the authors felt that there was a ceiling effect at play in this situation. With respect to recall, three of five studies found higher recall with illustrated text compared to text alone in both young and older participants. One study found no effect on recall, and one study reported that younger participants benefitted from the addition of illustrations, but older participants were hampered by the illustrations. These authors concluded that pictures should be used to illustrate key points, should be accompanied by text using simple language and should not contain distracting details (27).

van der Meulen et al. (12) reported on one randomized controlled trial that evaluated the use of question prompt sheets and found they improved recall but only if the physician was proactive in addressing the questions that the patient asked. Trevena et al. (28) reported on two randomized controlled trials that made use of question prompt sheets and found there was an increase in knowledge if the prompt sheets were used in conjunction with a leaflet.

Another option for patient educators is to make use of multiple teaching strategies. Based on ten studies, Theis and Johnson (33) reported that 67% of patients who received patient education using multiple teaching strategies had better outcomes (not specifically defined) than did patients receiving standard care (ES, 0.440; 95% CI, 0.287-0.593), which is a small to moderate effect.

### *Methods of Delivery*

There was not as much information available about methods of delivery in patient education as there was regarding teaching strategies. Nine systematic reviews/meta-analyses did have information regarding methods of delivery. McPherson et al. (15) reported that seven of the 10 studies they evaluated provided patient-specific information rather than general information. Overall, such targeted interventions increased knowledge, decreased anxiety and increased satisfaction. Chelf et al. (32) reported that, following an 'instructional session', patients undergoing chemotherapy remembered more information about the drugs they were taking and the potential side effects of those drugs. They also noted that orientation programs in general increased cancer patients' knowledge and decreased anxiety.

Duke et al. (17) reported on three studies that evaluated individual education for patients with type 2 diabetes. In one study, knowledge significantly improved at six months post-intervention for those receiving individual education compared to usual care. The other two studies compared individual to group education. One study demonstrated that both groups had improvements in knowledge compared to baseline, but there was no significant difference between individual and group education groups. In the third study, there was a significant improvement in knowledge in the group education arm over the individual education arm six months post-intervention but the difference disappeared by 12 months post-intervention. Duke et al. (17) also reported on the clinical outcome of glycemic control. They reported short term but not significant improvements, at six to nine months post-intervention, in hemoglobin-A1c ($HBA_{1c}$) in those receiving individual education compared to usual care. Group education resulted in significant ($p=0.0007$) improvements in $HBA_{1c}$ at six to nine months post-intervention compared to individual education but no differences at 12-18 months post-intervention. Theis and Johnson (33) report ES for various methods of delivery. Small ES was reported for group (ES, 0.269; 95% CI, 0.195-0.343; 13 studies) and individualized (ES, 0.240; 95% CI, 0.039-0.441; 5 studies) teaching for 'patient outcomes' in general (i.e., not specifically defined). This means that 60.6% of patients receiving group teaching and 59.5% of patients receiving individualized teaching had better outcomes than did those receiving routine care.

Yankova (23) conducted a systematic review and report on four studies that evaluated whether or not structured teaching increased patient knowledge about patient-controlled analgesia. Structured teaching resulted in significant increases in knowledge in comparison to ad hoc instruction ($p<0.05$ in all four studies). Theis and Johnson (33) reported moderate ES for structured teaching (ES, 0.539; 95% CI, 0.465-0.613; 37 studies), independent study (ES,

.521; 95% CI, 0.251-0.791; 5 studies) and for multi-methods (ES, 0.440; 95% CI, 0.287-0.593; 10 studies). Again, this was for ‘patient outcomes’ in general. No specific outcome was articulated. This means that 70.5% of patients receiving structured teaching, 69.8% of patients who did independent study and 66.9% of patients who receiving patient education from a variety of methods had better outcomes than those receiving routine care (33).

Four systematic reviews or meta-analyses (16,19,21,26) were found that evaluated the effect of culturally appropriate patient education for minority groups on outcomes related to patient education. These publications were checked for overlap with respect to the individual studies used within them. As a result of this check, one meta-analysis (19) was excluded from use in this section as it was mostly comprised of studies already included in the other systematic reviews of culturally specific education. Bailey et al. (16) looked at the effect on knowledge of culturally specific patient education for child and adult asthmatics from minority groups. Based on two pediatric studies, they reported that knowledge scores were significantly better in children (mean difference, 3.30; 95% CI, 1.07-5.53) and parents (mean difference, 1.90; 95% CI, -0.04-3.84) receiving culturally specific education. Khunti et al. (21) reported on the effect of culturally appropriate patient education for migrant South Asians with type 2 diabetes. They had found five studies that assessed knowledge. Of these, three studies reported improvements in knowledge in the group receiving culturally specific education, and two reported no difference between intervention and controls. Whittemore (26) evaluated culturally appropriate patient education in Hispanic adults with type 2 diabetes. They found four studies that assessed knowledge. In all cases, diabetes knowledge was significantly increased for those receiving culturally appropriate education compared to those who did not. Khunti et al. (21) and Whittemore (26) also reported on the clinical outcome of glycemic control. Whittemore (26) reported that seven of eight studies that measured $HBA_{1c}$ demonstrated improved glycemic control in those receiving culturally appropriate patient education, whereas Khunti et al. (21) reported variable results, with a few studies demonstrating improvements in $HBA_{1c}$ but only in the short term (up to three months).

## DISCUSSION

The evidence base for this document consists of systematic reviews and meta-analyses that evaluated teaching strategies and methods of delivery for patient education. There was much more evidence available for teaching strategies than for methods of delivery. Although each teaching strategy for which evidence was available was effective to some degree (i.e., better than controls), clearly some methods were more effective than others.

Most studies of patient education, especially those in cancer, measure behavioural and/or psychosocial outcomes and not clinical outcomes (e.g., survival, response, recurrence). One notable exception is studies of patient education in diabetes where glycemic control and to a lesser extent blood pressure might be evaluated.

Two of the articles in the evidentiary base are meta-analyses that estimated overall ES (13,33). These analyses are only appropriate and meaningful when the studies included in the meta-analysis were homogenous in such areas as the population groups studied or research questions addressed. The studies included in these meta-analyses show no obvious heterogeneity that would call the results into question. Moreover, both analyses reported on and attempted to deal with statistical heterogeneity. In the Theis and Johnson (33) paper, if heterogeneity was detected, outlier studies were removed until heterogeneity was achieved; weighted effect sizes were calculated based on the number of studies remaining after homogeneity was reached. In the Gysels and Higginson (13) paper, a random effects model was used when heterogeneity was encountered.

With respect to specific teaching strategies, verbal teaching (29,33) and discussions (33) were found to be the least effective teaching strategies. In fact, Theis and Johnson (33) recommend that verbal teaching be used in combination with other teaching strategies and not as a stand-alone teaching method.

The use of computer technology was found to be an effective teaching strategy, positively affecting patient knowledge, anxiety and satisfaction (11,13,18,20,24,25,28,31-33). Audiotapes, videotapes, written materials and lectures were all found to be more effective teaching strategies than were verbal teaching and discussions (33). All of these strategies were found to have a positive effect on patient knowledge, anxiety and patient satisfaction (13,14,18,20,28-30,32). Gaston and Mitchell (14) also concluded that written materials must be prepared at a reading level that is suitable for the general population. In Canada, it has been demonstrated that health literacy varies from community to community (39); therefore, written materials might need to be reviewed to ensure they can be understood by the individual community the patient education program serves. Demonstrations had the highest ES of any of the teaching strategies evaluated and should be considered in appropriate situations. Houts et al. (27) demonstrated that the addition of illustrations to written text is an effective teaching strategy when compared with written material lacking illustrations. This was especially true for those with low literacy skills. The use of multiple teaching strategies is also a viable option. Theis & Johnson (33) found that almost 67% of patients who received patient education using several different strategies had better outcomes than those who received routine care.

All the teaching strategies evaluated are used to provide effective patient education. However, their target audience must be taken into account and therefore they cannot be applied in the same way to every patient. These strategies will only be as effective as their audience's access to the necessary tools to use them, whether that tool is an intangible such as literacy or a tangible such as having access to an audiotape player. As a result there is no 'one size fits all' solution for the strategies needed to educate patients.

With respect to methods of delivery, targeted interventions that provide patient-specific information have been found to increase patient knowledge, decrease anxiety and increase satisfaction (15). In addition, structured teaching has been shown to be much more effective than unstructured ad hoc teaching (23,33). Culturally appropriate patient education has also been found to increases patient knowledge (16,21,26).

There are several limitations to this systematic review. The reporting of the systematic reviews and of the individual studies that comprise them is imprecise where the specific outcomes chosen are concerned. This is because the tools to measure a given outcome (e.g.,. knowledge) vary not only between diseases but also within a given disease. Moreover, these tools are not always validated. Related to this is the fact that 'outcomes' are not always clearly articulated, making it impossible to determine the exact outcome that was measured. A second limitation is that the individual studies that make up any given systematic review or meta-analysis vary considerably. A third limitation is that the teaching strategies evaluated are not necessarily mutually exclusive, and, as a result, studies were categorized into the teaching strategy that was most applicable. A fourth limitation of this systematic review is the fact that the details of the various interventions are unclear. The data does not necessarily provide this information and more importantly, it would not be pragmatic to report all the details in a document of this nature. Finally, while the reporting of ES is acceptable, absolute differences would provide much more compelling data regarding the impact of a given teaching strategy. However, absolute differences were not reported in any meaningful way. Furthermore, there is considerable variation in ES, which makes interpretation tricky. Despite these limitations, there is enough consistency in the findings of the systematic reviews and meta-analyses used in this guidance document, across different diseases, upon which overall generalizable recommendations can be made.

## CONCLUSIONS

Patient education is a vital component of heath care but currently, there is no provincial standard for how patient education is delivered in Ontario. This report discusses several teaching strategies for the delivery of patient education that were effective in increasing knowledge, decreasing anxiety and increasing satisfaction and that included computer technology, audio and videotapes, written materials and demonstrations. Various teaching strategies used in combination were similarly successful; for example, illustrations enhanced patient understanding of written materials. In addition, structured teaching, culturally appropriate teaching and teaching targeted to a patient's individual situation were found to be better than ad hoc teaching or teaching that only provides general information to a patient. These findings provide guidance for future discussions centred on establishing provincial standards for patient education delivery.

## CONFLICT OF INTEREST

All the authors reported no conflicts of interest.

## JOURNAL REFERENCE

The following systematic review and practice guideline recommendations have been published in the *Journal of Cancer Education* (© Springer 2010; http://www.springerlink.com/content/u875325520l6/):

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## Appendix 1. Members of the Patient Education Panel and the Patient Education Working Group.

| | | |
|---|---|---|
| Panel Chair: | Audrey Jusko Friedman* | Provincial Head, Patient Education |
| Panel Members: | Susan Boyko* | Patient Education Specialist |
| | Nadia Coakley | Methodologist |
| | Roxanne Cosby* | Methodologist |
| | Emily Freeman | Methodologist |
| | Jane Hatton-Bauer* | Patient Education Specialist |
| | Gale Turnbull* | Patient Education Specialist |
| CCO Representative: | Jennifer Hart* | Patient Education Program Manager |

* Member of the Patient Education Working Group.

**Appendix 2. MEDLINE, EMBASE, HealthSTAR, and CINAHL search strategy (all databases searched at once).**

1. patient education.mp
2. patient education/mt
3. teaching/mt
4. or/1-3
5. clinical trials/ or clinical trials, phase ii/ or clinical trials, phase iii/ or clinical trials, phase iv/ or controlled clinical trials/ or randomized controlled trials
6. meta-analysis
7. "review literature"
8. clinical trial.pt
9. clinical trial, phase ii.pt
10. clinical trial, phase iii.pt
11. clinical trial, phase iv.pt
12. meta-anaysis.pt
13. randomized controlled trial.pt
14. controlled clinical trial.pt
15. guideline.pt
16. randomized.mp
17. or/ 5-16
18. 4 and 17
19. limit 18 to english
20. limit 19 to human [Limit not valid in: CINAHL; records were retained]
21. remove duplicates from 20

## Evidence-Based Series 20-2: Section 3

# Effective Teaching Strategies and Methods of Delivery for Patient Education: EBS Development Methods and External Review Process

***The 2009 guideline recommendations***

***REQUIRE UPDATING***

***It is still appropriate for this document to be available while this updating process unfolds***

**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) (1). The PEBC mandate is to improve the lives of Ontarians affected by cancer, through the development, dissemination, implementation, and evaluation of evidence-based products designed to facilitate clinical, planning, and policy decisions about cancer care.

The PEBC supports a network of disease-specific panels, termed Disease Site Groups (DSGs) and Guideline Development Groups (GDGs), as well as other groups or panels called together for a specific topic, all mandated to develop the PEBC products. These panels are comprised of clinicians, other healthcare providers and decision makers, methodologists, and community representatives from across the province.

The PEBC is well known for producing evidence-based guidelines, known as Evidence-based Series (EBS) reports, using the methods of the Practice Guidelines Development Cycle (1,2). The EBS report consists of an evidentiary base (typically a systematic review), an interpretation of and consensus agreement on that evidence by our Groups or Panels, the resulting recommendations, and an external review by Ontario clinicians and other stakeholders in the province for whom the topic is relevant. The PEBC has a formal standardized process to ensure the currency of each document, through the periodic review and evaluation of the scientific literature and, where appropriate, the integration of that literature with the original guideline information.

## The Evidence-Based Series

Each EBS is comprised of three sections:

- *Section 1: Guideline Recommendations*. Contains the clinical recommendations derived from a systematic review of the clinical and scientific literature and its interpretation by the Group or Panel involved and a formalized external review in Ontario by review participants.
- *Section 2: Evidentiary Base*. Presents the comprehensive evidentiary/systematic review of the clinical and scientific research on the topic and the conclusions reached by the Group or Panel.
- *Section 3: EBS Development Methods and External Review Process*. Summarizes the evidence-based series development process and the results of the formal external review of the draft version of Section 1: Guideline Recommendations and Section 2: Evidentiary Base.

## DEVELOPMENT OF THIS EVIDENCE-BASED SERIES

### Development and Internal Review

This EBS was developed by the Patient Education Panel, CCO, and the PEBC. The series is a convenient and up-to-date source of the best available evidence on effective teaching strategies and methods of delivery for patient education developed through review of the evidentiary base, evidence synthesis, and input from external review participants by the Panel. The Panel consisted of several patient education specialists and several methodologists.

### Report Approval Panel

Prior to the submission of this EBS draft report for external review, the report was reviewed and approved by the PEBC Report Approval Panel, which consists of two members, including an oncologist, with expertise in clinical and methodology issues. Key issues raised by the Report Approval Panel and their resolution by the Patient Education Panel (*italicized*) included suggestions that:

- An explanation be provided regarding the lack of clinical outcomes. *An explanation was added to the Methods in Section 2 and in the Discussion.*
- A qualifying statement regarding the difficulty of establishing magnitude of effect based on effect size meta-analysis be added. *A qualifying statement was added to Section 1.*
- The magnitude of effect be added to the Key Evidence in Section 1. *This data was not available, but effect sizes and p-values were added to the Key Evidence where available.*
- The interventions evaluated in the document are likely not mutually exclusive and may overlap. *This was clarified in the Results in Section 2.*
- The primer on effect sizes in meta-analysis be moved from the Results to the Methods section. *This change was made.*
- Some explanation regarding the AMSTAR results be provided. *This was added in Section 2.*
- The reporting of some studies was imprecise as it related to the articulation of the specific outcomes evaluated. *This data was not provided in some studies, a fact that was clarified throughout the Results section where appropriate.*
- The reporting of the comparison group be consistent throughout the Results section. *The reported was altered where necessary.*

- The limitations of the data be better articulated. *The study limitations were clarified and outlined in the Discussion.*
- The intended users of this guidance document should be redefined. *The Intended Users section was clarified.*
- Given the limitations of the data, the conclusions may not be generalizable. *It was clarified in the Discussion that, despite the data limitations, the consistency of all the available evidence across diseases makes it possible to provide generalizable recommendations.*

**Expert Panel**

Prior to the submission of this EBS draft report for external review, the report was reviewed by an Expert Panel, which consisted of a group of patient education specialists from the CCO Patient Education Program. Key issues raised by the Expert Panel and not already covered in the Report Approval Panel comments above, and their resolution by the Patient Education Panel (*italicized*), included suggestions that:

- 'Diagnosis' should be added to the continuum of care. *This change was made.*
- The recommendations regarding computers, audiotapes, videotapes and demonstrations be worded in a more consistent fashion. *This change was made.*
- A recommendation should be added that visual aids should be age and gender sensitive. *Whereas this point may be self-evident, it could not be added without sufficient supporting evidence.*
- The evidence used should be limited to oncology. *The explanation as to why evidence from all healthcare settings was included was clarified.*
- There should be some mention regarding illiterate or functionally illiterate patients as they make up a large proportion of the oncologic patient population. *While this may be true, it could not be added in the absence of documented supporting evidence. There is mention of the issue of health literacy in the Discussion.*

**External Review by Ontario Clinicians and Other Experts**

The PEBC external review process is two-pronged and includes a targeted peer review that is intended to obtain direct feedback on the draft report from a small number of specified content experts and a professional consultation that is intended to facilitate dissemination of the final guidance report to Ontario practitioners.

Following the review and discussion of Section 1: Recommendations and Section 2: Evidentiary Base of this EBS and review and approval of the report by the PEBC Report Approval Panel, the Patient Education Working Group circulated Sections 1 and 2 to external review participants for review and feedback. Box 1 summarizes the draft recommendations and supporting evidence developed by the Patient Education Working Group.

**BOX 1:**

DRAFT RECOMMENDATIONS (approved for external review September 9, 2009

**QUESTION**

What are the most effective teaching strategies and methods of delivery for patient education?

**TARGET POPULATION**

The target population for this intervention is any individual who seeks services from the cancer system covering the entire continuum of care (prevention, screening, diagnosis, treatment, survivorship and palliative care).

## INTENDED USERS

The intended users of this guidance document are healthcare professionals involved in patient education. This may include patient education specialists and healthcare administrators and managers. Physicians, nurses and allied healthcare professionals with an interest in patient education may also be interested in this document.

## RECOMMENDATIONS

The following recommendations are informed by the currently available evidence (see Section 2). The recommendations are not meant to provide specific details with respect to the content provided through patient education. These recommendations are meant to provide an overview concerning the efficaciousness of the teaching strategies and methods of delivery that have been evaluated in the literature.

### Teaching Strategies

- Computers can be an effective patient education teaching strategy, especially when patients are given information specific to their own situation rather than general information.
- Audiotapes of patient consultations can be effective for patient recall of verbal education.
- Videotapes (or more modern formats such as CDs and DVDs) can be an effective teaching strategy in delivering patient education.
- The provision of written materials, and, especially, tailored print materials, can also be an effective patient education teaching strategy. All written information should be prepared at a reading level appropriate for the general population. New patient information packages provided to patients prior to their first clinic visit are very useful to them.
- Verbal instruction should only be used in conjunction with another teaching method.
- Demonstrations, if appropriate for the situation, can be a very effective teaching strategy.
- The use of multiple teaching strategies is a good option for patient education.
- Use visual aids appropriately. Pictures and illustrations are useful for enhancing printed materials especially in those with low literacy skills. The illustrations should be non-ambiguous and should be accompanied by text written in simple language.

### Methods of Delivery

- Patient-specific information (i.e., information specific to the individual’s actual clinical situation) should be provided to patients, rather than general information about their cancer.
- Patient education should be structured. An ad hoc random question and answer format session is not sufficient.
- Patient education should involve multiple teaching strategies.
- Patient education for minority groups should be culturally sensitive.

## KEY EVIDENCE

- The evidentiary base is composed of 19 systematic reviews (1-19) and four meta-analyses (20-23).
- In the summaries of the evidence that follows, the range of the standardized effect

sizes reported in the primary literature is presented, as is the range of p-values. When p-value or effect size has not been reported, this is also indicated. Standardized effect sizes greater than zero reflect an improvement.

- Computer interventions increase patient knowledge (Effect Size [ES], 0.12-1.03; p, Not Reported [NR]), reduce anxiety and increase satisfaction (ES, -0.05-0.40; p, NR) (1,6,7,11,12,15,18-20,23). ES is explained in the Methods section in Section 2 of this evidence-based series.
- Audiotapes of consultations increase patient knowledge. (ES, NR; p-values from individual studies, <0.001-0.05) (17).
- Videotape interventions increase patient knowledge (ES, 0.12-1.03; p=NR) (7,15,19,20) and satisfaction (ES, 0.05-0.40; p, NR) (7,20).
- New patient information packages improve patient knowledge, especially if provided prior to the first clinic appointment (ES, NR; p, NR) (4).
- Verbal instruction is the least effective teaching strategy and should not be used alone (ES, 0.28; p, NR) (23).
- Demonstrations are a good teaching strategy with a large effect size (ES, 0.79; p, NR) (23).
- The use of multiple methods is a good teaching strategy with a moderate effect size (ES= 0.44; 67% of patient receiving patient education by multiple methods had better outcomes than did patients receiving standard care; p=NR) (23).
  - Illustrations to complement text result in greater patient comprehension than text alone especially in those with low literacy skills (ES, NR; p-values from individual studies, 0.033-0.05) (14).
  - Patient-specific information is better than general information with respect to patient knowledge, anxiety and satisfaction (ES, NR; p, NR) (4).
  - Culturally sensitive patient education for minorities improves patient knowledge (ES, NR; p, NR) (8,13,21).

**QUALIFYING STATEMENTS**

- The clinic should make any necessary equipment (e.g., computer, audiotape player, videotape player, DVD player) available in the clinic for patients who do not have that equipment at home.
- Much of the evidence available is based on effect size meta-analysis. Therefore it is difficult to estimate magnitude of effect.
- The evidence underpinning these recommendations is complex and not easily summarized; please refer to Section 2 of this report for more details.

### *Methods*

*Targeted Peer Review:* During the guideline development process, four targeted peer reviewers from Ontario, Alberta, Nova Scotia and the USA considered to be clinical and/or methodological experts on the topic were identified by the Patient Education Working Group. Several weeks prior to completion of the draft report, the nominees were contacted by email and asked to serve as reviewers. Four reviewers agreed, and the draft report and a questionnaire were sent via email for their review. The questionnaire consisted of items evaluating the methods, results, and interpretive summary used to inform the draft recommendations and whether the draft recommendations should be approved as a guideline.

Written comments were invited. The questionnaire and draft document were sent out on September 9, 2009. Follow-up reminders were sent at two weeks (email) and at four weeks (telephone call). The Patient Education Working Group reviewed the results of the survey.

*Professional Consultation:* Feedback was obtained through a brief online survey of health care professionals who are the intended users of the guideline. All patient educators, physicians, nurses, supportive care staff, allied health professionals, and hospital and health care administrators involved in patient education in the PEBC database were contacted by email to inform them of the survey. Participants were asked to rate the overall quality of the guideline (Section 1) and whether they would use and/or recommend it. Written comments were invited. Participants were contacted by email and directed to the survey website where they were provided with access to the survey, the guideline recommendations (Section 1), and the evidentiary base (Section 2). The notification email was sent on September 18, 2009. The consultation period ended on October 30, 2009. The Patient Education Working Group reviewed the results of the survey.

***Results***

*Targeted Peer Review:* Three responses were received from the four reviewers who initially agreed to review the guideline. The key results of the feedback survey are summarized in Table 1.

**Table 1. Responses to nine items on the targeted peer reviewer questionnaire.**

| | **Reviewer Ratings (N=3)** | | | | |
|---|---|---|---|---|---|
| **Question** | Lowest Quality (1) | (2) | (3) | (4) | Highest Quality (5) |
| **1. Rate the guideline development methods.** | | | | | 3 |
| **2. Rate the guideline presentation.** | | | | | 3 |
| **3. Rate the guideline recommendations.** | | | | 2 | 1 |
| **4. Rate the completeness of reporting.** | | | | 1 | 2 |
| **5. Does this document provide sufficient information to inform your decisions? If not, what areas are missing?** | | | 1 | 2 | |
| **6. Rate the overall quality of the guideline report.** | | | | 1 | 2 |
| | Strongly Disagree (1) | (2) | Neutral (3) | (4) | Strongly Agree (5) |
| **7. I would make use of this guideline in my professional decisions.** | | | 1 | | 2 |
| **8. I would recommend this guideline for use in practice.** | | | | 1 | 2 |

9. **What are the barriers or enablers to the implementation of this guideline report?**
   Two reviewers felt that a barrier to the implementation of this guideline report would be the dissemination plan itself. It was felt that every patient educator should see the document and that there should be accompanying slides and training program. Enablers that were identified were that it was thorough, well written, and easy to navigate, as well as the reputation of CCO and the authors of the document.

*Summary of Written Comments*

The main points contained in the written comments were:

a. Recommendations could be evaluated using the GRADE scale.
b. Recommendations are not very specific.
c. It might be helpful to include discussions about learner preferences versus teacher preferences.
d. An implementation plan should be included.

*Professional Consultation:* Nineteen responses were received. Key results of the feedback survey are summarized in Table 2.

**Table 2. Responses to four items on the professional consultation survey.**

| | **Number (%)** | | | | |
|---|---|---|---|---|---|
| **General Questions: Overall Guideline Assessment** | **Lowest Quality (1)** | **(2)** | **(3)** | **(4)** | **Highest Quality (5)** |
| **a. Rate the overall quality of the guideline report.** | | | 4(22) | 8(44) | 6(33) |
| | **Strongly Disagree (1)** | **(2)** | **(3)** | **(4)** | **Strongly Agree (5)** |
| **b. I would make use of this guideline in my professional decisions.** | | 3(16) | 3(16) | 6(32) | 7(37) |
| **c. I would recommend this guideline for use in practice.** | | 2(11) | 4(21) | 6(32) | 7(37) |

**d. What are the barriers or enablers to the implementation of this guideline report?**

The main barrier identified by several respondents relates to resources, both in terms of human resources and equipment and technological resources. For example, even though the use of technology appears effective in patient education, it is very costly to develop the appropriate programs. One respondent cited the difficulty in providing appropriate education to patients and families as well as a lack of 'buy-in' by multidisciplinary team members. Enablers that were identified included comprehensiveness, strength of the evidence which was presented in an easy-to-follow format and readability of the document.

*Summary of Written Comments*

The main points contained in the written comments were:

e. Nurse educators and innovators in patient education should have access to this document.
f. The qualifying statement in Section 1 should include clinic and patient care areas.
g. Having patient consultation audiotapes would/might change how practitioners interact with patients.
h. Individual learning styles (ex., blunters and monitors) for patients would be relevant information to accompany this guideline.
i. The guideline is weakened by is reliance on systematic reviews.
j. The body of evidence is not keeping up with the pace of technological development. Patients now have tools at their disposal that have not been assessed extensively yet.
k. There are online resources for self-education or for peer-to-peer support.
l. We deal with culturally diverse populations and am uncertain whether these evidence-based approached are best for all cultural backgrounds.

### *Modifications/Actions*

a. The PEBC historically does not grade recommendations. The rationale has been that it is not advantageous to create hierarchies of recommendations that imply that some are better than others. The recommendations are to be considered in their totality, and the reader can then decide on their 'importance' based on the readers own needs/priorities and the qualifying statements (if included) and the key evidence sections.
b. A statement regarding the specificity of the recommendations was added to the list of Qualifying Statements in Section 1.
c. The working group recognizes that the topic of learner preferences versus teacher preferences is an important one but beyond the scope of the current guideline.
d. CCO carries out dissemination and implementation of guidelines.
e. Guideline dissemination is done by CCO.
f. The qualifying statement was so changed.
g. The working group recognizes the importance of this statement. However, the recommendation regarding the use of audiotaped consultations is evidence-based.
h. The working group recognizes the importance of individual learning styles such as blunter and monitors. However, it is beyond the scope of this guideline.
i. Systematic reviews (with or without meta-analyses) are considered to be the highest levels of evidence.
j. The working group recognizes that technology is advancing at a very rapid pace. Unfortunately, it is not possible to systematically study technologies that have not yet been assessed.
k. Online self help and peer support is available but is beyond the scope of this document.
l. Evidence is presented in Section 2 and a recommendation is provided in Section 1 regarding the delivery of culturally sensitive patient education programs.

### Conclusion

This EBS report reflects the integration of feedback obtained through the external review process with final approval given by the Patient Education Working Group and the Report Approval Panel of the PEBC. Updates of the report will be conducted as new evidence informing the question of interest emerges.

*Funding*
The PEBC is a provincial initiative of Cancer Care Ontario supported by the Ontario Ministry of Health and Long-Term Care through Cancer Care Ontario. All work produced by the PEBC is editorially independent from its funding source.

*Contact Information*
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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

## REFERENCES

1. Browman GP, Levine MN, Mohide EA, Hayward RSA, Pritchard KI, Gafni A, et al. The practice guidelines development cycle: a conceptual tool for practice guidelines development and implementation [see comment]. J Clin Oncol. 1995;13:502-12.
2. Browman GP, Newman TE, Mohide EA, Graham ID, Levine MN, Pritchard KI, et al. Progress of clinical oncology guidelines development using the practice guidelines development cycle: the role of practitioner feedback. J Clin Oncol. 1998;16(3):1226-31.

### Evidence-Based Series 20-2: Section 4

# Effective Teaching Strategies and Methods of Delivery for Patient Education:

## Document Review Summary

*J. Papadakos, C. Walker-Dilks, and Members of the Expert Panel on Effective Teaching Strategies and Methods of Delivery for Patient Education*

July 29, 2020

***The 2009 guideline recommendations***

***REQUIRE UPDATING***

***It is still appropriate for this document to be available while this updating process unfolds***

## OVERVIEW

The original version of this guidance document was released by Cancer Care Ontario's Program in Evidence-based Care in 2009. In January 2017, this document was assessed in accordance with the PEBC Document Assessment and Review Protocol and was determined to require a review. As part of the review, a PEBC methodologist (CWD) conducted an updated search of the literature. A clinical expert (JP) reviewed and interpreted the new eligible evidence. The Expert Panel on Effective Teaching Strategies and Methods of Delivery for Patient Education (Appendix 1) reviewed the document. Several members indicated that the recommendations were no longer current. It was determined that the guideline should be updated.

## DOCUMENT ASSESSMENT AND REVIEW RESULTS

### Questions Considered

1. What are the most effective teaching strategies and methods of delivery for patient education?

### Literature Search and New Evidence

Replicating the inclusion criteria of the original search, the updated search (2009 to May 2019) was restricted to systematic reviews (Appendix 2). The literature search supporting the original document was not limited to publications of patient education in oncology since patient education teaching strategies and methods in all health disciplines may be similar. Furthermore, the number of systematic reviews available was relatively small. Just 23 systematic reviews met the inclusion criteria in a search from 1995 to 2009. The updated search identified 47 systematic reviews relevant to patient education in an oncology setting and 187 not related to oncology. Given the large amount of literature, most of which was not related to oncology, the decision was made to focus only the results of the 47 systematic reviews relevant to patient education in oncology (Evidence Table).

## Impact on the Guideline and Its Recommendations

The key messages from the original guideline recommendations emphasized the effectiveness of tailored information specific to patients' individual situations, multiple teaching strategies (e.g., reinforcement of verbal instruction with written material), computer-based education strategies, and culturally sensitive information. These messages continue to emerge in the updated literature. However, it is acknowledged that technology has evolved since 2009, and new electronic patient learning platforms are becoming available. Learning formats are likely to include interactive computer-based components and multi-media as technology moves from audio books and videotapes to apps, podcasts, and webinars. Furthermore, there are new teaching strategies that should be included (e.g., teach-back) and the language around minorities is very dated. More emphasis must be placed on deliberate anti-racist teaching strategies.

The guideline on effective teaching strategies and methods of delivery for patient education should be UPDATED.

# Document Review Tool

| | |
|---|---|
| **Number and Title of Document under Review** | 20-2 Effective Teaching Strategies and Methods of Delivery for Patient Education |
| **Current Report Date** | December 10, 2009 |
| **Date Assessed (by DSG or Clinical Program Chairs)** | January 18, 2017 |
| **Health Research Methodologist** | Cindy Walker-Dilks |
| **Clinical Expert** | Janet Papadakos |
| **Approval Date and Review Outcome (once completed)** | REQUIRES UPDATING<br>August 21, 2020 |

Original Question(s):
What are the most effective teaching strategies and methods of delivery for patient education?

Target Population:
The target population for this intervention is any individual who seeks services from the cancer system covering the entire continuum of care (prevention, screening, diagnosis, treatment, survivorship, and palliative care).

Study Selection Criteria:

***Inclusion Criteria***

Articles were selected for inclusion in this systematic review if they were published English-language reports involving human participants that were practice guidelines, systematic reviews or meta-analyses that examined teaching strategies and methods of delivery for patient education. The search was not limited to publications of patient education in oncology since patient education teaching strategies and methods in all health disciplines may be similar. Specific reported outcome measures were not used as part of the selection criteria. It was not expected a priori that any cancer clinical outcome data would be located. However, any such sources of evidence were explicitly included. The comparisons considered were teaching intervention versus standard care (control) and teaching intervention versus another teaching intervention.

***Exclusion Criteria***

Letters, editorials, notes, case-reports, commentaries, comparative trials, non-randomized trials, randomized controlled trials, and non-systematic reviews were not included in this systematic review.

Search Details:
Summary of new evidence: See evidence table.

Clinical Expert Interest Declaration: No conflict of interest declared.
Health Research Methodologist Declaration: No conflict of interest declared.

| | |
|---|---|
| 1. Does any of the newly identified evidence contradict the current recommendations? (i.e., the current recommendations may cause harm or lead to unnecessary or improper treatment if followed) | No |
| 2. Does the newly identified evidence support the existing recommendations? | No |
| 3. Do the current recommendations cover all relevant subjects addressed by the evidence? (i.e., no new recommendations are necessary) | No |
| **Review Outcome as recommended by the Clinical Expert** | UPDATE |
| ***If the outcome is UPDATE, are you aware of trials now underway (not yet published) that could affect the recommendations?*** | No |
| **DSG/GDG Commentary** | |

The evidence table starts on page 44.

## Appendix 1. Members of the Expert Panel

| Name | Region | Conflict of Interest Declaration |
|---|---|---|
| Sarah Mushtaq | Erie St. Clair<br>Windsor Regional Cancer Centre | None declared |
| Christine Peters | Waterloo Wellington<br>Grand River Regional Cancer Centre | None declared |
| Monica Bennett | Hamilton Niagara Haldimand Brant<br>Juravinski Regional Cancer Centre | None declared |
| Kirstin Broders | Toronto Central North<br>Odette Cancer Centre | None declared |
| Tina Papadakos | Toronto Central South<br>Princess Margaret Hospital | None declared |
| Ruth Barker | Central<br>Southlake Regional Health Centre | None declared |
| Debbie Devitt | Central East<br>R.S. McLaughlin Durham Regional Cancer Centre | None declared |
| Sarah Vanderhelm | South East<br>Kingston Regional Cancer Centre | None declared |
| Janelle Desjardins | Champlain<br>Ottawa Hospital Regional Cancer Centre | None declared |
| Kerri Loney | North East<br>Northeast Cancer Centre/Health Sciences North | None declared |
| Heather Neilson Clayton | North West<br>Northwestern Ontario Regional Cancer Centre | None declared |
| Sarah McBain | Patient Education<br>Cancer Care Ontario | None declared |

## Appendix 2. Search Strategy

Search Strategy
Strategy restricted to sys revs and guidelines

Database: Embase <1996 to 2018 January 19>, Ovid Healthstar <1966 to November 2017>, OVID Medline Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present
(Updated May 2019)

--------------------------------------------------------------------------------

1 patient education.mp. (232962)
2 patient education/mt (24705)
3 teaching/mt or teaching.mp. (409203)
4 or/1-3 (627341)
5 meta-analysis.mp. (398013)
6 review literature.mp. (13514)
7 meta-analysis.pt. (126967)
8 guideline.pt. (29438)
9 or/5-8 (437918)
10 4 and 9 (4596)
11 (2009: or 2010: or 2011: or 2012: or 2013: or 2014: or 2015: or 2016: or 2017: or 2018:).ed. (10326007)
12 (2009: or 2010: or 2011: or 2012: or 2013: or 2014: or 2015: or 2016: or 2017: or 2018:).dd. (13383448)
13 11 or 12 (23709455)
14 10 and 13 (2061)
15 remove duplicates from 14 (1521)
16 limit 15 to english language (1454)
17 limit 16 to humans (1388)

CINAHL search
Search strategy run March 2018; updated May 2019

(patient education or patient teaching)
AND
(meta-analysis or systematic review or literature review or guidelines or practice guideline or clinical practice guideline)
AND
January 2009 to January 2018
English only
2749 hits

## DEFINITIONS OF REVIEW OUTCOMES

1. **ARCHIVE – A**RCHIVE means that a Clinical Expert and/or Expert Panel has reviewed new evidence pertaining to the guideline topic and determined that the guideline is out of date or has become less relevant. The document, however, may still be useful for education or other information purposes. The document is designated archived on the CCO website and each page is watermarked with the words "ARCHIVED."

2. **ENDORSE** – ENDORSE means that a Clinical Expert and/or Expert Panel has reviewed new evidence pertaining to the guideline topic and determined that the guideline is still useful as guidance for clinical decision making. A document may be endorsed because the Expert Panel feels the current recommendations and evidence are sufficient, or it may be endorsed after a literature search uncovers no evidence that would alter the recommendations in any important way.

3. **UPDATE** – UPDATE means the Clinical Expert and/or Expert Panel recognizes that the new evidence pertaining to the guideline topic makes changes to the existing recommendations in the guideline necessary but these changes are more involved and significant than can be accomplished through the Document Assessment and Review process. The Expert Panel advises that an update of the document be initiated. Until that time, the document will still be available as its existing recommendations are still of some use in clinical decision making, unless the recommendations are considered harmful.

## Evidence Table

Evidence Summary: Systematic reviews (Oncology topics)
2009 to May 2019 (n=47)

| Reference | Objective | Data sources | Study selection | Search results | Results |
|---|---|---|---|---|---|
| Adam 2015 | To determine whether educational interventions can improve cancer pain management and to characterize components of cancer pain educational interventions. | MEDLINE, EMBASE, CINAHL, and Cochrane Databases up to August 2013. | Systematic reviews that assessed educational interventions to improve cancer pain management were included and RCTs were identified from each review. Participants were adult patients, relatives, carers, or health care professionals (HCPs); interventions were educational interventions in which participants received instruction, information about, or training in cancer pain reporting, assessment, and/or management. Teaching strategies included educational booklets, audio-video, computer-based, | 8 systematic reviews that included 34 RCTs met the inclusion criteria. The 8 reviews included interventions targeting adult patients with cancer; 2 reviews also included studies of HCP education; 1 review also included studies of patient, HCP, and caregiver education. Pain outcomes were assessed: pain intensity, pain duration, average pain, worst pain, and pain interference. Quality of life was considered in 4 reviews. | 3 meta-analyses were conducted: 1 review, including 15 trials, found a statistically significant benefit of education on average pain (WMD -1.1, 95% CI -1.8 to -0.41), maximum pain (WMD -0.78, 95% CI -1.21 to -0.35), least pain (WMD -0.98, 95% CI -1.68 to -0.28), and current pain intensity (WMD -0.65, 95% CI -1.21 to -0.09). Patient pain knowledge and attitudes were also improved by half a point on a 5-point scale (WMD 0.52, 95% CI 0.04 to 1.0). 1 review, including 11 trials, found statistically significant results favouring pain education with respect to pain intensity (SMD 0.43, 95% CI 0.13 to 0.74) and least pain (SMD 0.93, 95% CI 0.44 to 1.42). 1 review |

| Reference | Objective | Data sources | Study selection | Search results | Results |
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|  |  |  | face-to-face, individually-tailored, nurse-led, telephone. |  | including 12 trials showed pain intensity was reduced in the intervention groups compared with control (SMD -0.11, 95% CI -0.20 to -0.02). |

| Reference | Objective | Data sources | Study selection | Search results | Results |
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| Albada 2009 | To study interventions that provide people with information about cancer risk and about screening that is tailored to their personal characteristics. To assess the tailoring characteristics, theory base, and effects of these interventions on risk perception, knowledge, and screening behaviour. | PubMed, EMBASE, CINAHL, PsychINFO, and Cochrane Library up to 2008. | RCTs were included if the information was provided to people about cancer risks, screening options, or cancer genetic counseling or DNA testing; was delivered by computer or printed material, and was tailored using algorithms. Outcomes included cancer risk perception or knowledge or behavior related to cancer screening. Teaching strategies included individually tailored, computer-based, telephone. | 40 included trials: 37 had interventions comprised of tailored materials (letters, books, and magazines); 6 trials included interventions that were computer-delivered. 30 trials had interventions that were tailored based on variables related to behavior change, sometimes combined with cancer risk factors; 10 articles described an intervention that tailored information based on risk factors only. | *Knowledge:* 4 trials studied the effect on knowledge: 2 showed an improvement in knowledge of breast cancer and mammography at 24 months. 1 trial showed an improvement in knowledge of breast cancer and heredity. 1 trial showed an improvement in knowledge of melanoma. *Risk perception:* 7 trials assessed perceived risk. 2 trials had interventions providing tailored feedback on susceptibility and showed no effect compared with standard/no information. 2 trials compared intervention providing tailored risk estimations with standard information and showed a positive effect on accuracy of risk perception. 3 trials evaluated interventions that were tailored based |

| Reference | Objective | Data sources | Study selection | Search results | Results |
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| | | | | | on risk factors and behavioural constructs and showed an effect on risk perception at 24 months. *Screening behavior:* 6 of 11 trials reported that behavioural construct tailored information significantly increased mammography adherence compared with no information; 1 of 3 trials showed an increase in patients receiving an intervention tailored to risk factors; 3 trials based on both showed no difference; and 1 trial tailored based on behavioural and cultural constructs showed increased mammography screening rates. 3 trials pertaining to cervical cancer screening showed an improvement in 2 trials tailored on behavioural constructs, and a negative effect in 1 trial tailored on risk factors. 2 trials focused |

| Reference | Objective | Data sources | Study selection | Search results | Results |
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| | | | | | on colorectal cancer screening showed no effect in 1 trial with intervention tailored to risk factors, and an increase in screening in a trial tailored for behavioural constructs. 1 trial with a multimedia intervention for skin cancer showed an effect with an intervention tailored to risk factor feedback. |

| **Reference** | **Objective** | **Data sources** | **Study selection** | **Search results** | **Results** |
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| Arthurs 2015 | To synthesize the evidence on the effectiveness of therapeutic patient education on adherence to oral anti-cancer medicines (OAM). | PubMed, CINAHL, EMBASE, Academic Search Premier, Cochrane Library, PsycINFO, Health Source: Nursing/Academic Edition from 1953 to 2014. | Studies that compared therapeutic patient education with routine patient education for promoting OAM adherence. Therapeutic patient education was defined as a coordinated set of educational activities proposed by a healthcare team that involved other professionals or family members. | 2 studies (1 RCT and 1 cohort study) were included. 1 study assessed a tailored nurse coaching intervention for oral chemotherapy adherence; one study assessed enhancing adherence to capecitabine chemotherapy by means of multidisciplinary pharmaceutical care. | In both studies the intervention showed a benefit in OAM adherence, but the group differences did not reach statistical significance. |
| Aubin 2018 | To synthesize the evidence on health and well-being education programs for survivors of cancer. | Cochrane Library, Central Register of Controlled Trials, Medline, CINHAL, EMBASE, and PsycINFO. | RCTs that evaluated an education program in adult patients with stage I to III cancer who had completed treatment and reported QOL. | 4 RCTs were included. 2 trials included individual education programs, 1 delivered by a nurse, the other by the principal investigator. 1 group-based education intervention was delivered by a nurse and psychologist. 1 intervention was web-based and self-directed. | All 4 trials showed a small increase in QOL scores in the intervention groups which resulted in a 1% difference compared with the control groups. |

| **Reference** | **Objective** | **Data sources** | **Study selection** | **Search results** | **Results** |
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| Bennett 2009 | To quantify the benefit of patient-based educational interventions in the management of cancer pain. | MEDLINE, CINAHL, EMBASE, PsycINFO, ASSIA, and AMED from inception to 2007; Cochrane Library, DARE, and NICE Websites, and contents lists of Pain, Journal of Clinical Oncology, and Journal of Patient Education and Counselling from 1997-2007. | Trials that compared a patient-based educational intervention on an individual basis with a control group that received usual care or attention only, included adults with pain from active cancer and not pain from cancer treatment (surgery or chemotherapy), and assessed pain-related outcomes. | 21 trials were included (19 RCTs). An educational intervention was defined as information, behavioural instructions, and advice in relation to management of cancer pain by means of verbal, written, audio- or video- or computer-aided modalities, provided by a healthcare professional or peer (expert patient). | Meta-analysis of 9 trials showed a beneficial effect of the intervention on knowledge and attitudes to cancer pain and analgesia (WMD 0.76, 95% CI 0.20 to 1.31). Meta-analysis of 12 trials showed reductions in all pain measures: average (WMD -1.1, 95% CI -1.8 to -0.41), worst (WMD -0.78, 95% CI -1.21 to -0.35), least (WMD -0.98, 95% CI-1.68 to -0.28), and current (WMD -0.65, 95% CI -1.21 to -0.09). No benefit was seen for medication adherence or reducing interference with daily activities. |

| Reference | Objective | Data sources | Study selection | Search results | Results |
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| Bennett 2016 | To determine the effectiveness of educational interventions for managing cancer-related fatigue in adults. | CENTRAL, MEDLINE, EMBASE, CINAHL, PsycINFO, ERIC, OTseeker, PEDro up to 2016 and trials registries. | RCTs evaluating educational interventions for managing cancer-related fatigue or symptoms among which fatigue was a primary focus. | 14 RCTs: 4 used only "information-giving" educational strategies; 10 used mainly information-giving strategies coupled with problem-solving, reinforcement, or support techniques; most trials compared educational interventions with usual care or attention control. Delivery was in-person (8 trials), telephone (2 trials), audiotape (1 trial), multimedia (1 trial), and web-based (2 trials). The education was conveyed by nurses, occupational therapists, and other allied health professionals. | Pooled analysis of 12 RCTs favoured the educational intervention group for general fatigue (SMD -0.27, 95% CI -0.51 to -0.04). Pooled analysis of 8 RCTs favoured the intervention for fatigue intensity (SMD -0.28, 95% CI -0.52 to -0.04). There was a moderate sized effect of educational interventions for reducing fatigue distress (3 RCTs; SMD -0.57, 95% CI -1.09 to -0.05); and a small reduction in fatigue interference with daily life (4 RCTs; SMD -0.35, 95% CI -0.54 to -0.16). |

| Reference | Objective | Data sources | Study selection | Search results | Results |
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| Chan 2011/2012 | To assess the effects of information interventions that orient patients and their carers or family to a cancer care facility and the services available within the facility. | MEDLINE, CINAHL, PsycINFO, EMBASE, and the Cochrane Central Register of Controlled Trials. | RCTs, cluster RCTs, and quasi-RCTs evaluating the effect of an orientation intervention compared with a control group which received usual care, or with trials comparing one orientation intervention with another orientation intervention. Participants were new oncology patients and their family or carers who were about to receive treatment or care. Intervention content had to include information about the facility and services available as the core component. | 4 RCTs were included. All 4 used printed material and 1 used audiovisual presentation in addition. Topics covered information about the health care team, the facility, clinical procedures, treatment, supportive services available in the cancer center, external organizations, a clinic tour, a question and answer session, and related information. | Pooled analysis of 2 RCTs showed benefits of the orientation intervention in reducing levels of distress (MD -8.96, 95% CI -11.79 to -6.13); anxiety levels were not different (MD -9.77, 95% CI -24.96 to 5.41). Increases in knowledge about cancer and treatments were reported in 2 trials. |

| Reference | Objective | Data sources | Study selection | Search results | Results |
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| Chen 2018 | To evaluate the effect of telehealth interventions on QOL and psychological outcomes in breast cancer patients. | Pubmed, Embase, Cochrane CENTRAL Register of Controlled Trials, and China National Knowledge Infrastructure from inception to 2016. | RCTs comparing a telehealth intervention with usual care in patients with breast cancer. The intervention was delivered by telephone, internet, or other remote information system. Usual care consisted of regular hospital visits for face-to-face health care or traditional health education about breast cancer. Outcomes were quality of life and psychological outcomes including depression, anxiety, distress, self-efficacy, and perceived stress. | 20 RCTs were included. The telehealth interventions in 7 trials specifically included educational components. Overall, the interventions were delivered by telephone in 7 trials, were internet-based in 10 trials, and both methods were used in 3 trials. | Telehealth showed significant improvements in quality of life (13 trials, standardized mean difference [SMD] 0.60, 95% CI 0.18 to 1.01); depression (6 trials, SMD -1.29, 95% CI -2.28 to -0.30); distress (7 trials, SMD -0.25, 95% CI -0.40 to -0.10); self-efficacy (3 trials, SMD 0.59, 95% CI 0.19 to 0.98); and perceived stress (2 trials, SMD -0.30, 95% CI -0.59 to -0.02).The SMD for anxiety was not statistically significant (6 trials, -0.09, 95% CI -0.22 to 0.04). |

| Reference | Objective | Data sources | Study selection | Search results | Results |
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| Cheng 2017 | To assess the effects of home-based, multidimensional survivorship programs on maintaining or improving the quality of life in breast cancer survivors. | Cochrane Breast Cancer Specialized Register, CENTRAL, PubMed, EMBASE, CINAHL Plus, PsycINFO, Web of Science, and the World Health Organization's International Clinical Trials Registry Platform, and ClinicalTrials.gov up to 2016. | RCTs and quasi-RCTs assessing the effects of home-based, multidimensional survivorship programs in maintaining or improving quality of life in women with stages 0 to 3 breast cancer who completed primary cancer treatment (surgery or adjuvant cancer therapy, or both) up to 10 years earlier. Studies in which the interventions included more than one of the following components: educational (information provision, symptom management advice, dietary advice and self-management advice), physical (exercise training or resistance training), and psychological (counseling and cognitive therapies), | 22 RCTs and 4 quasi-RCTs in which intervention components were categorized into 4 groups: educational and psychological; educational and physical; physical and psychological; and educational, physical, and psychological. Most studies used usual care (routine medical follow-up services) as the comparator, while few studies used a lower level or different type of intervention (stress management or exercise) or attention control as the comparator. Teaching strategies included group or individual sessions, delivery by nurses, or specialists, accompanying written material, website information. | Home-based, multidimensional survivorship programs may increase breast cancer-specific quality of life and global quality of life immediately after the intervention, as measured by FACT-B (MD 4.55, 95% CI 2.33 to 6.78, n=764) and EORTC (MD 4.38, 95% CI 0.11 to 8.64, n=299). At 4 to 6 months and 12 months, there was no evidence of a difference in quality of life between the groups. |

| Reference | Objective | Data sources | Study selection | Search results | Results |
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| | | | to constitute a multidimensional program. | | |

| Reference | Objective | Data sources | Study selection | Search results | Results |
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| Chow 2016 | To identify the best available evidence on the effects of psychoeducational interventions on sexual functioning, quality of life, and psychological outcomes in gynecological cancer patients. | Academic Search Premise, British Nursing Index, CINAHL, Cochrane Library, ERIC, EMBASE, Global Health, MEDLINE, PsycArticles, Psychology: A SAGE Full-Text Collection, PsycINFO, ScienceDirect, Scopus, CJN, CBM, CMCC, HKInChiP, HyRead, TEPS, and WanFang Data from inception to April 2012. | RCTs evaluating the effects of psychoeducational interventions that aimed at improving sexual functioning, quality of life, and psychological outcomes of patients who had a primary gynecological cancer confirmed pathology test. | 11 English RCTs were included. Psychoeducational interventions were comprised of information provision in all 11 trials, CBT in 8 trials, counseling in 9 trials, and social support in 5 trials. The intervention delivery included home and clinic in-person visit and phone by physicians, nurses, social workers, and graduate students. Outcomes included sexual functioning, quality of life, and psychological outcomes including anxiety, depressive symptoms, distress, adjustment to illness, mood, uncertainty, self-esteem, and coping. | 1 trial showed improvement in sexual functioning and 2 trials showed improvement in sexual health. 4 of 6 RCTs showed improvement in quality of life, especially mental aspects. Results were conflicting with respect to improvement in anxiety and depressive symptoms. A combination of the 3 main components of information provision, CBT, and psychological support was found to be superior to a combination of information and psychological support. |

| Reference | Objective | Data sources | Study selection | Search results | Results |
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| Ciciriello 2013 | To assess the effects of multimedia patient education interventions about prescribed and over-the-counter medications in people of all ages, including children and carers. | CENTRAL, The Cochrane Library, MEDLINE, EMBASE, CINAHL, PsycINFO, ERIC, and ProQuest Dissertation & Theses Database from inception to 2011. | RCTs and quasi-RCTs with multimedia-based (e.g., text, still graphics, photographs, animation, video, and audio) patient education about prescribed or over-the-counter medications. Primary outcomes were patient or carer knowledge about the medication and any measure of skill acquisition related to the medication. | Of 24 included studies, 3 dealt with cancer. 1 evaluated a computer-based program, measuring self-efficacy to manage cancer and its treatment; 1 evaluated videos and measured quality of life (Functional Assessment of Cancer Therapy – General); and 1 evaluated an interactive CD-ROM with enhanced material compared with standard written material alone to measure patient recall of chemotherapy treatment information. | In the study measuring self-efficacy to manage cancer and its treatment, there was a significant increase over time in the intervention group (p=0.01). Self-efficacy post intervention also favoured the multimedia education group (MD 5.30, 95% CI 0.00 to 10.60). In the study measuring quality of life in adult populations with cancer, there was a trend favouring the multimedia education, although the data did not reach statistical significance (SMR 0.20, 95% CI -0.04 to 0.44). The study measuring patient recall reported no difference between groups in knowledge. |

| Reference | Objective | Data sources | Study selection | Search results | Results |
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| Clement 2009 | To evaluate the published literature on the effects of complex (multi-faceted) interventions intended to improve the health-related outcomes of individuals with limited literacy or numeracy. | Medline, CINAHL, CENTRAL, PsycINFO, SCOPUS database, British Education Index, ERIC, and Australian Education Index up to 2007. | RCTs or quasi-RCTs of complex interventions intended to improve outcomes for people with limited literacy or numeracy, which included at least one health-related outcome. Interventions included verbal presentations given individually or in groups, written information, and telephone calls with tailored information. | Of 15 trials, 1 dealt with colorectal cancer screening and 1 dealt with nutrition education for cancer. | In 1 trial, no difference was seen among high literacy patients in screening rates between the intervention and control groups (39.0% vs. 36.0%, p=0.65). In contrast, patients with lower literacy who received the intervention were significantly more likely to have screening than the controls (55.7% vs. 30.0%, p=0.002).The other trial showed an improvement in self-reported fat-related behaviour after an intervention including telephone interview on fat and fiber intake, personalized dietary feedback, and guidance via physician letter. |

| Reference | Objective | Data sources | Study selection | Search results | Results |
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| Cummings 2011 | To examine whether knowledge translation interventions targeting health care providers, patients, and caregivers improve cancer pain outcomes. | CINAHL, MEDLINE, EMBASE, Web of Science, AMED, Cochrane Database of Clinical Trials, and Cochrane Database of Systematic Reviews. Websites related to oncology pain management, including the National Cancer Institute of Canada, Canadian Cancer Society, Canadian Strategy for Cancer Control, American Cancer Society, American Society of Clinical Oncology, European Association for Palliative Care, and others. | RCTs, controlled clinical trials, interrupted time series, and controlled before and after studies that evaluated the effect of knowledge translation interventions on patient outcomes, including: change in behavior or practice of health care professionals and change in behavior of patients or their family caregivers. | 26 RCTs: 16 targeted patients only, 5 included patients and family caregivers, and 5 targeted health care professionals. The format of the patient and family caregiver knowledge translation interventions was mostly individualized in-person coaching sessions with written materials and sometimes a video presentation. Half of the trials included telephone follow-up. The health professional interventions were mostly educational meetings with print materials. | 11 studies targeting patients and/or their family caregivers were included in the meta-analysis. Educational program training had a beneficial effect on usual pain (6 trials, SMD 0.43, 95% CI 0.13 to 0.74) and least pain intensity (2 trials, SMD 0.93, 95% CI 0.44 to 1.42). No effect of educational training was seen for pain interference (6 trials), worst pain (5 trials), overall pain (4 trials), or current pain (2 trials). |

| Reference | Objective | Data sources | Study selection | Search results | Results |
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| D'Agostino 2017 | To present an overview of the status of patient communication training literature. | MEDLINE, EMBASE, The Cochrane Library, Web of Science, PsycINFO, and ERIC up to 2015. | RCTs or quasi RCTs examining professional- patient relations; patient education, training, coaching, or teaching; communication, discussion, or interaction; and skills or behavior. | 32 intervention studies: 19 studies were RCTs; 13 studies were quasi-experimental design. 11 studies pertained to cancer (8 RCTs). Each training program was classified by type using three categories: materials only (multi-media 9 studies, written 4 studies); materials plus individual coaching (mixed 7 studies, face-to-face 6 studies); and group-based (mixed 6 studies). | Reported findings indicate that communication training is a useful approach to increase patients' total level of active participation in healthcare interactions and that some communication behaviors may be more amenable to training (e.g., expressing concerns). It appears that trained patients do not have longer visits and tend to receive more information from their providers. No apparent link between patient communication training and health outcomes. |

| Reference | Objective | Data sources | Study selection | Search results | Results |
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| de Boer 2015 | To evaluate the effectiveness of interventions aimed at enhancing return to work in cancer patients compared with alternative programs including usual care or no intervention. | CENTRAL, MEDLINE, EMBASE, CINAHL, OSH-ROM and OSH Update, PsycINFO, DARE, ClinicalTrials.gov, Trial register.nl, and Controlled-trials.com up to 2014. | RCTs of psycho-educational, vocational, physical, medical, or multidisciplinary interventions aiming to enhance return to work in cancer patients. Psycho-educational interventions could include counseling, education, training in coping skills, and problem solving therapy, delivered by a qualified professional such as psychologist, social worker or nurse. | 15 RCTs: 2 trials involved psycho-educational interventions including patient education and teaching self-care behaviours; 1 physical intervention, 7 medical interventions, and 5 multidisciplinary interventions which combined vocational counseling, patient education, patient counseling, biofeedback-assisted behavioural training or physical exercises. | Meta-analysis of 2 RCTs showed no difference in return to work rates for psycho-educational interventions compared with usual care (RR 1.09, 95% CI 0.88 to 1.35). In 5 RCTs, multidisciplinary interventions involving physical, psycho-educational, or vocational components led to higher return to work rates than usual care (RR 1.11, 95% CI 1.03 to 1.16). |

| Reference | Objective | Data sources | Study selection | Search results | Results |
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| Dieng 2014 | To assess the effectiveness of educational interventions in improving subjective cancer risk perception in the short and long term. | MEDLINE, PsycINFO, AMED, CINAHL, and EMBASE up to 2013. | RCTs and prospective observational studies that evaluated the impact of an educational intervention on cancer risk perception in cancer patients, survivors, or persons at high risk for cancer. The intervention was an educational intervention of any form including genetic counseling. | 12 RCTs and 28 prospective observational studies were included. Of the 12 RCTs, the interventions involved genetic counseling (4 RCTs) and 1 trial each of pre-visit educational website; consultation by genetic nurse; computer-based program plus genetic counseling; psychoeducational information pack; psychoeducational group intervention; genetic counseling plus nurse consultation; interactive education, brochure, and phone reminders; and multimedia health education program. | Pooled results from RCTs showed that educational interventions did not significantly influence risk perception in the short term (3 RCTs, SMD 0.05, 95% CI -0.24 to 0.34, p=0.74) or long term (2 RCTs, SMD -0.37, 95% CI -0.98 to 0.24, p=0.23). |

| Reference | Objective | Data sources | Study selection | Search results | Results |
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| Dougherty 2018 | To evaluate interventions designed to increase colorectal cancer screening rates in US settings. | PubMed, CINAHL, and Cochrane Library from 1996 to 2017. | RCTs of interventions to improve completion of colorectal cancer screening in average risk populations in the US. | 104 RCTs: 92 addressed initial screening uptake, 6 addressed follow-up of positive initial screening test results, and 13 addressed continued completion of fecal blood tests. Patient education was part of the intervention in 25 trials: 13 used information (print, video, website, in-person, and phone), 6 used decision aids, 5 used personalized risk information, and 2 used motivational interviewing. | 19 trials showed patient education was associated with increased screening rates compared with usual care (RR 1.20, 95% CI 1.06 to 1.36). Interventions that included some additional component beyond patient education such as clinician prompt or patient ability to request fecal blood tests directly led to a greater increase in screening completion (7 trials, RR 1.43, 95% CI 1.16 to 1.75). Subgroup analyses showed favourable results for interventions that included personalized phone calls or mailings with phone calls after a visit with screening test distribution, but no effect of decision aids or tailored interventions. |

| Reference | Objective | Data sources | Study selection | Search results | Results |
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| Du 2015 | To evaluate the effect of patient education programs on cancer-related fatigue. | Pubmed, Cochrane Library, Web of Science, Elsevier, and CINAHL up to April 2014. | RCTs including: adults (≥ 18 years of age) with cancer; tested the effect of patient education compared with blank control, placebo, waiting-list, usual care, or exercise; and included cancer-related fatigue as the primary outcome. | 10 RCTs were identified. Various theoretical frameworks of patient education programs were used (e.g., health belief model). Common elements were considered as interventions: physical activity (8 trials), sleep hygiene (7 trials), relaxation training (6 trials), nutrition guidance (6 trials), diary use (5 trials), telephone follow-up (4 trials), and imagery (2 trials). Supplemental material included a book or leaflet in 6 trials. Interventions were delivered face-to-face in groups in 8 trials, individually in 1 trial, and web-based in 1 trial. Nurses were most often involved in education delivery. | 2 trials showed patient education reduced cancer-related fatigue, with an effect size (ES) of -0.64 (moderate effect, p=0.0005) and ESs ranging from -0.76 to -1.41 (moderate to large effect, all p<0.001) for subscales of Fatigue assessment questionnaire. 6 trials showed limited positive effect. 1 trial showed no effect of patient education programs. In another trial, the intervention group showed worse outcome in the subscales of multidimensional fatigue inventory. |

| Reference | Objective | Data sources | Study selection | Search results | Results |
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| Elsner 2017 | To synthesize literature regarding the effect of radiation therapist led psychosocial support on patient anxiety. | MEDLINE, PsycINFO, EMBASE, CINAHL, PubMed, and Cochrane Library up to May 2015. | Qualitative and quantitative studies including radiation therapists or radiation therapy patients receiving external beam treatment and interventions led by radiation therapists with or without control groups. Outcomes in these studies included: patient-related anxiety, depression, distress, quality of life, self-reported side effects and symptoms, satisfaction, adherence to treatment, unplanned admissions; radiation therapist-related perceptions, confidence, communication, or feasibility of intervention. | 12 studies were included and categorized into 3 broad themes: patient perspectives (3 studies), patient information and education (5 studies [1 RCT], and screening and needs assessment (4 studies [1 RCT]). | Overall, both group and individual education/information sessions were effective in reducing patient anxiety, reducing fear of the unknown and feelings of loneliness; an increase in self-efficacy, knowledge of radiation therapy and preparedness for treatment were also reported. Radiation therapist-patient relationships, communication, and continuity of care were important aspects of health care that reduce patient anxiety. 1 RCT in the patient information and education theme showed a greater reduction in anxiety between baseline and post-radiation planning in the intervention group compared with usual care. 1 RCT in the screening and needs assessment theme showed that use of the |

| Reference | Objective | Data sources | Study selection | Search results | Results |
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|  |  |  |  |  | Screening Inventory of Psychosocial Problems screening tool was feasible, with most patients and RTs agreeing that screening discussions were important and pleasant. 'Physical' and 'emotional' needs were rated as acceptable to explore with screening, but 'sexual' issues were not. |

| Reference | Objective | Data sources | Study selection | Search results | Results |
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| Faury 2017 | To determine the effect of patient education interventions on quality of life, psychosocial skills, and self-management skills for colorectal cancer patients with stoma. | PubMed, MEDLINE, Cochrane Library, PsycInfo-PsycArticles, and Psychology and Behavioural Sciences Collection from 2000 to 2017. | RCTs, controlled before and after studies, before-after study without a control group, and historic cohort studies of patients with colorectal cancer with stoma were eligible if they described and tested the effect of patient interventions on quality of life, psychosocial skills, or self-management skills. | Of 15 studies, 6 were RCTs. The intervention format in all trials was individualized, with phone follow-up used in 3 trials, computer-assisted intervention in 2 trials, and home visit in 1 trial. 2 trials included audiovisual aids and 1 trial included take-home practice equipment. The control intervention was verbal or written information or both. | 2 RCTs that reported on QOL found no difference. Some improvements were noted in emotional distress (1 trial), self-management skills (1 trial), and stoma knowledge, attitude, and behavior (2 trials). |

| Reference | Objective | Data sources | Study selection | Search results | Results |
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| Howell 2017 | To identify the effectiveness and inclusion of essential components of self-management education interventions to support patients with cancer in developing the skills needed for effective self-management of their disease and the acute or immediate, long-term, and late harmful effects of treatments. | Ovid MEDLINE, EMBASE, the Cochrane Database of Systematic Reviews, CINAHL, and PsycINFO up to 2015. | RCTs were included if the target population of adults 18 years and older in the active treatment or survivorship phases of the cancer journey; at least one of the eight "core elements of self-management education interventions" are incorporated; self-management targeted physical or psychosocial symptoms or other supportive care needs of the patients with cancer; use of any type of teaching strategies; use of any mode of teaching delivery. | 42 RCTs examined self-management education interventions for patients with cancer. Interventions were tailored to specific patient groups and most were administered in groups, some with telephone or face-to-face follow-up. Audiovisual and computer-based instruction were also used. | Narrative qualitative synthesis suggested that self-management education interventions improve symptoms of fatigue, pain, depression, anxiety, emotional distress and quality of life. Results for specific combinations of core elements were inconclusive. Conclusions as to the components or elements of self-management education interventions associated with the strength of the effects could not be assessed in this review. |

| Reference | Objective | Data sources | Study selection | Search results | Results |
|---|---|---|---|---|---|
| Jho 2013 | To evaluate the overall efficacy of pain education on improving pain management in cancer patients using a meta-analysis of RCTs. | PubMed, EMBASE, and the Cochrane Library up to February 2012. | RCTs that included cancer patients with pain, used an education intervention for cancer pain management, and presented pain intensity at baseline and after intervention. | 12 RCTs were included. The intervention delivery was face to face interviews (11 trials) and 6 of those trials included follow-up phone calls. 1 trial delivered the intervention by phone call only. Printed materials were used in 11 trials and supplemental audiovisual material was used in 3 trials. 1 trial did not specify the delivery. Most interventions focused on general pain management. | Use of pain education was associated with lower pain intensity compared with the control group (SMD -0.11, 95% CI -0.20 to -0.02). Pain education was effective in trials with a first follow-up ≤ 2 weeks, multiple sessions, measurement of worst pain intensity, tailored education, general pain education, printed materials, education by medical staff, and usual care for the control group. |

| Reference | Objective | Data sources | Study selection | Search results | Results |
|---|---|---|---|---|---|
| Kim 2015 | To determine the effect size for psychoeducational interventions focused on sexuality and to compare effect sizes according to intervention outcomes and characteristics. | EBSCO, MEDLINE, ScienceDirect, and PQDT up to September 2013. | Experimental, quasi-experimental, or 1-group design studies that evaluate a psychoeducational intervention combining education with elements of behavioural or cognitive therapies to assist cancer patients in preventing and treating psychosexual problems after diagnosis. | 15 studies (including 7 RCTs) with intervention outcomes classified as: physical, psychological, cognitive, social, or compliance aspects. The intervention was delivered by nurses (3 trials), psychologists (6 trials), therapists (2 trials), and peer providers (2 trials); 2 trials did not specify the provider. | The meta-analysis provided 133 effect sizes from 15 primary studies; analysis revealed significant improvements after intervention, with a pooled random-effects standardized mean difference of 0.75, 95% CI 0.51 to 1.00 (medium to large effect). Interventions with combined face-to-face and telephone or internet contact had a higher effect size (1.04) than for face-to-face (0.62) and telephone (0.58) alone. RCTs had a smaller effect size (0.48) than studies using nonrandom assignment (2.25). |

| Reference | Objective | Data sources | Study selection | Search results | Results |
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| Kinnersley 2013 | To assess the effects of interventions to promote informed consent for patients undergoing surgical or other invasive healthcare treatments and procedures. | MEDLINE, EMBASE, CENTRAL, PsycINFO from inception to 2011. | RCTs, including cluster randomized trials, targeting healthcare professionals, patients, or both, who were participating in the consent process for a surgical or other invasive healthcare procedure, or targeted organizational change of the consenting of these patients. Primary outcome was informed consent. Other outcomes were components of informed consent such as understanding or knowledge, retentions, deliberation, attitudinal or uptake measures, and satisfaction with the process. | 65 trials were included; two trials were relevant to cancer and involved chemotherapy as the procedure type. 1 trial compared a CDROM with written information; the other trial compared a professionally-made 20 minute video consisting of a comprehensive description of therapy, associated risks, and patients describing their own experiences with routine written information booklets. | 1 chemotherapy trial measuring long-term knowledge (3 to 4 wk) showed no difference between groups (RR 1.19, 95% CI 0.81 to 1.76). The other trial showed a reduction in generalized anxiety in the intervention group (RR 0.47, 95% CI 0.31 to 0.72). |

| Reference | Objective | Data sources | Study selection | Search results | Results |
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| Kivela 2014 | To describe the effects of health coaching on adult patients with chronic diseases. | CINAHL, MEDLINE, PsycINFO, and Scopus databases from 2009 to 2013. | Adults with chronic diseases (excluding mentally ill and disabled people) receiving the intervention of health coaching by health care professionals. RCTs and quasi-experimental studies were included. Outcomes were physiological, behavioural, psychological, and social. | 13 published studies described the effects of health coaching on adult patients with chronic diseases. 1 RCT evaluated telephone contact by a nurse coach for patients with cancer pain. | The trial reported significant improvement in ratings of pain-related interference with function at the end of the study compared with the control groups; also reported the coaching group's vitality, mental health, and mental component improved significantly at 6 weeks compared with the control group, but not emotional well-being. No significant changes in social support outcomes at follow-up between the groups. |
| Lee 2014 | To assess the effectiveness of education for the management of cancer pain. | MEDLINE, EMBASE, Cochrane Library, KISS, KMBASE, and KoreaMed, with articles up to 2012. | Trials that investigated the effects of educational intervention on the use of analgesics in cancer patients; primary outcomes were pain intensity and quality of life. | 32 studies were included; 25 were RCTs. 17 RCTs could be combined in a meta-analysis. The educational interventions were mostly nurse-led and included written or audiovisual materials. | The SMDs of the most severe (7 trials), average (7 trials), and current (3 trials) pain were statistically significant favouring the educational intervention: -0.34 (95% CI -0.55 to -0.13), -0.40 (95% CI -0.64 to -0.15), and -0.66 (95% CI -1.09 to -0.23), respectively. 2 studies that evaluated QOL showed no difference. |

| Reference | Objective | Data sources | Study selection | Search results | Results |
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| Ling 2012 | To evaluate the effect of educational interventions on quality of life, pain intensity, and pain interference of patients with cancer. | Medline, CINAHL, PubMed, EMBASE, PsycINFO, and DARE from 2000 to 2010. | RCTs of adult patients with cancer-related pain and educational intervention only in the form of information, behavioural instructions and advice (verbal, written, audio/video-tape messages) targeted at patients and given by healthcare providers. Comparison groups were another form of treatment, no treatment, or usual treatment. Outcomes were quality of life in terms of functional status, perceived pain control, well-being, anxiety, satisfaction with pain treatment, pain interference, physical functioning, psychological status, spiritual well-being and social functioning; and pain expressed in terms of intensity and | 4 RCTs were included in the review: one study with culture-specific video and booklet on pain management for African American and Hispanic patients; one study with standard care and a book and/or video; one study with intervention based on representational approach to patient education; instructional and cognitive behavioural strategies and general information about pain. | Pain intensity and pain interference decreased after educational interventions in 2 trials; there was no difference between groups in quality of life in any of the studies. |

| Reference | Objective | Data sources | Study selection | Search results | Results |
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|  |  |  | interference. |  |  |

| **Reference** | **Objective** | **Data sources** | **Study selection** | **Search results** | **Results** |
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| Marie 2013 | Previous systematic reviews have found patient education to be moderately efficacious in decreasing the intensity of cancer pain, but variation in results warrants analysis aimed at identifying which strategies are optimal. | MEDLINE, PsycINFO, and CENTRAL searched from inception to May 2012. | Studies evaluating the effect of patient education on cancer pain intensity; participants had to have pain attributed directly to cancer; interventions had to include an educational component that included paper-based or electronic information for review by the patient; studies had to compare education with usual care. | 15 RCTs were included in a meta-analysis. The interventions consisted of information sheets or booklets, pain diaries, and audiovisual supplements. Delivery of the intervention was mostly performed by nurses; some studies reported investigators, health educators, and research assistant. | Meta-analysis identified a small to moderate effect size favouring education versus usual care (ES 0.27, 95% CI -0.47 to -0.07, p=0.007). In 2 trials of education alone, the intervention had a nonsignificant effect. Education plus other functions within the intervention had a small effect size (ES 0.30, 95% CI -0.51 to -0.10, p=0.004). |

| **Reference** | **Objective** | **Data sources** | **Study selection** | **Search results** | **Results** |
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| Martinez 2014 | To synthesize the evidence on the effectiveness of pain-focused interventions in patients with poorly controlled pain in advanced cancer. | MEDLINE, CINAHL, PsycINFO, Cochrane, and DARE from 2000 to 2011. | Both randomized and non-randomized prospective, controlled intervention studies in advanced cancer populations, focusing on pain management (including patient education and self-management interventions). Many interventions were multi-session, patient-focused and led by nurses. Outcomes included pain, quality of life, patient knowledge of appropriate pain management practices, and patient-reported barriers to pain management. | 19 studies (16 RCTs) were included. Most of the studies examined patient-centered educational interventions; 2 studies focused on provider-level interventions only. 4 studies used provider education as a component of the intervention; one study used a patient and caregiver reminder system as a component of their intervention; 17 studies employed patient and/or family education and promotion of self-management. | *Barriers and Knowledge to Pain:* 6 studies measuring barriers to pain management found statistically significant improvements as a result of the interventions; 3 studies showed significant improvements in pain outcomes using family education as part of the intervention; 1 provider-focused study did not include patient/family education and it did not significantly affect barriers; 2 studies showed a significant improvement in pain knowledge and one study found a significant impact of the intervention on patient pain. *Pain:* 9 of 19 studies showed statistically significant improvement with the intervention on pain scores compared with control group; 4 studies found significant effects for usual/average pain; 2 |

| Reference | Objective | Data sources | Study selection | Search results | Results |
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| | | | | | studies showed significant differences by group on scores for current pain; 1 study found significant effects for average pain and current pain. *Quality of Life:* 1 study found a statistically significant improvement on quality of life. The most common intervention type was patient/caregiver education (17 studies), with 7 studies showing a significant decrease in pain. |

| Reference | Objective | Data sources | Study selection | Search results | Results |
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| Matsuda 2014 | To evaluate the effectiveness of psychosocial (including psychoeducational) support interventions for early-stage breast cancer patients | PubMed and the Cochrane Central Register of Controlled Trials database from 1988 to 2012. | RCTs that compared an intervention group receiving psychosocial support with a control group and reported quality of life. | Of 8 RCTs, 3 included a psychoeducational component in the intervention. These were administered face-to-face and included health education in 1 trial, a specific breast cancer education in 1 trial, and a workbook containing educational information on common medical and psychosocial issues in 1 trial. | Among the 3 RCTs of psychoeducational support, no difference was seen between groups in global QOL (mean difference 1.008; 95% CI -1.775 to 3.790, p=0.478). A benefit was seen on the Emotional subscale (mean difference 4.167; 95% CI0.760 to 7.574, p=0.017). |

| Reference | Objective | Data sources | Study selection | Search results | Results |
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| Mayyas 2015 | To evaluate the efficacy of pain education programs in reducing barriers to cancer pain management. | PubMed, Google, and Science Direct from 2008 to 2013. | Studies involving adult patients with cancer receiving a pain education program or usual care. The outcome measure was reduction in barriers to pain management. | 9 RCTs and 1 quasi-experimental study were included. | 6 trials focused on assessing the effectiveness of educational interventions on reducing barriers to cancer pain management and found that education can be an effective approach to reduce barriers to pain management in patients with cancer. 1 trial found that pain education programs are an effective approach to improve patient's knowledge and pain. 2 additional trials found improved pain communication efficacy in patients with cancer. Another trial showed improvement in adherence to analgesic use. Another trial found booklets or videotapes were effective in reducing some of the barriers related to the fear of addiction with respect to cancer pain treatment. |

| Reference | Objective | Data sources | Study selection | Search results | Results |
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| McAlpine 2015 | To examine the literature on the use of online resources for adult cancer patients. The focus is online resources that connect patients with their healthcare clinician and with supportive and educational resources, their efficacy, and the outcome measures used to assess them. | MEDLINE, PsycINFO, Cochrane Central Register of Controlled Trials, CINAHL, Inspec, and Computers and Applied Science up to February 2014. | Studies were included if an online interactive intervention was used to connect cancer patients with each other or with their healthcare clinicians or provide educational resources in an outpatient setting with a measurable outcome related to quality of life. | 14 studies were included (9 RCTs, 2 cluster RCTs and 3 nonRCTs): 7 RCTs provided an educational component: 5 were multidimensional, combining education resources with connecting patients and clinicians (1 trial) and education with connecting patients (4 trials). 2 trials were solely of internet-based education programs. | Of the multidimensional trials, the intervention showed better Global Distress scores in 1 trial, improved quality of life and social support in 1 trial, improved quality of life in 2 trials, and no benefit in 1 trial. Of the 2 trials with interventions providing educational resources, 1 trial showed a greater decrease in fatigue and anxiety and improved quality of life. The other trial showed improvement in insomnia severity and a reduction in fatigue. |

| Reference | Objective | Data sources | Study selection | Search results | Results |
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| McLoone 2013 | To systematically review psycho-educational interventions for melanoma survivors. | Medline, PsycINFO, EMBASE, and CINAHL from 1980 to 2010. | Included studies were qualitative or quantitative and evaluated an intervention that was educational or psychological in nature in patients with a personal history of malignant melanoma. Educational sessions were led by nurses, doctors, or dermatologists. Most provided participants with personal instruction on how to perform skin self-examination (SSE), supplemented by written information. | 11 of 16 included studies were RCTs. 4 evaluated programs with a predominantly educational focus, 3 had a predominantly psychological focus, and 4 had both. | Educational interventions were generally successful in increasing melanoma-related knowledge, SSE adherence, self-efficacy or confidence in one's ability to perform SSE, and satisfaction with care or information provision; 2 studies reported no intervention effect on melanoma-related knowledge or self-efficacy of SSE. No significant changes in anxiety, depression, or psychosomatic symptoms were reported post-educational intervention or at 6-month follow-up. Studies of psychological interventions had divided effects, with lower anxiety in 1 study, and another showing no difference. Intervention studies containing both psychological and educational components reported decreases in distress (e.g., anxiety, |

| Reference | Objective | Data sources | Study selection | Search results | Results |
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|  |  |  |  |  | depression, hostility, and mood disturbance); increase in active coping styles; significantly less fatigue, somatization, and confusion; increase in vigor; greater likelihood to return to work. 1 study reported that 5 and 10 years post-intervention, there was an increase in survival rates for intervention participants relative to controls, after controlling for other prognostic factors. Another study reported only short term emotional and physiological benefits, and no differences in survival or time to recurrence by study group. |

| Reference | Objective | Data sources | Study selection | Search results | Results |
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| Musa 2017 | To understand the current evidence on the effect of cervical cancer education as an intervention to improve cervical cancer screening rates in women who are eligible for cervical cancer screening. Also to review the evidence of the effectiveness of provider recommendations for cervical cancer screening on screening rates in women at risk for cervical cancer. | MEDLINE, Embase, Cochrane Database of Systematic Reviews, Cochrane CENTRAL Register of Controlled Trials from inception to August 2016. | Studies on any educational interventions aimed at increasing the participants' knowledge about cervical cancer (causes, importance of screening, how screening is done and where to have screening done, including interpretation and treatment of abnormal screening tests).Theory-based and non-theory-based (e.g., didactic health talks) education interventions were eligible for inclusion. The interventions could be delivered through videos, culturally sensitive educational materials, fact sheet letters or brochures on cervical cancer and screening, and call or text-message mediated education. | 28 studies (26 RCTs and 2 quasi-experimental designs): 7 assessed the effectiveness of cervical cancer education on cervical cancer screening rates; 21 assessed the effectiveness of various aspects of provider screening recommendations on cervical cancer screening rates. | A meta-analysis of 5 trials of educational interventions showed an increase in cervical cancer screening rates in women exposed to cervical cancer education compared with controls (OR 2.46, 95% CI 1.88 to 3.21). |

| Reference | Objective | Data sources | Study selection | Search results | Results |
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| Oldenmenger 2009 | To identify the major barriers hindering adequate cancer pain management and critically review interventions aiming to overcome them. | PubMed from 1986 to 2007. | RCTs with interventions aimed to overcome barriers to cancer pain management. Outcome measures were: patients' pain intensity (average pain, worst pain, and current pain); patients' or professionals' knowledge or barriers; adherence to analgesics; adequacy of pain treatment, measured with the pain management index. | 70 RCTs met inclusion criteria; 11 evaluated patient pain education programs. Interventions were face-to-face, most with accompanying written material, some with in-person or telephone follow-up. | 5 of 11 RCTs on patient education reported pain intensity decreased statistically significantly. |
| Oldenmenger 2018 | To evaluate the effectiveness of educational interventions in patients with cancer-related pain. | MEDLINE and CINAHL from 1995 to 2017. | RCTs of educational interventions (information, behavioural instructions, and advice for the management of cancer-related pain) given by a healthcare professional to adult patients with cancer-related pain. The comparison group was usual care in 13 | 29 reports of 26 RCTs met inclusion criteria. Interventions were face-to face, several with telephone follow-up and accompanying booklets or videos. | 8 of the 26 RCTs showed a statistically significant difference in pain intensity with the educational intervention. 4 of 12 trials investigating pain interference with daily life found a statistically significant difference with the educational intervention. |

| Reference | Objective | Data sources | Study selection | Search results | Results |
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| | | | studies and an active control intervention in the other studies. Primary outcomes were pain intensity and pain interference with daily life. | | |
| Reidy 2018 | To review the effectiveness of interventions designed to increase knowledge about cancer risk reduction among men. | MEDLINE, CINAHL, PsycINFO, PsycARTICLES, Psychology and Behavioural Sciences Collection, and ERIC databases from 2006 to 2016. | Studies of interventions promoting knowledge about cancer risk reduction. Study subjects were men ≥18 years of age. | 25 studies: 9 were RCTs, 12 were pre-post-test designs, 2 were longitudinal, 1 was qualitative, and 1 was post-test measurement only. 23 studies addressed prostate cancer, 1 addressed colorectal cancer, and 1 addressed multiple cancers. Interventions included educational sessions, print materials, DVDs, and computer-based information. | The intervention supported knowledge gain in 21 studies (7 RCTs), did not support knowledge gain in 3 studies (2 RCTs), and partly supported knowledge gain in 1 study. The effective interventions used multimodal approaches such as print materials; education sessions; and interactive video, online, and audio components. |

| **Reference** | **Objective** | **Data sources** | **Study selection** | **Search results** | **Results** |
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| Ryhanen 2010 | To determine the effectiveness of interactive computer-based patient education programs for breast cancer patient education. | Cochrane Database, CINAHL, MEDLINE, PsycINFO, Eric, Science Direct, Social Science Citation Index, and Educational Research Complete up to 2008. | Studies were included if they concerned patient education for breast cancer patients with Internet or interactive computer programs and were based on RCTs, clinical trials, or quasi-experimental studies. | Of 14 studies, 9 were RCTs, 2 were clinical trials and 3 were quasi-experimental studies. All patient education programs included text related to breast cancer but the content differed depending on the purpose of the program. | Internet or interactive computer-based patient education programs in the care of breast cancer patients may have positive effects in increasing breast cancer knowledge; also reported as a more effective method than written educational materials to increase knowledge. Use of the information and interactive services contributed to perceived information competence and increased healthcare participation. |

| Reference | Objective | Data sources | Study selection | Search results | Results |
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| Salonen 2014 | To determine the benefit of computer-based patient education programs for patients with prostate cancer. | Ovid Medline, Ovid Nursing, Cochrane, CINAHL, and PsycINFO up to 2011. | Quantitative or qualitative studies with patients with prostate cancer that examined the use of computer or Internet/websites when the programs were interactive. | 18 studies were included: 2 RCTs, 7 case studies, 2 pre-post-quasi-experimental studies, 2 pre-post-test, 1 quasi-experimental, and 4 qualitative studies. | Of the 2 RCTs, 1 trial using an interactive computerized program to improve patients' decision-making showed no difference between groups in levels of decision control. The other trial used an assessment program to track patients' quality of life problems and psycho-educational strategies and showed the intervention improved quality of life outcomes related to sexual functioning and cancer worry compared with standard care. |

| Reference | Objective | Data sources | Study selection | Search results | Results |
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| Strupeit 2013 | To evaluate the effectiveness of nurse-delivered education interventions compared with usual care with regard to the quality of life of outpatients. | MEDLINE, EMBASE, and CINAHL up to 2012. | RCTs that examined the effectiveness of nurse-delivered patient education interventions on quality of life in outpatients were included. Studies examining types of educational interventions were included if the interventions basically contained information, counseling, and/or training, such as self-management or psychosocial interventions. | Of 25 included RCTs, 6 dealt with cancer. | Beneficial effects were seen in 4 trials with interventions including watchful waiting, palliative care intervention, cancer care intervention, and psychosocial intervention. No effect was seen in 1 trial with an educational intervention, and 1 trial with a family intervention. |

| Reference | Objective | Data sources | Study selection | Search results | Results |
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| Strupeit 2016 | To evaluate the effectiveness of nurse-delivered education interventions compared with usual care for improving quality of life in older hospitalized patients. | MEDLINE, EMBASE, CINAHL up to December 2012. | RCTs that examined the effectiveness of nurse-delivered patient education interventions on quality of life in elders in the hospital were included. Education interventions included information, counseling, and case management. The primary outcome was quality of life. | 4 trials were included. 2 examined the effects of single nurse-delivered education interventions on quality of life in elders in the hospital; 1 investigated whether frequent hospital follow-up in the first year after breast cancer treatment might partly be replaced by nurse-led telephone follow-up without diminishing health-related quality of life, as well as whether short educational group program would enhance HRQoL. 1 trial evaluated multicomponent interventions (with education components) on quality of life; the study evaluated self-care improvement through the Oncology Nursing program to | One trial showed positive effects of multicomponent interventions, including single nurse-delivered education on quality of life in elders in the hospital; significant improvement on quality of life in the intervention group compared to the control group in 50% of the domains. 1 trial found a harmful effect of single nurse-delivered education on quality of life in elders in the hospital (0=0.017). |

| Reference | Objective | Data sources | Study selection | Search results | Results |
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|  |  |  |  | reduce distressing anorexia, nausea, and emesis during chemotherapy. |  |

| **Reference** | **Objective** | **Data sources** | **Study selection** | **Search results** | **Results** |
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| Tho 2016 | To synthesize the best available evidence on the effectiveness of nurse-led patient navigation programs on clinical and patient outcomes for adult cancer patients undergoing treatments, such as radiotherapy and chemotherapy. | CINAHL, MEDLINE, Academic Search Complete, EMBASE, Cochrane Central Register of Controlled Trials, Science Direct, Google Scholar, MEDNAR (first 200 hits), and ProQuest Dissertations and Theses from 1990 to 2013. | RCTs and quasi-experimental studies that evaluated nurse-led patient navigation programs (patient education, psychosocial support, and care coordination) versus no patient navigation program or non-structured care coordination. | 4 studies (2 RCTs and 2 quasi-experimental studies) were included. All included studies used a single intervention; these studies reviewed the impact of nurse-led patient navigation programs in cancer care settings, with the control being either usual/routine care (nurse navigator) or enhanced usual care (more tailored education). 4 studies analyzed the impact on quality of life of patients with cancer who were undergoing treatment; 2 studies analyzed patient satisfaction with the care of a nurse navigator; 1 study looked at distress levels. | 3 studies could be meta-analyzed for global or total quality of life. The pooled weighted difference was 0.41 (95% CI -2.89 to 3.71) showing no significant difference. 2 studies showed better patient satisfaction with the patient navigation program (p=0.03, and p=0.001). 1 study assessing distress levels showed no statistical significant difference between groups over time (p=0.675). |

| Reference | Objective | Data sources | Study selection | Search results | Results |
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| Walczak 2016 | To identify and synthesize evidence for interventions targeting end-of-life communication. | MEDLINE, PsycINFO, and CINAHL from 1950 to 2014. | Studies included RCTs, nonrandomized control trials, pre-post studies, and post-only with control group or retrospective baseline data. Interventions included communication skills training, education, advance care planning, and structured practice changes. Stakeholder groups included health professionals, patients, caregivers, and mixed groups. | 45 studies met the inclusion criteria; 18 were RCTs. Interventions targeted patients (4 trials), caregivers (2 trials), healthcare professionals (4 trials), and multiple stakeholders (8 trials). | *Patient-focused interventions:* End-of-life communication education and advance care planning interventions led to more positive attitudes to, and comfort with, end-of-life planning, greater power of attorney completion, knowledge and recall, and lower hospital readmission rates.<br>*Caregiver-focused interventions:* Structured end-of-life conference with bereavement brochure reduced the impact of patients' illness and death on caregivers, caregiver psychological morbidity, expressions of guilt, and provision of non-beneficial treatments to patients after the decision to withdraw life-sustaining treatment.<br>*Health professional-focused interventions:* Communication skills training interventions |

| Reference | Objective | Data sources | Study selection | Search results | Results |
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| | | | | | were largely consistent in improving skill, comfort, self-efficacy, preparedness, and knowledge in relation to specific communication skills.<br>*Multifocal interventions:* Group-based end-of-life education resulted in greater knowledge of healthcare proxy forms and roles amongst participants, and agreements between patients and healthcare proxies regarding end-of-life care preferences. |

| Reference | Objective | Data sources | Study selection | Search results | Results |
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| Xiao 2016 | To evaluate the effectiveness of psychoeducational interventions on managing symptom clusters in patients with cancer. | CINAHL, MEDLINE, British Nursing Index, EMBASE, PsycINFO, and Cochrane Library from 2001 to July 2014. | RCTs with psychoeducational interventions delivered alone or in combination with other intervention categories: counseling & psychotherapy, behaviour therapy, education & information, social support, and other. Primary outcomes were symptom clusters, expressed in terms of intensity, timing, distress, and quality; secondary outcomes were functional performance including physical functioning, activities of daily living, social activities, role performance, and cognitive performance, as well as quality of life. | 4 RCTs: two studies tested interventions targeting specific symptom clusters (breathlessness, fatigue, and anxiety in one cluster, and pain, fatigue, and sleep disturbance in another). The other 2 studies examined the effects of interventions on post hoc symptom clusters. All 4 studies adopted behaviour therapy as one of the psychoeducational intervention components. In 3 trials the interventions were delivered individually by nurses; in the other a psychologist delivered the intervention in a group format. | 3 studies showed statistically significant improvement in symptom clusters for the intervention groups: breathlessness, fatigue, and anxiety (p=0.003); pain, fatigue, and sleep disturbance (p=0.032); gastrointestinal cluster (p=0.017); cognitive cluster (p=0.002); functional cluster (p=0.009); mucositis cluster (p=0.019). Pooled results of 2 studies showed improvement in the symptom interference with daily living for the intervention group (MD -0.65, 95% CI -1.22 to -0.09, p=0.02). Functional ability was also found to be enhanced over time in the intervention group (p=0.000). |

| Reference | Objective | Data sources | Study selection | Search results | Results |
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| Zhou 2015 | To evaluate the effects of nurse-led educational interventions on improving cancer pain outcomes for patients and to establish an effective cancer pain protocol for clinical nursing practice in China. | The Cochrane Library, CINAHL, Medline, EMBASE, PsycINFO, CNKI, Wanfang Database, and ProQuest Dissertation and Thesis Databases from December 2007 to February 2014. | RCTs and quasi-experimental studies with any kind of educational interventions led by nurses with in-person or telephone follow-up for adult patients with cancer-related pain. | 6 studies: 5 RCTs and 1 quasi-experimental study. In 4 studies, educational interventions were clearly explained and based on theoretical or conceptual frameworks; two studies did not provide clear descriptions of the interventions. | Patients' Knowledge and Attitudes Towards Analgesics and Cancer Pain Management: 3 studies used educational interventions to increase patient knowledge about cancer pain; level of pain knowledge for patients was improved and was significantly better in the intervention group. 2 studies showed that nurse-led educational interventions decreased patient barrier scores. Quality of Life: There was no evidence from 4 studies that nurse-led educational interventions had an effect on quality of life. Pain Intensity: 2 studies reported the educational interventions had no statistically significant impact on pain relief after 1-month (OR -0.45, 95% CI -1.49 to 0.59] and 2-months (OR -0.60, 95% CI -1.22 to 0.02, p=0.06). 1 study found pain intensity in the |

| Reference | Objective | Data sources | Study selection | Search results | Results |
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| | | | | | intervention group was decreased after 1 month, but not 2 months; one study found no difference in pain intensity for participants within treatment groups after 2 months; one study showed greater-long-term decreases in pain severity than control. Anxiety and Depression of Cancer Pain Management: No statistical difference between groups in patient anxiety and depression. |

| Reference | Objective | Data sources | Study selection | Search results | Results |
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| Zweers 2016 | To provide an inventory of non-pharmacological nurse-led interventions and evaluate the effectiveness in managing anxiety in advanced cancer patients. | MEDLINE, CINAHL, PsycINFO, and Cochrane until March 2013. | RCTs that included patients with metastatic cancer irrespective of the stage of cancer and location of care. Eligible nurse-led interventions aimed at reducing anxiety as a symptom and were done face-to-face or by telephone. Outcome of interest was anxiety as a symptom due to progressive illness and/or side effects of treatment. | 7 studies included in the systematic review: four interventions consisted of an educational element: education plus a psychological intervention (1 trial), education plus telemedicine (2 trials), and muscle relaxation plus guided imagery (1 trial). | In 1 trial, a psycho-educational intervention showed significant reduction in anxiety compared with education alone (p=0.005). Education plus telemonitoring had a beneficial effect on 1 trial (p<0.0001) and showed no difference in another trial (p=0.5), compared with education alone. In 1 trial, training in relaxation and imagery techniques showed no difference with contact time with a nurse. |

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