

Review

Patient empowerment in cancer pain management: an integrative literature review

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Abstract

Objective: More than 50% of patients with cancer experience pain. Patient empowerment has been highlighted as central to success in pain management. Up to now, no clear model for this patient group exists, yet several strategies to empower patients have been used in clinical practice. This review examines how empowerment or related concepts have been described in relation to pain management in patients with cancer. With the help of a conceptual model, recommendations for clinical practice are provided.

Methods: An integrative review was conducted, using the databases PubMed, CINAHL and PsycINFO. We evaluated papers discussing empowerment or related concepts in relation to pain management in patients with cancer. We analyzed the term ‘empowerment’ semantically.

Results: From a total of 5984 identified papers, 34 were included for analysis. Empowerment has been described with the concepts self-efficacy, active patient participation, increasing abilities, and control of life. Most papers focus on pain treatment induced by the professional caregiver or on the active involvement of the patient, and not on the combination of both. The following elements of empowerment could be discriminated: role of the patient, role of the professional, resources, self-efficacy, active coping, and shared decision making.

Conclusions: On the basis of these findings, we propose a conceptual model to empower patients in controlling cancer pain. We recommend focusing on pain treatment given by the professional, on the active involvement of the patient, and on the interaction of both. Our model might also be useful for other patient groups or specific contexts, especially in symptom management.

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Introduction

In Europe, in 2006, about 3.2 million patients were diagnosed with cancer [1], and in 2012, this number increased to 3.5 million [2]. As a result of the aging population, this number is expected to increase further in the next decades [1]. Pain is one of the most prevalent symptoms of patients with cancer; more than 50% of them suffer from it [3].

Because cancer pain hampers daily activities [4] and is associated with anxiety, depression, and sleep disturbances [5–7], it strongly influences patients’ quality of life and well-being. Although adequate pain relief up to 86% of patients with cancer is considered feasible [8], inadequate pain treatment ranged from 31% [9] to 65% [10]. Thus, cancer pain is still undertreated.

Multidisciplinary pain management, in which medical, behavioral, and cognitive aspects are combined, has been found to be more effective than single pharmacological

treatments [11]. Patient empowerment could be one of these aspects, as it has been highlighted as central to success in pain management [12].

Since 1988, patient empowerment has gained more attention in healthcare [13]. The European Network on Patient Empowerment (ENOPE 2012) defined patient empowerment as ‘a process to help people gain control, which includes people taking the initiative, solving problems, and making decisions’ [14]. Patient empowerment is a growing trend; models of patient–doctor relationships are making way for empowered patient models with patients as active partner [15]. The concept empowerment in healthcare might get increasing interest in the next decades, because of the requirement to reform healthcare systems [16]. Healthcare systems should deliver healthcare in a way that meets the increasing health demands in a cost-effective manner [16]. An empowered patient probably self-manages his cancer pain to a larger extent than a

non-empowered patient. Self-management might be an alternative for the traditional patient–physician hierarchy, which might increase cost-effectiveness [15].

Up to now, no clear patient empowerment model exists that can guide cancer pain management, although several strategies to empower patients are currently used in clinical practice [17]. Such a model might be useful to implement empowerment in a more consistent way in clinical practice. Therefore, this review examines how empowerment or related concepts have been described in relation to pain management in patients with cancer in order to provide recommendations and to define a conceptual model.

Method

We performed an integrated review. Whittmore and Knafl defined an integrative review as ‘a specific review method that summarizes past empirical or theoretical literature to provide a more comprehensive understanding of a particular phenomenon or healthcare problem’ [18]. As this paper examines how empowerment or related concepts have been described, both empirical and theoretical data were needed. Therefore, an integrative review based on the guidelines suggested by Whittmore and Knafl [18] was the first choice.

We evaluated papers discussing empowerment or empowerment-related concepts in relation to pain management in patients with cancer. As other constructs, such as self-efficacy and shared decision making (SDM), have shown to be essential in cancer pain management [19,20] and also show overlap with empowerment, these were included too. Therefore, to obtain insight in the concept empowerment, related concepts should be taken into account. Studies included in this review have varying methodological quality, but all were included in this review in accordance with the integrative review approach [18].

Search strategy

Databases PubMed, CINAHL, and PsycINFO were searched. Detailed search strategies are presented in Appendix A. The search was limited to studies published between 1990 and October 2012. Studies on children (<18 years of age) were excluded.

Keywords and/or Medical Subject Headings (MeSH) terms used were empowerment, self-efficacy, mastery, self-control, self-esteem (obtained from Samoocha *et al.* [21]), self-concept, self-perception, internal–external control, decision making, and self-regulation. These keywords and/or MeSH terms were combined with pain management, pain measurement, analgesia, pain therapy, pain prevention, pain control, and pain assessment. The search strategy was not limited to cancer, because papers may discuss cancer patients without mentioning it in the abstract or title.

Reference lists of selected publications as well as major relevant journals (*Pain*, *Anesthesiology*, *CA: A Cancer Journal for Clinicians*, and *Nature Review Cancer*) were hand-searched to check for missing publications.

Inclusion and exclusion criteria

Papers that studied or discussed empowerment or empowerment-related concepts in relation to pain management/control were included. Papers were excluded when empowerment/empowerment-related concepts or pain management/control were not related to cancer or were not separately discussed for cancer, when empowerment or related concepts were not discussed in relation to pain management/control, when empowerment or related concepts were only related to professional caregivers, when the study population consisted of patients with a psychiatric or cognitive disorder/impairment or depression, and finally, when the paper was not written in English.

Data extraction

One of the authors (N. B.) initially identified and reviewed citations on title. Two authors (I. L. and N. B.) independently reviewed the papers remaining after title selection on abstract, and they selected papers for full text reading. Discrepancies were discussed, and a third reviewer (Y. E.) was consulted when necessary. Data were extracted on study design and descriptions, definitions, and theories on empowerment-related concepts.

Results

Included studies

We initially identified a total of 5984 articles: 5839 citations by database searching and 145 citations by hand searching. After correction for duplicates, 4987 citations were reviewed on title. The remaining 490 papers after title selection were reviewed on abstract, and 155 papers were selected for full text reading. An assessment of full text excluded 121 papers. The remaining 34 papers were 22 studies with empirical data, three case reports, one systematic review with meta-analysis, two theoretical papers, two opinion papers, one study protocol, two validation studies, and finally, one invited commentary. The detailed selection process is described in Figure 1.

Empowerment in relation to cancer pain management

Seven papers out of 34 described or defined empowerment in pain management in patients with cancer. They focused on a limited number of aspects of empowerment in pain management (Table 1). Some papers focus on the professional caregiver and others on the active involvement of the patient; however, both should be discussed. Although

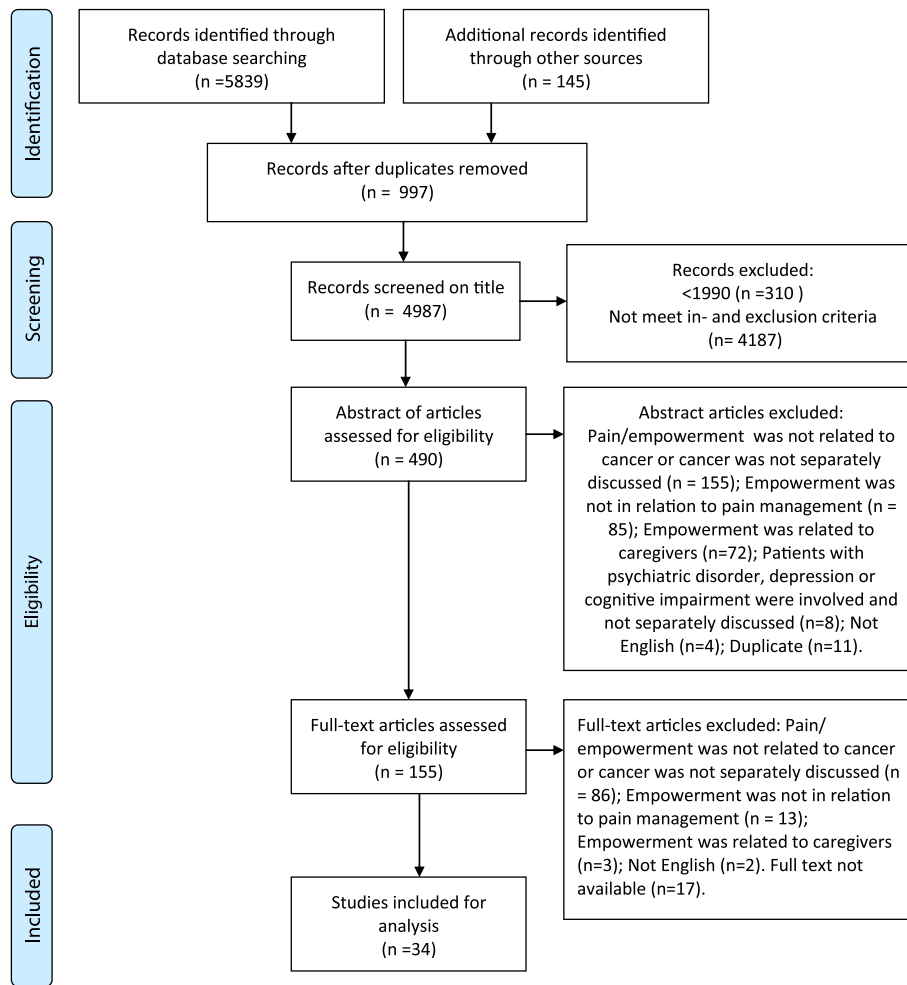


Figure 1. Search flow diagram: Preferred Reporting Items of Systematic reviews and Meta-Analysis (PRISMA)

Kravitz *et al.* [22,23] described their intervention as ‘Cancer Health Empowerment for Living without Pain intervention’ (Ca-HELP), they measured and discussed empowerment as self-efficacy for pain control and for patient–physician communication. Whereas Lasch *et al.* [24] and Thomas *et al.* [25] described empowerment as active patient participation in pain management, Tse *et al.* [26], McNeill *et al.* [27], and González Barón *et al.* [28] described the empowerment concept itself.

Lasch [24], Thomas [25], González Barón [28], and McNeill *et al.* [27] addressed that access to resources are essential in empowerment to control pain (e.g., enjoy themselves, plans for the future, information, and access to support). Tse *et al.* [26] defined empowerment as increasing the patients’ abilities to take control of their life and McNeill *et al.* [27] as a feeling of control, making patients active participants in pain management. González Barón *et al.* [28] defined empowerment as the belief that patients with cancer could do something to feel better by empowering resources (enjoy themselves and plans for the future) and that empowering resources of patients with cancer and pain

might help them to give a new sense to their lives. Both Tse *et al.* [26] and McNeill *et al.* [27] note that the feeling of control over their pain can empower patients (Table 1).

Related concepts of empowerment

Eighteen of 34 papers discussed the concept of self-efficacy in pain management. Self-efficacy has been well defined, and these definitions show strong similarities with the descriptions of empowerment in the previously mentioned papers. Self-efficacy has been defined in pain management as ‘the patient’s confidence, perception or belief in his or her ability to perform a specific behaviour, task or to achieve a desired goal’ [22,23,29–36]. It has been defined as a cognition [22,23,29–36], whereas empowerment has been described as an action and/or as a cognition (Table 1). Self-efficacy is task specific [22,23,29,30]. Patients with high communication self-efficacy may still have low confidence for performing pain self-care behaviors. Others do refer to self-efficacy but do not define or describe it [37–44].

Table 1. Definitions and descriptions of empowerment in cancer pain management

Author, year [reference]	Study design	N	Professional field	How empowerment was defined/described and its assessment	Definition empowerment or definition-related concept
Kravitz, 2009 [22]	Study protocol	265	Oncology	Empowerment is described and assessed as self-efficacy	Self-efficacy is the confidence in the ability to achieve control over one's pain
Kravitz, 2011 [23]	Randomized clinical trial	258	Oncology	Empowerment is described and assessed as self-efficacy	None
Lasch, 2000 [24]	Qualitative data analysis	None	Nursing	Empowerment is described as effective communication/participation	None
Thomas, 2000 [25]	Opinion paper	n/a	Oncology and psychosocial	Empowerment is described as active participation	None
McNeill, 2007 [27]	Case report	1	Nursing	Empowerment is defined as a control and active participation	Empowerment is a feeling of control, making patients active participants
Tse, 2012 [26]	Randomized clinical trial (without control)	38	Nursing	Empowerment is defined as control and increasing abilities; however, it was not assessed	Empowerment should involve increasing the patients' abilities to take control of their life
González Barón, 2006 [28]	Cross-sectional	73	Oncology	Empowerment is described as resources to relieve the suffering	Empowerment is the belief that they could do something to feel better by empowering resources (enjoy themselves and plans for the future)

Common concepts discussed in relation with empowerment

Self-efficacy, locus of control, coping, and active participation

Both self-efficacy and active patient participation in decision making [45–50] are described in relation with pain management. Decision making requires active patient participation to achieve control over pain [45–50]. Additionally, two aspects of self-efficacy are considered important in decision making, namely confidence in effectively talking to clinicians about pain and confidence in one's ability to achieve control over pain [45,46].

Other related concepts of empowerment discussed are coping strategies and/or locus of control, self-esteem, and mastery. Although these concepts have been discussed in four out of 34 papers [51–54], they do not describe or define it. Büssing and authors [51] analyzed which coping strategies refer to the concept 'locus of control'. They found that patients with cancer often have a strong reliance on external sources (e.g., trust in God's help). Büssing *et al.* described external resources of control; however, they also reported internal resources [55]. These external resources might not be seen as true factors of empowerment because they are often used as passive strategies, whereas the internal strategies are in most cases active processes (e.g., abilities).

Finally, a concept related to locus of control is mastery. Kurtz defined mastery as sense of control, as the extent to which a person feels in control over his or her environment [56].

Conceptual model to empower patients in controlling cancer pain

On the basis of these findings, we suggest a conceptual model to empower patients in controlling cancer pain

(Figure 2). A cyclical model seems most appropriate, as pain and other characteristics might change over time and sometimes the patient and professional caregiver have to start all over again to empower the patient. Previous research focused only on pain treatment provided by the clinician or on the active involvement of the patient, but not on the combination of both. However, both are essential to empower the patient in controlling their cancer pain. Patient empowerment could improve pain management, and pain control might result in improved empowerment, and this might result in more pain control.

Therefore, we suggested a model with both the patient and the clinician as well as their interaction. Self-efficacy has been shown essential in both elements of empowerment. In relation to empowerment, it has been described as a core cognition. In this model, for example, communication self-efficacy and self-efficacy for SDM are essential.

Another essential element of empowerment is having resources. A professional caregiver can induce external resources (e.g., information on pain management and pain treatment) and use strategies to empower the patient. However, the patient needs to be involved to become empowered and to manage his pain. External and internal resources have been described. Internal resources are related to the patient, such as his or her abilities and attitude. Yet, external resources can be introduced by the professional caregiver, for example, information or access to support. Resources and self-efficacy are a prerequisite to be able to cope actively. Yet, resources and self-efficacy

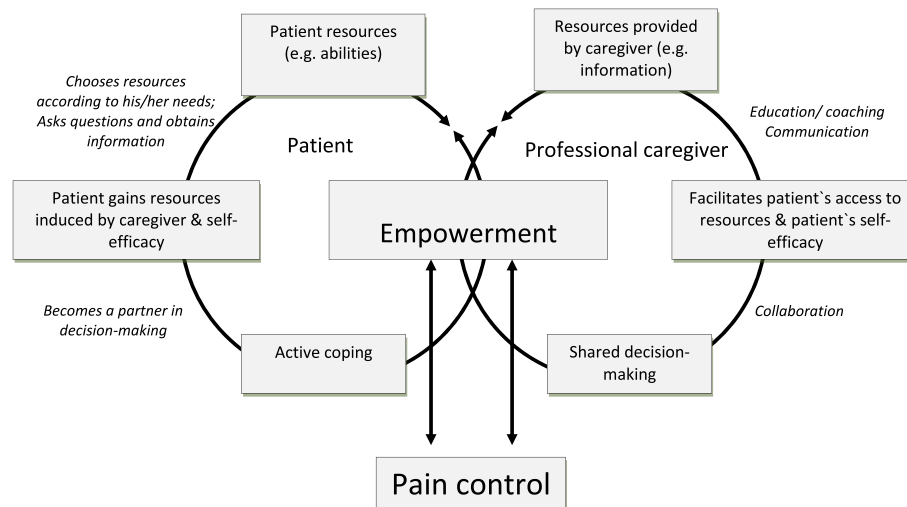


Figure 2. A conceptual model to empower patients in controlling cancer pain

are not enough to achieve pain control. The patient also needs to be involved, needs to become an active patient. The definition of empowerment of ENOPE 2012 is ‘a process to help people gain control, which includes people taking the initiative, solving problems, and making decisions’ [14]. This definition includes both the help of the clinician and the active involvement of the patient.

Strategies to empower the patients are also essential in this model. These strategies can be either induced by the professional caregiver (collaboration, SDM, education/coaching, and communication) or induced by the patient (becoming a partner in decision making, choosing resources according to his or her needs, and asking questions and obtaining information (communication)).

Discussion

With the help of an integrative literature review, we examined how empowerment or related concepts have been described in relation to pain management in patients with cancer, and recommendations on how to improve patient empowerment were made, illustrated by a conceptual model. Elements in this two-cycle model, with central roles for the patient as well as the clinician, are resources (external and internal), self-efficacy, SDM, and active patient participation/coping.

Our results are in agreement with the definition of empowerment of ENOPE 2012 [14]. Like in our conceptual model, this definition includes both the help of the professional caregiver and the active involvement of the patient. Previous research focused only on pain treatment induced by professional caregiver or active involvement of the patient and did not combine these elements.

Studies that did not explain the term empowerment and/or used it as a synonym of self-efficacy, active participation in decision making, or access to resources (Table 1). It is

noteworthy that papers presented their own descriptions of empowerment with little overlap, and they focused on a limited number of aspects. Only one paper described a limited model of cancer pain management including empowerment [26]. They described a pain management model with empowerment as an element of the model. Our model is an empowerment model in pain management, including pain treatment and clinician as well as patient involvement.

Nevertheless, the articles included in this review provided insight in aspects essential for empowerment and related concepts in cancer pain management to suggest an empowerment model for cancer pain management. Both the confidence in the ability to perform a task (self-efficacy) and the access to internal and external resources [24,25,27,28] have shown to be the most important aspects of empowerment. Self-efficacy appeared to be strongly related to empowerment and often used as empowerment outcome. Self-efficacy is needed to achieve empowerment, whereas empowerment is not needed for self-efficacy.

The present study has some strengths. First, until now, there was no systematic review on empowerment in cancer pain management. Second, our model might also be useful for other patient groups or contexts. We expect that the elements of our model (resources, self-efficacy, and active patient participation) are also essential in other diseases. The symptom and the resources may differ, but the framework of the model stays the same. Finally, because other concepts as SDM have shown to be essential in cancer pain management [19,20] and also show overlap with empowerment, these were included too.

However, there were also some limitations. First, the suggested model needs to be tested before it can be widely used in clinical practice [57]. As well professionals involved in cancer pain management as patients with cancer and pain should be involved in such a pilot. Finally, only

papers in English were included. As this review aimed to describe/define a concept, translation might change the meaning. Cultural differences should be taken into account in future studies.

Conclusion

On the basis of these findings, we propose a conceptual model to empower patients in controlling cancer pain. We recommend focusing on pain treatment induced by the professional, on the active involvement of the patient, and on the interaction of both. Both elements are needed to empower the patient to control their cancer pain. The model should be tested in future research. Our model might also be useful for other patient groups or specific contexts, especially in symptom management.

Appendix A: Search strategy databases

First selection PubMed:

Date search: 03-10-2012: total 3730.

First selection psychINFO:

Date search: 03-10-2012: total 765.

First selection CINAHL:

Date search: 03-10-2012: total 1344.

PUBMED

Search terms PubMed

1. Pain management[Mesh] OR pain management[tiab] OR management pain[tiab] OR managing pain[tiab] OR managed pain [tiab] OR manage pain[tiab]
2. Pain measurement[Mesh] OR pain measurement[tiab] OR pain measurements[tiab] OR pain measure[tiab] OR pain measures[tiab] OR pain measured[tiab] OR pain measuring[tiab] OR measurement pain [tiab] OR measurements pain [tiab] OR measure pain [tiab] OR measures pain [tiab] OR measured pain [tiab] OR measuring pain [tiab]
3. Analgesia[Mesh] OR analges* [tiab]
4. Pain/therapy[mesh] OR pain therap*[tiab] OR therapy pain[tiab]
5. Pain/prevention & control[mesh] OR pain prevent*[tiab] OR preventing pain[tiab] OR prevented pain [tiab]
6. Pain control[tiab] OR pain controlling[tiab] OR pain controlled[tiab] OR pain controls[tiab] OR control pain[tiab] OR controlling pain[tiab] OR controlled pain[tiab]
7. Pain assessment[tiab] OR pain assessments[tiab] OR pain assessing[tiab] OR pain assessed[tiab] OR assessment pain [tiab] OR assessments pain [tiab] OR assessing pain [tiab] OR assessed pain [tiab]

8. Empower*[tiab]
9. Self efficacy[Mesh] OR Self efficacy [tiab]
10. Self esteem[tiab] OR Self concept[Mesh] OR Self concept[tiab]
11. Self control*[tiab] OR selfcontrol[tiab]
12. Self percep*[tiab]
13. Internal-external control[Mesh] OR Internal-external control[tiab]
14. Decision making[Mesh] OR decision making [tiab] OR making decisions[tiab]
15. Mastery[tiab] OR mastering[tiab]

PubMed search strategy [title and abstract] (Hits: 3730)

((Pain management[Mesh] OR pain management[tiab] OR management pain[tiab] OR managing pain[tiab] OR managed pain[tiab] OR manage pain[tiab]) OR (pain measurement[Mesh] OR pain measurement[tiab] OR pain measurements[tiab] OR pain measure[tiab] OR pain measures[tiab] OR pain measuring[tiab] OR measurement pain[tiab] OR measurements pain[tiab] OR measure pain [tiab] OR measures pain[tiab] OR measured pain[tiab] OR measuring pain[tiab]) OR (analgesia[Mesh] OR analges*[tiab] OR (Pain/therapy[mesh] OR pain therap*[tiab] OR therapy pain[tiab]) OR (Pain/prevention AND control[mesh] OR pain prevent*[tiab] OR preventing pain[tiab] OR prevented pain[tiab]) OR (Pain control[tiab] OR pain controlling[tiab] OR pain controlled[tiab] OR pain controls[tiab] OR control pain[tiab] OR controlling pain[tiab] OR controlled pain[tiab]) OR (pain assessment [tiab] OR pain assessments[tiab] OR pain assessing[tiab] OR pain assessed[tiab] OR assessment pain[tiab] OR assessing pain[tiab] OR assessed pain[tiab])) AND ((Empower*[tiab]) OR (Self efficacy[Mesh] OR Self efficacy [tiab] OR (Self esteem[tiab] OR Self concept[Mesh] OR Self concept[tiab]) OR (Self control[tiab] OR selfcontrol [tiab] OR self controlling[tiab] OR self controlled[tiab]) OR (self percep*[tiab]) OR (Internal-external control [Mesh] OR Internal-external control[tiab]) OR (Decision making[Mesh] OR decision making[tiab] OR making decisions[tiab]) OR (Mastery[tiab] OR mastering[tiab]))

PSYCIINFO

Search terms PsycINFO

1. Exp pain management/OR pain manag*.ti,ab. OR manag* pain.ti,ab.
2. Exp pain measurement/OR pain measur* .ti,ab. OR measur* pain.tiab.
3. Exp analgesia/OR analges* .ti,ab.
4. Pain therapy.ti,ab. OR therap* pain
5. Pain prevent*.ti,ab. OR prevent* pain.ti,ab.
6. Pain control*.ti,ab. OR control* pain.ti,ab.
7. Pain assess*.ti,ab. OR assess* pain.ti,ab.
8. Exp empowerment/OR empower*.ti,ab.

9. Exp self efficacy/OR self efficacy.ti,ab.
10. Exp self esteem/OR self esteem.ti,ab.
11. Exp self concept/OR self concept.ti,ab.
12. Exp self control*/OR self control*.ti,ab. OR Selfcontrol.ti,ab.
13. Exp self percep*/OR self perception.ti,ab.
14. Exp internal-external locus of control/OR internal external locus of control.ti,ab.
15. Exp decision making/OR decision making.ti,ab. OR making decisions.ti,ab.
16. Exp mastery.ti,ab. OR mastering.ti,ab.

PsycINFO search strategy [title and abstract] Hits: 765

(exp pain management/or (pain adj2 manag*).ti,ab. or (manag* adj2 pain).ti,ab. or exp pain measurement/or (pain adj2 measur*).ti,ab. or (measur* adj2 pain).ti,ab. or exp analgesia/or analges*.ti,ab. or (Pain adj2 control*).ti, ab. or ((control* adj2 pain) or (Pain adj2 assess*) or (assess* adj2 pain) or pain therapy or (therap* adj2 pain) or (pain adj2 prevent*) or (prevent* adj2 pain)).ti,ab.) and (exp empowerment/or empower*.ti,ab. or exp self-efficacy/or self-efficacy.ti,ab. or exp self-esteem/or self-esteem.ti,ab. or exp self concept/or self concept.ti,ab. or exp Internal External Locus of Control/or Internal External Locus of Control.ti,ab. or exp self control/or self control.ti,ab. or selfcontrol.ti,ab. or exp self perception/or self perception.ti,ab. or mastery.ti,ab. or mastering.ti,ab. or exp decision making/or decision making.ti,ab. or making decisions.ti,ab.)

CINAHL

Search terms CINAHL

1. MH Pain management (Iowa NIC)+OR TI pain management OR AB pain management OR TI pain managing OR AB pain managing OR TI pain manage OR AB pain manage OR TI pain managed OR AB pain managed OR TI management pain OR AB management pain OR TI managing pain OR AB managing pain OR TI managed pain OR AB managed pain OR TI manage pain OR AB manage pain
2. MH American society for pain management nursing +OR TI American society for pain management nursing OR AB American society for pain management nursing
3. MH Pain measurement+ OR TI pain measurement OR AB pain measurement OR TI pain measurements OR AB pain measurements OR TI pain measure OR AB pain measure OR TI pain measures OR AB pain measures OR TI pain measured OR AB pain measured OR TI pain measuring OR AB pain measuring OR TI measurement pain OR AB measurement pain OR TI measurements pain OR

- AB measurements pain OR TI measure pain OR AB measure pain OR TI measures pain OR AB measures pain OR TI measured pain OR AB measured pain OR TI measuring pain OR AB measuring pain
4. MH Analgesia + OR TI analges* OR AB analges*
 5. MH Pain+/TH/PC OR TI Pain therap* OR AB Pain therap*
 6. TI Pain prevent* OR AB Pain prevent* OR TI preventing pain OR AB preventing pain OR TI prevented pain OR AB prevented pain
 7. TI pain control OR AB pain control OR TI pain controlling OR AB pain controlling OR TI pain controlled OR AB pain controlled OR TI pain controls OR AB pain controls OR TI control pain OR AB control pain OR TI controlling pain OR AB controlling pain OR TI controlled pain OR AB controlled pain
 8. TI pain assessment OR AB pain assessment OR TI pain assessments OR AB pain assessments OR TI pain assessing OR AB pain assessing OR TI pain assessed OR AB pain assessed OR TI assessment pain OR AB assessment pain OR TI assessments OR AB assessments pain OR TI assessing pain OR AB assessing pain OR TI assessed pain OR AB assessed pain
 9. MH Empowerment+OR TI empower* OR AB empower*
 10. MH Self-efficacy + OR TI Self-efficacy OR AB Self-efficacy
 11. TI Self esteem OR AB Self esteem
 12. MH Self concept + OR TI Self concept OR AB Self concept
 13. TI Internal external control OR AB Internal external control
 14. TI Self- control OR AB Self- control OR TI selfcontrol OR AB selfcontrol
 15. MH Control (psychology)+OR TI Control (psychology) OR AB Control (psychology)
 16. MH Self regulation +OR TI Self regulation OR AB Self regulation
 17. TI Self percep* OR AB Self percep*
 18. TI Mastery OR AB Mastery OR TI mastering OR AB mastering
 19. MH Decision making +OR TI Decision making OR AB Decision making OR TI making decisions OR AB making decisions

CINAHL search strategy [title and abstract] Hits: 1344

((MH 'Pain Management (Iowa NIC)'+) OR (TI pain management OR AB pain management) OR (TI pain managing OR AB pain managing) OR (TI pain manage OR AB pain manage) OR (TI pain managed OR AB pain managed) OR (TI management pain OR AB management pain) OR (TI managing pain OR AB managing pain) OR (TI managed pain OR AB managed pain) OR (TI manage

pain OR AB manage pain) OR (MH 'American society for pain management nursing'+) OR (TI American society for pain management nursing OR AB American society for pain management nursing) OR (MH 'Pain Measurement') OR (TI pain measurement OR AB pain measurement) OR (TI pain measurements pain OR AB pain measurements) OR (TI pain measure OR AB pain measure) OR (TI pain measures OR AB pain measures) OR (TI pain measured OR AB pain measured) OR (TI pain measuring OR AB pain measuring) OR (MH 'Analgesia'+) OR (TI analges* OR AB analges*) OR (MH 'Pain+/TH/PC') OR (TI pain therap* OR AB pain therap*) OR (TI pain prevent* OR AB pain prevent*) OR (TI preventing pain OR AB preventing pain) OR (TI prevented pain OR AB prevented pain) OR (TI pain control OR AB pain control) OR (TI pain controlling OR AB pain controlling) OR (TI pain controlled OR AB pain controlled) OR (TI pain controls OR AB pain controls) OR (TI control pain OR AB control pain) OR (TI controlling pain OR AB controlling pain) OR (TI controlled pain OR AB controlled pain) OR (TI pain assessment OR AB pain assessment) OR (TI pain assessments OR AB pain assessments) OR (TI pain assessing OR AB pain assessing) OR (TI pain assessed OR AB pain assessed) OR (TI assessment pain OR AB assessment pain) OR (TI assessments pain OR AB assessments pain) OR (TI assessing pain OR AB assessing pain) OR (TI assessed pain OR AB assessed pain)) AND ((MH 'Empowerment'+) OR (TI empower* OR AB empower*) OR (MH 'Self-efficacy'+) OR (TI Self-efficacy OR AB Self-efficacy) OR (TI Self esteem OR AB Self esteem) OR ('MH Self concept'+) OR (TI Self concept OR AB Self concept) OR (TI Internal external control OR AB Internal external control) OR (TI Self-control OR AB Self-control) OR (TI selfcontrol OR AB selfcontrol) OR (MH 'Control (Psychology) + ') OR (MH 'Self regulation'+) OR (TI Self regulation OR AB Self regulation)

OR (TI Self percep* OR AB Self percep*) OR (TI Mastery OR AB Mastery) OR (TI mastering OR AB mastering) or (MH 'Decision making'+) OR (TI Decision making OR AB Decision making) OR (TI making decisions OR AB making decisions))

Appendix B: Search strategy additional sources

Date search: 06-02-2013

ISI web of Knowledge top two journals:

Anesthesiology

1. Pain (16 hits)
2. Anesthesiology (0 hits)

Oncology

1. CA: A cancer Journal for clinicians (49 hits)
2. Nature review cancer (82 hits (2 not valid))

Searched for:

Pain and empower
Pain and empowerment
Title/abstract

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Conflict of interest

The authors have declared no conflicts of interest.

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