

Using Qualitative Research to Overcome the Shortcomings of Systematic Reviews When Designing of a Self-Management Intervention for Advanced Cancer Pain

Kate Flemming¹, S. José Closs², Nicholas D. Hughes², and Michael I. Bennett³

Abstract

Objectives: To identify the key components for a self-management intervention for advanced cancer pain using evidence drawn from systematic reviews of complex interventions and syntheses of qualitative research. **Methods:** Evidence from up-to-date systematic reviews was prioritized. Searches were initially undertaken to identify the systematic reviews of effectiveness in Cinahl, Medline, Embase, PsycInfo, and the Cochrane Database of systematic reviews from 2009 to June 2014, using validated search terms. Subsequent searches to identify the qualitative systematic reviews were undertaken in Cinahl, Medline, Embase, and PsycInfo from 2009 to January 2015. The results of the two sets of reviews were integrated using methods based on constant comparative techniques. **Results:** Four systematic reviews examining interventions for the self-management of advanced cancer pain were identified. Although each review recommended some attributes of a pain management intervention, it was not possible to determine the essential key components. Subsequent searches for qualitative evidence syntheses identified three reviews. These were integrated with the effectiveness reviews. The integration identified key components for a self-management intervention including individualized approaches to care, the importance of addressing patients' knowledge, skills, and attitudes toward pain management, and the significance of team approaches and inter-disciplinary working in the management of pain. **Conclusion:** Implementing the findings from systematic reviews of complex interventions is often hindered by a lack of understanding of important contextual components of care, often provided by qualitative research. Using both types of data to provide answers for practice demonstrates the benefits of incorporating qualitative research in reviews of complex interventions by ensuring the strengths of qualitative and quantitative research are combined and that their respective weaknesses are overcome.

Keywords

qualitative research, systematic reviews, mixed methods, advanced cancer pain, self-management

What Is Already Known?

- Qualitative evidence syntheses can provide context to systematic reviews of effectiveness, develop new insights from primary research and enhance the generalizability of primary studies.
- Methodologically robust systematic reviews of randomized controlled trials provide evidence for the effectiveness of interventions but may lack detail as to how findings can be used in the context of clinical practice.

development of an educational intervention to help patients and carers manage advanced cancer pain, in a way using effectiveness reviews alone did not.

What Does This Paper Add?

- The integration of both qualitative evidence syntheses and systematic reviews of effectiveness enabled the

¹ Department of Health Sciences, University of York, Heslington, York, United Kingdom

² School of Healthcare, University of Leeds, Leeds, United Kingdom

³ Leeds Institute of Health Sciences, University of Leeds, Leeds, United Kingdom

Corresponding Author:

Kate Flemming, Department of Health Sciences, Research Section Area 4, Seebom Rowntree Building, University of York, Heslington, York YO10 5DD, United Kingdom.

Email: kate.flemming@york.ac.uk



- In order to effectively implement the findings from systematic reviews of effectiveness into clinical practice, where feasible, such reviews should be juxtaposed to relevant qualitative research.

Evidence syntheses, and in particular systematic reviews of randomized controlled trials (RCTs), have been held up as the “gold standard” to provide the evidence for the effectiveness of interventions. The efforts of many international organizations including the Cochrane Collaboration’s Pain, Palliative, and Supportive Care Group have been prolific in producing systematic reviews of effectiveness to help develop and improve the evidence base for the effectiveness of interventions to manage pain in advanced cancer. More recently, however, concern has developed as to how practical this extensive evidence base is when informing developments in clinical or research practice (Ecclestone, Wiffen, Derry, & Moore, 2013). It has recently been argued that evidence must be usable, as well as robust, in order that the individualized components of care, so central to the management of pain from advanced cancer, are not lost (Greenhalgh, Howick, & Maskrey, 2014). It is advocated that those who are producing reviews and summaries of evidence need to pay closer attention to those who are the end users of the research. Lengthy reviews that are “methodologically robust” but provide little detail as to how findings relate to and can be used by clinical practice, fail to provide research that can be used in a way that informs either individualized care or can help guide the development of interventions (Lavis, Davies, Gruen, Walshe, & Farquhar, 2006). There is an additional challenge in research into the management of pain in palliative care when, despite methodologically robust systematic reviews, good evidence is still unavailable to guide clinical practice, due to the paucity of the primary research that feeds into such reviews (Wee, Hadley, & Derry 2008).

Pain from advanced cancer remains prevalent despite the introduction of interventions such as the World Health Organization analgesic ladder (1986), which have been shown to be effective in managing the pain of this population of people (Bennett, 2008). A recent systematic review highlighted pain prevalence of up to 75% in advanced disease and showed that around one third of patients are undertreated (Greco et al., 2014). There are a number of interrelating factors that can contribute to advanced cancer pain being poorly controlled. Patients and their carers may be reluctant to report the symptom, may be fearful of pain and what it signifies, or may lack knowledge about strong opioid analgesia and fear adverse effects, leading to poor adherence (Flemming, 2010). It has been shown that providing education to support patients in self-managing their pain can help improve symptoms (Bennett, Bagnall, & Closs, 2009). As part of a wider program of work, we wished to design an education intervention to support people experiencing advanced cancer pain to self-manage their pain by identifying the essential components for such an intervention by drawing on the existing evidence base in this area. This article highlights how it was only through using qualitative research alongside reviews of complex interventions that

the identification of the key components for education was possible.

Method

Search Strategy

We prioritized evidence from up-to-date systematic reviews of effectiveness to help inform our intervention. We did this in order to limit unnecessary duplication, minimize the time and expense spent on screening primary research evidence, and minimize the potential of bias or error that might arise from rapid screening of primary research (Khangura, Konnyu, Cushman, Grimshaw, & Moher, 2012). A pragmatic approach to searching was undertaken to supplement research the team were aware of through our work in this area. Searches were undertaken in Cinahl, Medline, Embase, PsycInfo, and the Cochrane Database of Systematic Reviews from January 2009 to December 2014, with terms developed from those used in a review by Bennett, Bagnall, and Closs (2009) using broad definitions for educational interventions. As the process was not intended to replicate the comprehensive and systematic searches associated with a full systematic review, we did not use a question formulation framework or formal inclusion criteria. We were however seeking systematic reviews that explored the effectiveness of educational interventions to help manage advanced cancer pain, published in English. The searches identified six reviews that examined educational interventions for self-management of cancer pain (Bennett et al., 2009; Cummings et al., 2011; Gorin et al., 2012; Koller, Miaskowski, De Geest, Opitz, & Spichiger, 2012; Ling, Lui, & So, 2012; Marie, Lockett, Davidson, Lovell, & Lal, 2013). We chose not to use two of these reviews: the review by Ling, Lui, and So (2012) only contained a small number of trials already included in the reviews by Bennett et al. (2009), Cummings et al. (2011), Gorin et al. (2012), and Koller, Miaskowski, De Geest, Opitz, and Spichiger (2012); the review by Marie, Lockett, Davidson, Lovell, and Lal (2013) was excluded due to the restricted nature of its searching, including terms for chronic pain and its narrow definition of education.

Preliminary Findings From the Systematic Reviews of Effectiveness

In total, the four reviews included 61 RCTs, of which 14 RCTs were common to each review. For each review, where possible, we summarized the main findings relating to specific components or aspects of the interventions that were associated with effectiveness (Table 1). Each review made some recommendations as to the kind of attributes a successful educational intervention required. For example, it could comprise culturally appropriate written material and a face-to-face educational session of not less than 15 min (Koller et al., 2012), need to specifically target all three attributes of knowledge, skills, and attitudes toward cancer pain and its management (Cummings et al., 2011), and contain psychosocial interventions as these

Table 1. Findings From the effectiveness reviews and gaps in the evidence.

Author	Key Findings	Gaps in the Evidence Base Identified From the Review
Koller, Miaskowski, De Geest, Opietz, and Spichiger (2012)	<p>Educational interventions need to be:</p> <ul style="list-style-type: none"> • Culturally appropriate written material and face-to face educational session of not less than 15 min. • Information on how to implement self-management of pain strategies. • Interventions can be implemented for inpatients and outpatients. • Need to contain information on pain management. • Need to address cognitive barriers to pain management. • Need to contain information on how to implement self-management strategies. • Psychosocial interventions had meaningful effects on both pain severity and interference. • Skills-based interventions showed somewhat greater effectiveness compared with educational approaches on reducing pain severity although these findings were not statistically significant. • Of the studies included for review, larger effect sizes were associated with more rigorous designs that included monitoring of treatment implementation according to the study protocol: Treatment fidelity is therefore crucial. 	<p>The most efficacious intervention components or combination of components and the optimal intervention doses need to be established in future studies.</p> <p>The impact of patient, provider, and system factors need also to be evaluated.</p>
Gorin et al. (2012)	<ul style="list-style-type: none"> • Psychosocial interventions had meaningful effects on both pain severity and interference. • Skills-based interventions showed somewhat greater effectiveness compared with educational approaches on reducing pain severity although these findings were not statistically significant. • Of the studies included for review, larger effect sizes were associated with more rigorous designs that included monitoring of treatment implementation according to the study protocol: Treatment fidelity is therefore crucial. 	<p>Not all studies measured pain as the primary outcome and pain was measured inconsistently across studies. Pain raters were rarely blinded. Few studies carefully described the other treatments (including pharmacologic) that participants were receiving that could have influenced their pain; this is particularly important for studies in which the intervention was compared with usual care.</p>
Cummings et al. (2011)	<p>Potential attributes of successful educational interventions in cancer pain:</p> <ol style="list-style-type: none"> 1. Use of pre-constructed educational material with local development of materials specific to the trial, thought these can be drawn from external validated resources. 2. Specifically, targeting <i>all three</i> attributes of knowledge, skills, and attitudes of cancer pain and its management. 3. Use of standardized and systematic approach to deliver and present the educational intervention. 4. High educational dose—two or more of the following present <ul style="list-style-type: none"> – Substantial follow-up of the intervention in the form of reinforcement (delivered at least one month following the intervention). – High educational dose intensity—meaning equal to, or greater than two hours in one setting or equal to, or greater than four teaching sessions. – Significant resource allocation for the project in the form of a multidisciplinary team, dedicated staff. 5. High educational dose intensity on its own has a significant impact on positive pain outcomes. 6. Monitor early signs of success or lack thereof. 7. Be prepared to intervene at an early stage if needed. 	<p>A trial's actual educational material should be posted on the Web or a similar public repository. The duration and circumstances of the intervention, medium used, kind and extent of institutional or other support for learners and information on the educational dose should be available.</p> <p>Fidelity of delivery is similarly important.</p> <p>Insufficient information in reported studies means that it is not possible to evaluate the educational dose sufficiently to make reliable conclusions from all studies.</p>
Bennett, Bagnall, and Closs (2009)	<ol style="list-style-type: none"> 1. Patients with cancer pain should routinely be provided with patient based education to improve knowledge on managing pain and analgesia. 2. Provide consistent screening for misunderstandings about pain and analgesia when commencing analgesic therapy. 3. Address these aspects through clear advice and information. 4. Specialist nurses and pharmacists might be the most appropriate HCPs to deliver pain management advice. 5. Written or audiovisual material supporting the advice should be given to the patient to take away. 6. Single exposure interventions resulted in similar effects on maximum pain intensity as multiple exposures. 7. Effects are more pronounced when compared to usual care rather than placebo or attention control group <p>Not possible to determine optimum exposure or duration of effect.</p>	<p>Optimum length of follow-up difficult to determine from the included trials and in the population of patients with advanced cancer pain.</p> <p>Some patients may benefit greatly from education, while others may not or have worse outcomes.</p>

Note. HCPs = Health Care Professionals.

have a meaningful effect on both pain severity and interference (Gorin et al., 2012). In addition to summarizing the main findings, we looked to identify the gaps in the evidence base across the four reviews (Table 1). In doing this, it became apparent that we don't yet know what the most effective components of an intervention are; whether these should be provided in isolation or combination with other components and if so in what form; and what an optimal intervention dose, in terms of quantity and frequency, might look like. Additionally, the impact of patient, provider and system factors need also to be evaluated; the duration and circumstances of interventions, the medium used, and the fidelity of delivery are important but also not yet established.

Additional Search Strategy

Once we became aware of the limitations in the evidence provided by the four systematic reviews of effectiveness, we decided to draw on additional types of evidence in an attempt to fill some of the gaps in our knowledge. We were particularly interested in the contribution of qualitative research to facilitate the understanding of patient, carer, and health-care system barriers and facilitators to pain assessment and management in the community. Using qualitative research, including qualitative evidence syntheses, alongside effectiveness data has been shown to increase the understanding of key features and attributes of interventions as well the influence of context on effectiveness, the perceptions of populations involved, and the way interventions are delivered (Noyes, et al., 2016; Sheldon, 2005). Using both types of data to provide answers for practice can ensure that the strengths of qualitative and quantitative research are combined and that their respective weaknesses can be overcome (Pluye & Hong, 2014). Such an approach is particularly relevant for palliative care where the addition of qualitative research can help overcome some of the practical, ethical, and moral dilemmas associated with the conduct of effectiveness research in this patient population (Flemming, Adamson, & Atkin, 2008).

Again we concentrated on evidence from systematic reviews; qualitative evidence syntheses can provide context to systematic reviews of effectiveness, new insights from primary research and enhance the generalizability of primary studies (Flemming, 2007) and the argument has been made, at primary research level, that the integration of evidence of different types from different sources can shed new light on different aspects of complexity (Petticrew et al., 2013). The focus of our searching was to identify qualitative evidence syntheses that could provide additional insight into how patients, their carers and health professionals managed cancer pain, in order that the evidence from the effectiveness reviews could be contextualized and developed. Searches were undertaken in Cinahl, Medline, Embase, and PsycInfo from January 2009 to January 2015, using terms relating to qualitative synthesis and cancer pain. Three qualitative evidence syntheses were identified, which were seen as highly relevant as they explored patients', carers', and health professionals' views on management of pain caused by

advanced cancer. These reviews examined patients', carers', and health professionals' views of using morphine to treat cancer related pain (Flemming, 2010); health professionals' views of delivering education to patients with advanced disease (Flemming, Closs, Foy, & Bennett, 2012); and the barriers and facilitators for managing adult cancer pain (Luckett et al., 2013; Table 2). The three reviews incorporated over 90 qualitative research papers, dating from 1991 to 2011.

Preliminary Findings From the Qualitative Evidence Syntheses

The findings of the synthesis examining the use of morphine to treat cancer related pain gave insight into the context and social meaning surrounding the use of morphine to treat cancer pain and how this can impact on the self-management of pain (Flemming, 2010). It was shown that for patients, the use of morphine, a drug widely used for the treatment of advanced cancer pain, becomes a balancing act with the trade-off being between achieving pain relief and experiencing adverse effects. Patients, carers, and health professionals held deep-seated concerns regarding the symbolism of morphine and other strong opioids, addiction, and tolerance. These factors influence the way morphine is prescribed and additionally its practical use. The review also determined that patients and their carers viewed cancer pain as a referent for disease status leading to the pain taking on existential meaning. A prescription of morphine then became a metaphor for impending death. How patients reported their pain was dependent on the relationship they had with health professionals, with patients more readily reporting pain to those health professionals with whom they had an established and trusted relationship. The findings are key to the development of an educational intervention as they demonstrate how health-care professionals can begin to anticipate, acknowledge, and address some of the barriers to the use of morphine when discussing it with patients.

The review examining health professionals' views of delivering education to patients with advanced disease discovered three key themes that related to health professionals' capacity to deliver education and aid decision-making; the context in which education is delivered, and the timing and triggers that initiate education (Flemming et al., 2012). There was a perception that continuing professional development, both clinically specific and in educational techniques, enhances health professionals' confidence and skill, which then improves capacity to deliver education. There was felt to be a need for greater role definition among health professionals as to who was responsible for education. Adopting the approach that education and communication is "everybody's business" and ensuring that professionals seek to make use of both planned and opportunistic approaches, requires teams to have an understanding of shared and delegated roles. There are considerable challenges to embedding patient-oriented education into professional routines, often because health professionals believe that they have insufficient time or skills or that it is not their role. Therefore, finding ways to build patient education into existing routines is

Table 2. Findings From the Systematic Reviews of Qualitative Research Exploring Contextual Aspects of Education for Pain Management in Advanced Disease.

Author	Key Findings
Flemming, Closs, Foy, and Bennett (2012)	<p>Capacity</p> <ol style="list-style-type: none"> 1. Continuing professional development, both clinically specific and in educational techniques, enhances health professionals' confidence and skill, which then improves capacity to deliver education. 2. Extra time afforded within specialist clinics enhanced HCPs capacity to deliver education. 3. Effective and patient-oriented practice is central to successful education. <p>Context</p> <ol style="list-style-type: none"> 1. Positive relationships between members of the multidisciplinary team facilitate teamwork and enhance education. 2. Continuity of care and knowledge of patients significantly facilitated professional decision-making. <p>Timing</p> <ol style="list-style-type: none"> 1. Timing of education is problematic. Tension over whether to deliver education on early in the disease to stay ahead of its trajectory or to wait until symptoms occurred in order that the education seemed more relevant to patients. 2. Common triggers for initiation of education and decision-making arose from the assessment and monitoring of patients. 3. Assessment triggers were generally successful in instigating discussions of further disease management strategies.
Flemming (2010)	<ol style="list-style-type: none"> 1. Using morphine is a balancing act and a trade-off between pain relief and adverse effects. 2. Deep-seated concerns regarding the symbolism of morphine, addiction, and tolerance are held by patients, carers, and clinicians, which influence prescription and use. 3. Cancer pain is a referent for disease status and has existential meaning, with the introduction of morphine becoming a metaphor for impending death. 4. Cancer pain is intersubjective, with its perception and reporting influenced by those with whom the patient interacts.
Luckett et al. (2013)	<ol style="list-style-type: none"> 1. Assessment of pain should be comprehensive and tailored to each individual and family. 2. Promote greater understanding and use of nonpharmacological strategies in managing cancer pain. 3. Empower patients and families to assess and manage pain themselves. 4. Disciplinary roles should be reorganized around patient-centered care and outcomes, including timely prescribing of analgesics.

Note. HCPs = Health Care Professionals.

needed. The group who were most likely to share the view that providing patients and carers with information and education during clinics enabled a greater degree of self-management and empowerment were nurse specialists and practice nurses. These professionals were those who were mostly likely to have the capacity to deliver education because of the additional time available to them within their specialist clinics. These findings from the review gave insight into how an educational intervention could be developed to mold into existing clinical practice routines and some of the challenges of this.

Luckett et al. (2013) synthesized 70 papers, of which 48 reported the perspectives of patients, 19 the perspectives of caregivers, and 21 of health-care providers on the assessment and management of cancer pain. The synthesis was driven by a model of patient-centered care that enabled the findings to be mapped against patients, provider, and health-care system level barriers and facilitators to assessing and managing pain (Mead & Bower, 2000). This mapping addressed some of the contextual elements missing from our included effectiveness reviews highlighting that pain assessment and management should be tailored to each individual and family and that those individuals should be empowered, if desired, to undertake this themselves, including being taught about nonpharmacological strategies. A

strong message arose from patients and carers that they expected and valued care that treated them as people rather than focusing on symptoms in isolation and that disciplinary roles should be reorganized to patient-centered care and outcomes.

Integration of the Effectiveness and Qualitative Systematic Reviews

In order to try and contextualize the outcomes of the effectiveness reviews with the findings of the qualitative syntheses, a pragmatic way of integrating the two substantial bodies of data was required. Although work examining the ways of synthesizing primary research of different methodologies is increasingly well documented (Noyes et al., 2011; Pluye & Hong 2014), work on the synthesis of reviews is much less well developed. In the absence of significant guidance, we used methods similar to the constant comparative technique (Glaser, 1965), which have been advocated in the synthesis of primary research (Dixon-Woods, Agarwal, Jones, Young, & Sutton, 2005; Kearney, 2001). Data were extracted from each of the reviews and assembled onto a grid to facilitate cross-study comparison. This involved us examining again the key findings of each review as well as the gaps in the evidence (Tables 1 and 2) and comparing

them in order to identify complementary and explanatory findings between the two sets of evidence.

Results

Integration of the Effectiveness and Qualitative Systematic Reviews

Through the process of comparison, the findings from each review were condensed into categories. These categories represented key elements at the level of patient, carer, health professional, and health-care systems that need significant consideration when developing an educational intervention. Some focused on contextual functions that are intrinsic to an individual, for example, a patient's knowledge and attitude toward cancer pain, while others related to key extrinsic components, such as the role of a multidisciplinary team and the importance of educating health professionals to deliver interventions with fidelity. Factors relating to the functions of an intervention also featured, including the way the education should be developed, formatted, and delivered, the role of enablement and persuasion in overcoming cognitive barriers to pain management and the way that an environment needs structuring and resourcing to ensure the maximum effectiveness of an intervention.

Five categories were identified (Table 3):

- Individualized and patient-centered approach.
- Patients' and carers' knowledge, skills, and attitudes to pain management are addressed.
- Delivery of education: its triggers and format.
- Team approach from health professionals placing the patient at the center of the intervention.
- Health professionals receive appropriate education to manage their professional role.

Individualized and Patient-Centered Approach

Ensuring that any approach to educational intervention was individualized and patient-centered featured in four reviews (Bennett et al., 2009; Koller et al., 2012; Flemming et al., 2012; Luckett et al., 2013). Of particular note was that materials are culturally appropriate, tailored to each individual and their family and that placing the patient at the center of pain management decision-making was key to its success.

Patients' and Carers' Knowledge, Skills, and Attitudes to Pain Management are Addressed

Patients' and carers' knowledge, skills, and attitudes to pain management can have a significant impact on whether or not an educational intervention is successful. The importance of understanding all three attributes featured in six of the seven reviews (Bennett et al., 2009; Cummings et al., 2011; Flemming, 2010; Gorin et al., 2012; Koller et al., 2012; Luckett et al., 2013). Central to this are ways of determining any

cognitive barriers to pain management that patients, carers, and indeed health professionals may have. These barriers were identified through the qualitative evidence syntheses and included concerns about the use of strong analgesics; alongside understanding the significance and meaning that pain can hold as a referent for the status of an individual's disease progression. Consistent screening is required throughout the delivery of an intervention to ensure that this happens and the role of enablement and persuasion within an intervention should be considered to help patients and carers overcome concerns.

Delivery of Education: Its Triggers and Format

Five of the reviews made recommendations regarding the way an educational intervention may be formatted and delivered, including information about the triggers for when it might be delivered (Bennett et al., 2009; Cummings et al., 2011; Flemming et al., 2012; Gorin et al., 2012; Koller et al., 2012).

Through the qualitative evidence syntheses, it was identified that common triggers for the initiation of an educational intervention arise from routine assessment and monitoring of patients. It was acknowledged by health professionals through the qualitative research that the timing of educational interventions can be problematic; tension can exist over whether to deliver education early on in the disease to stay ahead of its trajectory or to wait until symptoms occur in order that the education seemed more relevant to patients.

Exact detail regarding the most effective way to deliver education and its length remains unclear despite the extensive evidence base explored. Findings indicate that the use of written material and a face-to-face educational session of not less than 15 min can be effective for both patients in hospital and in the community (Koller et al., 2012). Single exposure interventions resulted in similar effects on maximum pain intensity as multiple exposures (Bennett et al., 2009). Skills-based interventions showed greater effectiveness compared with educational approaches on reducing pain severity and fidelity of interventions (Gorin et al., 2012) and standardized and systematic approaches to deliver and present the educational intervention including substantial follow-up are central to its success (Cummings et al., 2011). Information and advice need to be clearly given, with written or audiovisual material to support this advice given to the patient to take away (Bennett et al., 2009).

Team Approach From Health Professionals Placing the Patient at the Center of the Intervention

Relationships between members of the multidisciplinary team and between the patient and their health professional both emerged from the qualitative data as influential on the successful delivery of education and the facilitation of patients to report and manage their pain (Flemming, 2010; Flemming et al., 2012). Continuity of care is also central to consistency and fidelity of delivery of education and provides the base on which professional relationships can be developed; it was seen

Table 3. Key Elements to an Educational Intervention.

	Individualized and Patient Centered	Patients and Carers Knowledge, Skills, and Attitudes to Pain Management are Addressed	Delivery of Education: Triggers and Format	Team Approach From Health Professionals Placing Patient at the Center of the Intervention	Health Professionals Receive Appropriate Education to Manage Their Professional Role
Flemming et al. (2012)	Effective and patient orientated practice is central.		Common triggers for initiation of education and decision-making arose from the assessment and monitoring of patients. Timing of education is problematic; tension over whether to deliver education on early in the disease to stay ahead of its trajectory or to wait until symptoms occurred in order that the education seemed more relevant to patients.	Positive relationships between members of the multidisciplinary team facilitate teamwork and enhance education. Extra time afforded within specialist clinics enhanced HPs' capacity to deliver education. Continuity of care and knowledge of patients significantly facilitated professional decision-making. Cancer pain is inter-subjective, with its perception and reporting influenced by those with whom the patient interacts.	Continuing professional development, both clinically specific and in educational techniques, enhances health professionals' confidence and skill, which then improves capacity to deliver education.
Flemming (2010)		Using morphine is a balancing act and a trade-off between pain relief and adverse effects. Deep-seated concerns regarding the symbolism of morphine, addiction, and tolerance are held by patients, carers, and clinicians, which influence prescription and use. Cancer pain is a referent for disease status and has existential meaning, with the introduction of morphine becoming a metaphor for impending death. Promote greater understanding and use of nonpharmacological strategies in managing cancer pain.			
Lucket et al. (2013)	Empower patients and families to assess and manage pain themselves. Assessment of pain should be comprehensive and tailored to each individual and family. Culturally appropriate material.			Disciplinary roles should be reorganized around patient-centered care and outcomes, including timely prescribing of analgesics.	
Koller et al. (2012)		Need to address cognitive barriers to pain management.	Written material and face-to-face educational session of not less than 15 min. Information on how to implement self-management pain strategies. Interventions can be implemented for inpatients and outpatients.		

(continued)

Table 3. (continued)

Individualized and Patient Centered	Patients and Carers Knowledge, Skills, and Attitudes to Pain Management are Addressed	Delivery of Education: Triggers and Format	Team Approach From Health Professionals Placing Patient at the Center of the Intervention	Health Professionals Receive Appropriate Education to Manage Their Professional Role
Gorin et al. (2012)	Psychosocial interventions had meaningful effects on both pain severity and interference.	Skills-based interventions showed greater effectiveness compared with educational approaches on reducing pain severity. Fidelity of delivery is crucial.		
Cummings et al. (2011)	Specifically targeting <i>all three</i> attributes of knowledge, skills, and attitudes of cancer pain and its management.	Use of preconstructed educational material with local development of materials. Use of standardized and systematic approach to deliver and present the educational intervention. Substantial follow-up of the intervention in the form of reinforcement (delivered at least one month following the intervention). High educational dose intensity, that is, equal to or greater than 2 hr in one setting or equal to or greater than four teaching sessions.		Significant resource allocation for the project in the form of a multidisciplinary team, dedicated staff.
Bennett et al. (2009)	Education needs to be patient based in order to improve knowledge on managing pain and analgesia.	Consistent screening is required for misunderstandings about pain and analgesia when commencing analgesic therapy. Clear advice and information needs to be given. Written or audiovisual material supporting the advice should be given to the patient to take away. Single exposure interventions resulted in similar effects on maximum pain intensity as multiple exposures.		Specialist nurses and pharmacists might be the most appropriate HCPs to deliver pain management advice.

as key by both patients and health professionals (Flemming, 2010; Fleming et al., 2012). The organization of disciplinary roles should be based around patient-centered care and outcomes and needs to enable timely prescribing of analgesics (Luckett et al., 2013).

Health Professionals Receive Appropriate Education to Manage Their Professional Role

Three reviews described the importance of continuing professional development in enhancing health professionals' confidence and skill which then improves capacity to deliver education (Bennett et al., 2009; Cummings et al., 2011; Fleming et al., 2012). Education in both clinically specific and educational techniques was seen as essential. Specific professionals emerged as potentially the most appropriate health professionals to deliver pain management advice, these being specialist nurses and pharmacists. Underpinning education for health professionals with significant resource allocation including the use of a multidisciplinary team approach and dedicated staff is at the core of effective educational interventions (Bennett et al., 2009; Cummings et al., 2011).

Discussion

Since the mid-1990s, the implementation of evidence-based health care has helped to revolutionize decision-making for policy and practice (Hoffman, Montori, & Del Mar, 2014). Hierarchies of evidence for the effectiveness of interventions have been developed, and systematic reviews are one of the highest ranking among these (Dicenso, Bayley, & Haynes, 2009). In seeking to develop a new intervention, we sought to employ this evidence hierarchy to inform our approach; four systematic reviews reported on 61 trials representing over 5,000 patients, all of which were directly relevant to the intervention we needed to develop. When we closely examined this evidence, however, we were unable to find the answers we required.

The initial problem of quality of reporting in the primary RCTs led to a further dilution of their "story" when incorporated into a systematic review. These are common issues in palliative care trials alongside problems of recruitment and attrition, which are influential factors on the outcome of a trial. There was also an issue that the details of the components of the educational interventions under trial were simply not reported; this then had a knock-on effect when these trials are incorporated into systematic reviews. Although we had information from a systematic review (or a series of systematic reviews) that educational interventions "work" in as much as they will reduce pain intensity scores, trying to tease apart what were the active components of an intervention in order to use it in practice was impossible, as the detail as to "what it is that works" was not available. This phenomenon is not unique to trials of advanced cancer pain. Glasziou, Meats, Heneghan, and Shepperd (2008) called for improved reporting of trials to include full descriptions of treatment having established that more than

50% of published reports of treatment lacked detail of elements of the intervention. Such gaps in reporting lead to fundamental flaws in the role of systematic reviews when, overall, an intervention is shown to work, but little detail is available as to how findings relate to and can be used in clinical practice or in our case to underpin the development of an educational intervention.

Using syntheses of qualitative research helped to both illuminate and support the findings from the quantitative reviews, with an emerging emphasis on individualized approaches to care, the importance of addressing patients' knowledge, skills, and attitudes toward pain management and the significance of team approaches and interdisciplinary working with patients and their pain at the core. Without these additional data, we were left with a series of reviews that were closely related but lacked a "contextual glue" to stick them together.

There are limitations to our work. We used basic search techniques and expert knowledge to identify the reviews included in this overview of the evidence rather than undertaking full systematic searches. In doing so, we may have missed key publications. We justified this approach as one more likely to be taken by clinicians seeking evidence to decipher clinical uncertainties rather than using protocol driven approaches favored by systematic review methodologists. We emphasize that this work does not claim to follow formal systematic review processes, but instead is a pragmatic reflection of using an evidence base to help decipher "what do we know about" a particular clinical issue. As such it is more closely positioned to a rapid review (Khangura et al., 2012); an approach that is increasingly popular as researchers and clinicians seek to scope an evidence base without the time and costs associated with a full systematic review. Similarly, the method for synthesizing the qualitative and quantitative reviews together was a simple form of constant comparison rather than a more sophisticated approach such as thematic synthesis (Thomas & Harden, 2008). We found it a straightforward and systematic way of combining data to help inform practice and research and it presents a novel way of integrating the findings of systematic reviews of effectiveness and qualitative evidence syntheses.

Conclusion

The integration of both quantitative and qualitative systematic reviews enabled us to create a list of recommendations for developing an educational intervention to help patients and carers manage advanced cancer pain. The recommendations drew on 61 trials and 108 qualitative research articles, represented in seven systematic reviews. In order to effectively implement the findings from systematic reviews of effectiveness into clinical practice, particularly where the detail required for implementation is limited we would recommend, where feasible, such reviews are juxtaposed to relevant qualitative research in order that the contextual components of clinical care become incorporated into the intervention's implementation.

Authors Note

The views expressed in this publication are those of the authors and not necessarily those of the NHS, the NIHR or the Department of Health.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This article presents independent research commissioned by the National Institute for Health Research (NIHR) under the Program Grants for Applied Research Program {RP-PG-0610-10114}.

References

- Bennett, M. I. (2008). What evidence do we have that the WHO analgesic ladder is effective in cancer pain? In H. J. McQuay, R. Moore, & E. Kalso (Eds.), *Systematic Reviews in Pain Research: Methodology Refined* (pp. 303–316). Seattle, WA: IASP.
- Bennett, M. I., Bagnall, A. M., & Closs, S. J. (2009). How effective are patients-based educational interventions in the management of cancer pain? Systematic review and meta-analysis. *Pain, 143*, 192–199.
- Cummings, G. G., Armijo Olivo, S. J., Bionde, P. D., Stiles, C. R., Yurtseven, Ö., Fainsinger, R. L., & Hagen, N. A. (2011). Effectiveness of knowledge translation interventions to improve cancer pain management. *Journal of Pain and Symptom Management, 4*, 915–939.
- Dicenso, A., Bayley, L., & Haynes, R. B. (2009). Accessing pre-appraised evidence: Fine-tuning the 5S model into a 6S Model. *Evidence Based Nursing, 12*, 99–101.
- Dixon-Woods, M., Agarwal, S., Jones, D., Young, B., & Sutton, A. (2005). Synthesising qualitative and quantitative evidence: A review of possible methods. *Journal of Health Services Research & Policy, 10*, 45–53B.
- Ecclestone, C., Wiffen, P., Derry, S., & Moore, A. (2013). Growing pain: Striving for quality relevance and applicability in Cochrane reviews. *Cochrane Database Systematic Reviews, 5*, ED000059.
- Flemming, K. (2007). The synthesis of qualitative research and evidence-based nursing. *Evidence Based Nursing, 10*, 68–71.
- Flemming, K. (2010). The use of morphine to treat cancer related pain: A synthesis of qualitative and quantitative research. *Journal of Pain and Symptom Management, 39*, 139–154.
- Flemming, K., Adamson, J., & Atkin, K. (2008). Improving the effectiveness of interventions in palliative care: The potential role of qualitative research in enhancing evidence from randomized controlled trials. *Palliative Medicine, 22*, 123–131.
- Flemming, K., Closs, S. J., Foy, R., & Bennett, M. I. (2012). Education in advanced disease. *Journal of Pain and Symptom Management, 43*, 885–901.
- Glaser, B. (1965). The constant comparative method of qualitative analysis. *Social Problems, 12*, 4.
- Glasziou, P., Meats, E., Heneghan, C., & Shepperd, S. (2008). What is missing from descriptions of treatment in trials and reviews? *British Medical Journal, 336*, 1472–1474.
- Greco, M. T., Roberto, A., Corli, O., Deandrea, S., Bandieri, E., Cavuto, S., & Apolone, G. (2014). Quality of cancer pain management: An update of a systematic review of under treatment of patients with cancer. *Journal of Clinical Oncology, 32*, 4149–4154.
- Greenhalgh, T., Howick, J., & Maskrey, N. (2014). Evidence based medicine: A movement in crisis? *British Medical Journal, 348*, g3725. doi 10.1136/bmj.g3725
- Gorin, S. S., Krebs, P., Badr, H., Janke, E. A., Jim, H. S. L., Spring, B., . . . Jacobsen, P. B. (2012). Meta-analysis of psychosocial interventions to reduce pain in patient with cancer. *Journal of Clinical Oncology, 30*, 539–547.
- Hoffman, T. C., Montori, V. M., & Del Mar, C. (2014). The connection between evidence-based medicine and shared decision making. *Journal of the American Medical Association, 312*, 1295–1296.
- Kearney, M. (2001) Enduring love: A grounded formal theory of women's experience of domestic violence. *Research in Nursing and Health, 24*, 270–282.
- Khangura, S., Konnyu, K., Cushman, R., Grimshaw, J., & Moher, D. (2012). Evidence summaries: The evolution of a rapid approach. *Systematic Reviews, 1*, 10.
- Koller, A., Miaskowski, C., De Geest, S., Opitz, O., & Spichiger, E. (2012) A systematic evaluation of content structure, and efficacy of interventions to improve patients' self-management of cancer pain. *Journal of Pain and Symptom Management, 44*, 264–284.
- Lavis, J. N., Davies, H. T. O., Gruen, R. L., Walshe, K., & Farquhar, C. M. (2006). Working within and beyond the cochrane collaboration to make systematic reviews more useful to healthcare managers and policy makers. *Health Policy, 1*, 21–33.
- Ling, C., Lui, L. Y. Y., & So, W. K. W. (2012). Do educational interventions improve cancer patients' quality of life and reduce pain intensity? Quantitative systematic review. *Journal of Advanced Nursing, 68*, 511–520.
- Luckett, T., Davidson, P., Green, A., Boyle, F., Stubbs, J., & Lovell, M. (2013). Assessment and management of adult cancer pain: A systematic review and synthesis of recent qualitative studies aimed at developing insights for managing barriers and optimizing facilitators within a comprehensive framework of patient care. *Journal of Pain and Symptom Management, 46*, 229–253.
- Marie, N., Luckett, T., Davidson, P. M., Lovell, M., & Lal, S. (2013). Optimal patient education for cancer pain: A systematic review and theory-based meta-analysis. *Journal of Supportive Care in Cancer, 21*, 3529–3237.
- Mead, N., & Bower, P. (2000). Patient-centeredness: A conceptual framework and review of the empirical literature. *Social Science and Medicine, 151*, 1087–1110.
- Noyes, J., Booth, A., Hannes, K., Harden, A., Harris, J., Lewin, S., & Lockwood, C. (Eds.) (2011). *Supplementary guidance for inclusion of qualitative research in cochrane systematic reviews of interventions. Version 1 (updated August 2011)*. Retrieved from <http://cqrmg.cochrane.org/supplemental-handbook-guidance>
- Noyes, J., Hendry, M., Lewin, S., Glenton, C., Chandler, J., & Rashidian, A. (2016). Qualitative “trial-sibling” studies and

- “unrelated” qualitative studies contributed to complex intervention reviews. *Journal of Clinical Epidemiology*. doi:10.1016/j.jclinepi.2016.01.009
- Petticrew, M., Rehfuss, E., Noyes, J., Higgins, J.P., Mayhew, A., Pantoja, T., . . . Sowden, A. (2013). Synthesizing evidence on complex interventions: How meta-analytical, qualitative, and mixed-method approaches can contribute. *Journal of Clinical Epidemiology*, 66, 1230–1243.
- Pluye, P., & Hong, Q. N. (2014). Combining the power of stories and the power of numbers: Mixed methods research and mixed studies reviews. *Annual Review of Public Health*, 35, 29–45.
- Sheldon, T. A. (2005). Making evidence synthesis more useful. *Journal of Health Service Research and Policy*, 10, 1–4.
- Thomas, J., & Harden, A. (2008). Methods for the thematic synthesis of qualitative research in systematic reviews. *BMC Medical Research Methodology*, 8, 45.
- Wee, B., Hadley, G., & Derry, S. (2008). How useful are systematic reviews for informing palliative care practice? Survey of 25 Cochrane systematic reviews. *BMC Palliative Care*, 7, 13 doi: 10.1186/1472-684X-7-13
- World Health Organization. (1986). *Cancer Pain Relief*. Geneva, Switzerland: Author.