

Original Article

Pain Assessment Tools: Is the Content Appropriate for Use in Palliative Care?

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Abstract

Inadequate pain assessment prevents optimal treatment in palliative care. The content of pain assessment tools might limit their usefulness for proper pain assessment, but data on the content validity of the tools are scarce. The objective of this study was to examine the content of the existing pain assessment tools, and to evaluate the appropriateness of different dimensions and items for pain assessment in palliative care. A systematic search was performed to find pain assessment tools for patients with advanced cancer who were receiving palliative care. An ad hoc search with broader search criteria supplemented the systematic search. The items of the identified tools were allocated to appropriate dimensions. This was reviewed by an international panel of experts, who also evaluated the relevance of the different dimensions for pain assessment in palliative care. The systematic literature search generated 16 assessment tools while the ad hoc search generated 64. Ten pain dimensions containing 1,011 pain items were identified by the experts. The experts ranked intensity, temporal pattern, treatment and exacerbating/relieving factors, location, and interference with health-related quality of life as the most important dimensions. None of the assessment tools covered these dimensions satisfactorily. Most items were related to interference (231) and intensity (138). Temporal pattern (which includes breakthrough pain), ranked as the second most important dimension, was covered by 29 items only. Many tools include dimensions and items of limited relevance for patients with advanced cancer. This might reduce compliance and threaten the validity of the assessment. New tools should reflect the clinical

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relevance of different dimensions and be user-friendly. *J Pain Symptom Manage* 2006;32:567–580. © 2006 U.S. Cancer Pain Relief Committee. Published by Elsevier Inc. All rights reserved.

Key Words

Pain, pain measurement, cancer, palliative care, palliative medicine, clinical practice

Introduction

Pain is among the commonest symptoms in cancer patients receiving palliative care.^{1,2} Proper pain assessment is generally considered a prerequisite for proper pain treatment, but despite dedicated efforts, studies demonstrate that pain still is not adequately assessed, and as such, not satisfactorily managed.^{3–6} In a survey among 897 physicians in the Eastern Cooperative Oncology Group, 76% reported poor pain assessment as the single most important barrier to adequate pain management.⁷

An Expert Working Group of the European Association for Palliative Care (EAPC) reviewed the status of the use of pain measurement tools in palliative care research.⁸ Based on the literature and the experts' opinions, the group gave recommendations on pain assessment in palliative care research. The selection of tools should be based on the study population and the specific study design. For adult patients without cognitive impairment, multidimensional pain assessment with the Brief Pain Inventory short form (BPI-sf)^{9,10} was recommended.⁸ The Short Form McGill Pain Questionnaire (SF-MPQ)¹¹ was recommended for studies that specifically assess pain quality, such as studies focusing on diagnoses and characterization of various pain syndromes.⁸ For simple assessment of changes in pain intensity, Numerical Rating Scales (NRS) were recommended.⁸

Another recent review evaluated the psychometric performance of pain assessment tools in cancer patients in general, both in the clinic and in research.¹² This review demonstrated that single-item unidimensional tools, such as Visual Analogue Scales (VAS) and NRS, were psychometrically satisfactory for assessment of pain intensity in clinical settings. However, these should be used with caution in palliative care patients, particularly because the ability to complete the VAS scales declines with disease

progression.¹² In line with the advice of the EAPC Expert Working Group and as emphasized in other studies,^{8,12–16} it was recommended that pain assessment in cancer clinical care and research should include dimensions additional to intensity. Fewer than 3% of the studies in the review addressed issues of content validity in pain assessment tools, leading to a recommendation that examination and evaluation of the content should be the focus of future studies.¹²

Both reviews recommended selection of a pain assessment tool on the basis of its psychometric performance. No direct recommendations were given on the basis of the tools' contents, even though both reviews recommended tools for multidimensional pain assessment. However, the literature has shown that many of the present multidimensional tools are burdensome to use for both clinicians and patients, especially in populations with advanced disease.^{8,15,17–20} The SF-MPQ was regarded as too demanding to use by the EAPC Expert Working Group and others.^{8,17} A study using both the full version of the BPI and the BPI-sf showed that fewer than 58% of the patients completed all questions in the full version, returning partially completed questionnaires.¹⁸ The study concluded that the BPI was too burdensome for both patients and administrators.¹⁸ The BPI-sf, on the other hand, was regarded as not sufficiently comprehensive.¹⁸ Despite the shorter format, two European studies, including more than 400 palliative care cancer patients, demonstrated that 35% and 40% in the two samples, respectively, returned incomplete BPI-sf questionnaires.^{19,20}

To our knowledge, evidence-based information regarding the content of pain assessment tools is scarce. At present, we are not aware of any studies that have specifically addressed the content of pain assessment tools with specific relevance for cancer pain assessment in

palliative care. The lack of knowledge on what to assess combined with insufficient performance of the recommended tools made us launch the present study, with the following aims: 1) to examine the content of the existing pain assessment tools for cancer pain in palliative care practice and research, 2) to evaluate the relevance of different dimensions and items for cancer-pain assessment in palliative care practice and research by consulting a panel of international experts, and 3) to explore the need for additional items, dimensions, or assessment tools specific to palliative care.

Methods and Materials

The methodology consisted of two approaches. First, two literature searches were conducted in order to identify the content of existing pain assessment tools. Second, an expert panel was consulted to evaluate and classify the content of the tools identified by the literature searches.

Literature Searches

Two literatures searches were conducted. First, a systematic search on pain assessment tools used in palliative care was performed. This was supplemented by a broader search for pain assessment tools used in other populations. To be included in the *systematic search*, the title or abstract should describe the following: 1) a self-report method used for pain assessment or the name of an assessment tool explicitly used for self-report of pain, and 2) a sample with adult advanced cancer patients receiving palliative care. The search was further restricted to publications in English. Case reports, editorials, letters, and commentaries were excluded.

A systematic, computerized literature search in PubMed (MEDLINE) and Cancerlit (1966 to February 2003), PsychInfo (1972 to February 2003), and Cinahl (1970 to February 2003) was done. The Cochrane Library review group for Pain, Palliative and Supportive Care was also consulted. The following key words and medical subject headings were used: *Pain assessment* or *Pain measurement* combined with *Palliative care* or *Palliative medicine*. All titles and abstracts were examined in relation to

the inclusion criteria. When a tool was named and/or described as a measure for pain, the full paper was examined for further information. If applicable, the original paper describing the construction of the identified tool was examined for further information.

To ensure a more complete coverage of pain assessment tools, we decided to broaden the study with an *ad hoc search* applying wider search areas in the Ovid-MEDLINE journal archive and the BIBSYS book archive. The aim was to identify self-report-based assessment tools for adults including at least one item for pain assessment. This included assessment tools developed for, and used, in patient populations other than palliative care. The aim was to identify supplementary information regarding the pain dimensions being covered by tools developed for other patient populations. The terms in the searches were *Pain assessment* or *Pain measurement*. The Ovid-MEDLINE-bases from 1989 through February 2003 were searched. Because this was a supplementary ad hoc search and because of the vast number of publications on pain assessment in general, the following MEDLINE limitation options were deployed: English language, abstracts available, humans, all adult (19 years or above), and full text. The Norwegian Search Library database BIBSYS (international) was searched for books. The results from the two searches were combined and duplicates were deleted.

The titles and abstracts of the papers were browsed in order to identify those including information about assessment tools. When a tool was named and described as a measure for pain, the full text paper was consulted. Tools especially designed for measurement of back and neck pain and headache/migraine were included, as they are numerous and had the potential to present pain assessment information of general value. We decided not to include ad hoc questionnaires or tailor-made tools for the following specialized areas of interest: ocular pain, ankle and Achilles pain, myofascial pain, mucositis, dental pain, wheelchair user's shoulder pain, and jaw pain, as their potential for adding general cancer pain information for palliative care was evaluated as small. The original papers describing the construction of the identified tools were examined for further information about the

tool. The books were evaluated by the background information provided by the BIBSYS site and by browsing the titles. Only books that seemed to be devoted to pain assessment as the main topic were included. The *Oxford Textbook of Palliative Medicine*,²¹ *Quality of Life: Assessment, Analysis and Interpretation*,²² and *Quality of Life and Pharmacoeconomics in Clinical Trials*²³ were also included because they present relevant assessment tools and were in the first author's possession.

Pain Dimensions and Items

The terms *pain dimensions* and *pain domains* are used interchangeably in the literature on pain. Intensity is typically referred to as a dimension, while location is commonly described as a domain. However, as both concepts refer to aspects of the pain experience, the term dimension is used throughout the present work.

An item is operationalized in the form of a question or a statement.²² For example, an item conceptualized as "pain intensity" might be operationalized like "How bad is your pain?" or "My pain is as severe as: ...". To summarize the numerous items across tools, we defined an item as a question or a statement that requires an answer. A question such as no. 21 from the BPI,²⁴ "I believe my pain is due to:", where the respondent is provided with three choices, was conceptualized, therefore, as three separate items. Body maps for pain were counted as one item (BPI), or one item per question asked in tools that ask about pain in different body parts (Regional Pain Scale²⁵). We defined a *pain item* as a question/statement that explicitly refers to pain, is related to pain (headache), or at least includes pain (among other symptoms) in the wording or in the questionnaires' guidelines. Thus, items about psychological distress in a pain assessment tool were not counted unless directly phrased as pain-related distress. Global items about how the present health situation interferes with health-related quality of life (HRQOL) were not defined as pain items, in contrast to items specifically asking about how pain, alone or in combination with other symptoms, interferes with a specific function.

Content Categorization

All the included assessment tools and the papers describing the construction of the tools

were examined for information about the content expressed by their pain dimensions and the items covering them. All dimensions that were either described as assessed by the tool developers or that were named in the tool were included in a list of assessed pain dimensions. The tools are presented in Table 1, with their pain dimensions and number of items within each dimension. In some tools, all dimensions were not specified by the constructors, and had to be conceptualized on the basis of the items' content. The items covering the dimensions that were not defined were compared to items from other tools with known dimensionality in order to examine the similarity. Items asking about severity, intensity, and amount of pain were consequently named intensity items, while items asking about where it hurts were classified as location items. This was performed by the first author and later an international expert panel was asked to delete or add other dimensions in order to achieve coverage of all necessary dimensions for palliative care (to be described later). In cases of uncertainty about the actual dimensions within a tool, the dimensions were placed in brackets (Table 1). If only one of the dimensions was obvious, it was decided to label the tool as unidimensional, with the other potential dimensions listed in brackets. In approximately 30% of the tools, we assigned items to dimensions other than those originally suggested by the constructors. This is exemplified by the Oswestry Disability Index,⁵⁴ item no. 1: "Pain killers give complete relief from pain." This item was named pain intensity by the developers, but when comparing this wording against similar items in other tools, we classified it as also assessing effects of treatment. In cases with disagreement between tool developers' characterization of included dimensions and our comparisons between tools, dimensions were included in addition to the developers' dimensions (that always were taken into account). The categorization of the dimensions and items was later reviewed by the expert panel.

Expert Panel

In line with the study objectives, an international expert panel was established for the identification and the evaluation of the importance of the different pain dimensions for

Table 1
Assessment Tools

	First Author, Year	Pain Dimensions	Pain Items	Unidimensional
<i>Pain Tools</i>				
24-hour Migraine Quality-of-Life Questionnaire (MQoLQ)	Hartmaier, 1995 ²⁶	Aff, Bel, Inf, Int	15	
Aberdeen Low Back Pain Scale (AB)	Ruta, 1994 ²⁷	Loc, Inf, Int, Rel, Temp	16	
Back Pain Function Scale (BPFS)	Stratford, 2000 ²⁸	Inf	12	X
Borg Category-Ratio 10 Pain Scale (CR10)	Borg, 1998 ²⁹	Int (but depends on wording)	1	X
*Brief Pain Diary for ambulatory cancer care (BPD)	Maunsell, 2000 ³⁰	Inf, Int, Treat	8	
Brief Pain Inventory (BPI)	Cleeland, 1991 ^{10,24}	Bel, Hist, Int, Inf, Loc, Qual, Rel, Treat	49	
*Brief Pain Inventory short form (BPI-sf)	Cleeland, 1991 ^{9,10}	Int, Loc, Inf, Treat (Qual)	15	
Cervical Spine Outcome Questionnaire (CSOQ)	BenDebba, 2002 ³¹	Inf, Int, Loc, Treat (Aff)	24 (Aff not counted)	
Cognitive Risk Profile (CRP)	DeGood, 2001 ³²	Aff, Bel, Inf, Rel	About 58	
Colored Analogue Scale (CAS)	McGrath, 1996 ³³	Int (but depends on wording)	1	X
Chronic Pain Coping Inventory (CPCI)	Jensen, 1995 ³⁴	Bel, Treat	65	
Coping Strategies Questionnaire (CSQ)	Rosentiel, 1982 ³⁵	Bel (Rel)	50	X
Dallas Pain Questionnaire (DPQ)	Lawlis, 1989 ³⁶	Bel, Int, Inf	13	
Descriptor Differential Scale (DDS)	Gracely, 1988 ³⁷	Int	12	X
*Faces Pain Scale (FAS)	Bieri, 1990 ³⁸	Int	1	X
Graded Chronic Pain Scale (GCPS)	Von Korff, 1992 ³⁹	Inf, Int	7	
Headache Disability Inventory (HDI)	Jacobson, 1994 ⁴⁰	Bel, Aff and/or Inf	25	
Initial Pain Assessment Tool (IPAT)	McCaffrey, 1989 ⁴¹	Inf, Int, Loc, Qual, Temp	18	
Integrated Pain Score (IPS)	Tamburini, 1987 ⁴²	Dur, Int	6	
Leeds assessment of neuropathic symptoms and signs (LANSS)	Bennett, 2001 ⁴³	Qual, Temp	5	
Low Back Pain Rating scale (LBPR)	Manniche, 1994 ⁴⁴	Bel, Inf, Int, Loc	21+ tests	
McGill Pain Questionnaire (MPQ)	Melzack, 1975 ^{45,46}	Int, Loc, Qual, Temp	23	
*Short form McGill Pain Questionnaire (SF-MPQ)		Int, Qual	17	
*Memorial Pain Assessment Card (MPAC)	Fishman, 1987 ⁴⁷	Int, Treat	3	
Migraine Disability Assessment Scale (MIDAS)	Stewart, 2000 ⁴⁸	Dur, Inf, Int, Loc, Qual, Rel, Treat	20	
Multiperspective Multidimensional Pain Assessment Protocol (MMPAP)-Patient Scale	Rucker, 1996 ⁴⁹	Aff, Dur, Inf, Temp (Bel)	8 (displayed in paper)	
Neck Pain and Disability Scale (NPAD)	Wheeler, 1999 ⁵⁰	Aff, Inf, Int, Treat	20	
Neuropathic Pain Scale (NPS)	Galer, 1997 ⁵¹	Aff, Int, Qual, Temp	12	
*Numerical rating scales (NRS)	Example in Turk, 2001 ⁵²	Int (but depends on wording)	1	X
Oswestry Disability Index 2 (OSW-2)	Cited in Roland, 2000 ⁵³	Inf, Int (Rel)	10 (2 are different from OSW)	
Oswestry Low-Back Pain Disability Questionnaire (OSW)	Fairbank, 1980 ⁵⁴	Hist, Inf, Int and/or Treat	10	
*Pain Assessment Questionnaire for a patient with advanced disease (PAQ) (guidelines for assessment)	Perron, 2001 ²	Bel, Dur, Hist, Inf, Int, Loc, Qual, Rel, Temp, Treat	14+ discussion topics on Aff, Bel, Inf Treat	

(Continued)

Table 1
Continued

	First Author, Year	Pain Dimensions	Pain Items	Unidimensional
Pain Beliefs Questionnaire (PBQ)	Edwards, 1992 ⁵⁵	Bel, (Rel)	20	X
Pain Beliefs and Perceptions Inventory (PBAPI)	Williams, 1989 ⁵⁶	Bel, Temp	16	
Pain Catastrophizing Scale (PCS)	Sullivan, 1995 ⁵⁷	Bel, (Aff)	13	X
Pain Disability Index (PDI)	Tait, 1987 ⁵⁸	Inf	7	X
Pain and Impairment Relationship Scale (PAIRS)	Riley, 1988 ⁵⁹	Bel, (Inf)	15	X
Pain Stages of Change Questionnaire (PSOCQ)	Kerns, 1997 ⁶⁰	Bel	30	X
Regional Pain Scale (RPS)	Wolfe, 2003 ²⁵	Int, Loc	38	
Quebec Back Pain Disability Scale (QBPDS)	Kopec, 1996 ⁶¹	Inf	20	X
Roland-Morris Disability Questionnaire (RDQ)	Roland, 1983 ⁶²	Inf, Temp, Rel	24	
Survey of Pain Attitudes (SOPA)	Jensen, 1987 ⁶³ , 1996	Aff, Bel	57 ³²	
*Verbal Rating Scales (VRS)	Turk, 2001 ⁵²	Int (but depends on wording)	1	X
*Visual Analogue Scales (VAS)	Example in Turk, 2001 ⁵²	Int (but depends on wording)	1	X
*Wisconsin Brief Pain Questionnaire (WBQP)	Daut, 1983 ⁶⁴	Bel, Hist, Inf, Int, Loc, Qual, Treat	19	
Vanderbilt Pain Management Inventory (VPMI)	Brown, 1987 ⁶⁵	Bel	18	X
West Haven-Yale Multidimensional Pain Inventory (MPI)	Kerns, 1985 ⁶⁶	Aff, Bel, Inf, Int, Rel	34	
*World Health Organization Quality of Life Assessment Instrument –Pain Module (WHQOL-Pain)	Mason, 2004 ⁶⁷	Aff, Bel, Dur, Inf, Int, Loc, Temp, Treat	28	
<i>General Symptom/HRQoL Tools</i>				
Arthritis Impact Measurement Scale (AIMS)	Meenan, 1980 ⁶⁸	Int and/or Temp, Qual, (Loc)	4 (+1 about morning stiffness)	
Assessment of Quality of Life Instrument (AQoL)	Hawthorne, 1999 ⁶⁹	Int	1	X
Breast Cancer Treatment Outcomes Scale (BCTOS)	Stanton, 2001 ⁷⁰	Int, (Aff)	3	X
Coping with Health, Injuries, and Problems Scale (CHIP)	Found in Hadjistavropoulos, 1999 ⁷¹	Unavailable	32	
Dartmouth COOP Functional Health Assessment Charts (COOP)	Presented in Nelson, 1996 ⁷²	Int	1	X
*Edmonton Functional Assessment Tool-2 (EFAT-2)	Kaasa, 2001 ⁷³	Inf	1	X
*Edmonton Symptom Assessment Scale (ESAS)	Bruera, 1991 ⁷⁴	Int	1	X
*European Organization for Research and Treatment of Cancer Quality-of-Life Questionnaire (EORTC QLQ-C30)	Aaronson, 1993 ⁷⁵	Inf, Int	2	
EORTC Head and Neck Cancer Module QLQ-H&N37	Bjordal, 1994 ⁷⁶	Int, Loc, Treat	4	
Euro QOL Group (EQ-5D)	Rabin, 2001 ⁷⁷	Int	1	X
Expanded Prostate Cancer Index Composite (EPIC)	Wei, 2000 ⁷⁸	Inf, Temp, Loc	5	
*Functional Assessment of Cancer Therapy Scale (FACT-G)	Cella, 1993 ⁷⁹	Int	1	X
Functional Living Index-Cancer (FLIC)	Schipper, 1984 ⁸⁰	Bel, Inf	2	
Fibromyalgia Impact Questionnaire (FIQ)	Burckhardt, 1991 ⁸¹	Inf, Int	2	
Head and Neck Cancer-Specific Quality of Life (HNQOL)	Terrell, 1997 ⁸²	Aff, Loc, Treat	3	
Health Assessment Questionnaire (HAQ)	Fries, 1980 ⁸³	Int	1	X
HRQoL Questionnaire for Advanced Prostate Cancer Patients (QAPC)	Cleary, 1995 ⁸⁴	Inf, Int	4	
Health Utilities Index Mark 3 (HUI3)	Feeny, 1996 ⁸⁵	Int (Inf)	1	X
Hospice Quality of Life Index (HQLI)	McMillan, 1994 ⁸⁶	Treat	1	X

Illness Behavior Questionnaire (IBQ)	Pilowsky, 1984 ⁸⁷	Bel, Int	3	
M. D. Anderson Symptom Inventory (MDASI)	Cleeland, 2000 ⁸⁸	Int	1	X
Medical Outcome Study 116 item core set (MOS-116)	RAND, 2003 ⁸⁹	Inf, Int, Temp	15	
Nottingham Health Profile (NHP)	Hunt, 1985 ⁹⁰	Int, Temp, Rel	8	
Pain and Distress Scale (PAD)	Zung, 1983 ⁹¹	Int	1	X
Palliative Care Outcome Scale (POS)	Hearn, 1999, ⁹² proxy and self-report	Inf (Aff)	1	X
Quality of Life Index (QLI)	Padilla, 1983 ⁹³	Int	1	X
Rotterdam Symptom Checklist (RSCL)	Presented in de Haes, 1990 ⁹⁴	Int, Loc	4	
*Medical Outcome Study 36-item short form health survey (SF36)	Ware, 1992 ⁹⁵ , McHorney, 1993 ⁹⁶	Inf, Int	2	
Short Musculoskeletal Function Assessment Questionnaire (SMFA)	Svontkowski, 1999 ⁹⁷	Inf, Int	2	
Therapy Impact Questionnaire (TIQ)	Tamburini, 1992 ⁹⁸	Int, (Loc, Int of headache)	2	X
Toronto Western Spasmodic Torticollis Rating Scale (TWSTRS)	Consky, 1994 ⁹⁹	Dur, Inf, Int	3	
Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC)	Bellamy, 1988 ¹⁰⁰	Inf, (Int)	5	X

Treat = Effects of treatment, Aff = Pain affect, Bel = Pain beliefs, Dur = Duration, Hist = Pain history, Inf = Pain intensity, Int = Pain interference, Int = Pain intensity, Loc = Pain location, Qual = Pain quality.

Rel = Pain relief—exacerbating/relieving factors, Temp = Temporal pattern.

Tools marked with * are from the systematic literature search. Tools are presented alphabetically.

Dimensions are placed in brackets when it is unclear if the dimension is assessed or not, or when it is only partly assessed.

palliative care pain assessment. This panel consisted of six physicians who are experienced pain and palliative care specialists in both clinical practice and research from five European countries and members of the EAPC Research Network. The expert panel was involved in two steps.

First, the identified pain dimensions were alphabetically listed and mailed to the experts together with an instruction sheet. They were asked to consider both clinical and research objectives combined, and to provide one rank of the dimensions for relevance and importance for pain assessment (clinical + research) in palliative care. The experts were instructed to add new dimensions if they considered any to be missing, and to delete those that they found inappropriate or unnecessary to assess in palliative care. Thus, the most important dimension was to be ranked as number one, the second most important as two, and so on. The overall importance of each dimension was calculated as the average of the expert rankings. Thus, the lowest total score signified the most important dimension. Dimensions that were deleted were all given the highest score for the purpose of analyses. The five top-ranked dimensions were retained for the next phase of this study.

Based on the experts' definitions and selection of pain dimensions, the first author assigned items to the appropriate dimensions. As the second expert task, the list with all the appropriate items assigned to the five highest-ranked dimensions was mailed to the experts. This time they were asked to evaluate the assignments, to move items to the appropriate dimension if they disagreed with our suggestions, and to delete items that they deemed inappropriate for palliative care.

Results

Literature Search

A total of 412 citations were retrieved from the systematic search, with 10 being duplicates. Examination of the titles and the abstracts identified 48 papers that met our inclusion criteria. The majority of the excluded studies failed to meet the criterion regarding advanced cancer patients receiving palliative care. The search disclosed 16 different tools for pain assessment

used in palliative care studies. The most popular pain assessment tool was the VAS, used in 21 (44%) of the included studies, followed by NRS with 8 (17%), and the MPQ and the BPI with 6 (13%) each (the tools that were found in the systematic literature search are marked with an * in Table 1).

The ad hoc search in the Ovid-MEDLINE databases resulted in a total of 18,021 hits as follows: *pain assessment* produced 919 hits, while *pain measurement* identified 17,102 papers. When the searches were limited according to our criteria, the numbers were reduced to 48 and 1,343, respectively. The full text limitation that was applied to this search only, reduced the number of hits in the ad hoc search by 85%. After duplicates were deleted, 1,359 papers were eligible for this report. The BIBSYS search identified 100 books.

The entire literature search generated 80 different assessment tools containing at least one pain item. The tools were categorized into Pain Tools ($n=48$) and General Symptom/HRQOL Tools ($n=32$). The tools can be separated into those that assess pain with a unidimensional approach usually measuring pain intensity, and the multidimensional tools that include more than one pain dimension.

Among the 48 Pain Tools, 16 (33%) tools were unidimensional, and of 32 General Symptom/HRQOL Tools, 16 (50%) were unidimensional with regard to pain. The majority of the unidimensional tools (58%) were single-item scales such as VAS, Verbal Rating Scales (VRS), and NRS. Pain intensity was the most common dimension, targeted in 60% of the tools.

Forty-eight (60%) of the tools assessed pain multidimensionally. Sixty-seven percent of the Pain Tools were multidimensional, compared with 50% of the General Symptom/HRQOL tools. Of the multidimensional tools, 38% were two-dimensional. The most frequently appearing dimension was intensity, included in 75% of the multidimensional tools. Other frequently occurring dimensions were interference, location, and beliefs. These dimensions were particularly targeted by two kinds of specialized tools: disease-specific tools (with a majority of low back Pain Tools), and tools that measure pain affect, beliefs, and coping-related issues in nonmalignant chronic pain patients.

Pain Dimensions and Items

The search identified 11 different pain dimensions (Table 1). These were, in alphabetical order: Effects of treatment, Pain affect, Pain beliefs, Pain duration, Pain history, Pain intensity, Pain interference with HRQOL, Pain location, Pain quality, Pain relief (exacerbating/relieving factors), and Temporal pattern (dimension descriptions are offered in Table 2). The three most frequently assessed dimensions were: intensity in 55 tools, interference in 37, and beliefs in 22, while duration and history were assessed in six and four tools, respectively.

The tools contained 1,011 pain items. There were 893 items in the Pain Tools (88%) and 118 items in the General Symptom/HRQOL Tools. Most items were formulated as statements or as questions followed by an NRS, VAS, or VRS.

Expert Panel Evaluation

The expert panel suggested that the dimensions for “pain relief (exacerbating/relieving factors)” and “effects of treatment” be collapsed into one dimension named *treatment and exacerbating/relieving factors*, after the initial suggestion of one expert and the approval by the others. The rationale was to make one dimension that includes all nontreatment and

Table 2
Pain Dimensions Ranked by Experts According to Importance for Pain Assessment in Palliative Care

	Pain Dimensions	Descriptions
1	Pain intensity	How much it hurts, sensory component
2	Temporal pattern	Pain fluctuations, variations in intensity and occurrence
3	Treatment and exacerbating/relieving factors	Medical and nonmedical
4	Pain location	Where it hurts
5	Pain interference	How much components of HRQOL are reduced by pain
6	Pain quality	The specific physical sensation associated with the pain
7	Pain affect	Emotional component of pain, the unpleasantness and significance of pain
8	Pain duration	How long pain has lasted
9	Pain beliefs	Attitudes, coping strategies and beliefs about causes and consequences
10	Pain history	Previous pain experiences

treatment factors (medical and nonmedical) that influence pain. The experts thereby reduced the number of pain dimensions from 11 to 10 and ranked them, according to the perceived importance for pain assessment in palliative care (Table 2).

Pain intensity was rated as the most important dimension by four of the experts and as the second most important by the two others. All experts agreed that the first five dimensions were important for pain assessment in palliative care. The other five were ranked as less important. Furthermore, by at least one expert, each of the last five dimensions was regarded as not important enough to be assessed in palliative care patients, weighed against the assessment burden. No additional dimensions were suggested.

The item distribution for the five highest-ranked dimensions, according to the expert evaluation, is presented in Table 3. The experts rearranged three items from our original dimension assignment. All of these were moved from the intensity dimension to the treatment and exacerbating/relieving factors dimension, due to the focus on pain intensity after medication with painkillers. Four items, among them the item, "My life is hardly worth living with all of this pain,"³² were deleted because they were regarded by at least one expert as inappropriate (unnecessarily offensive) for use in palliative care.

Pain intensity items could be categorized into two groups: statements about pain and questions about pain. The statements include descriptions of pain sensations, experiences of intensity level, and items relating intensity to the need for analgesics. The intensity questions approached pain intensity in four ways (according to the tool constructors dimension definitions): suffering caused by pain, intensity of the pain, dependency on analgesics, and

how bad pain has been. Most tools did not include "intensity" in the wording of the item. The majority asked about *pain*, when addressing *pain intensity*.

Tool Content Compared to Expert Recommendations

Three of the reviewed tools covered all of the five highest-ranked dimensions: the Aberdeen Low Back Pain Scale (AB),²⁷ the World Health Organization Quality of Life Assessment Tool-Pain Module (WHQOL-Pain),⁶⁸ and the Pain Assessment Questionnaire for a patient with advanced disease (PAQ).² The latter is not an ordinary questionnaire, but a pain assessment protocol based on the guidelines presented in *Management of Cancer Pain: Clinical Practice Guidelines*. The dimensions for pain quality, beliefs, and pain history (ranked 6, 9, and 10, Table 2) were also covered by the PAQ guidelines. The WHQOL-Pain tool included pain affect, duration, and beliefs (respectively ranked 7, 8, and 9), in addition to the five that were recommended.

Discussion

A number of different tools for pain assessment is available. Pain is a complex phenomenon, however, and evaluation of the content of the existing tools revealed great diversity of dimensions and items. This variety might affect the validity of pain assessment in general. It also makes comparisons between studies difficult,^{3,12} as recently noted in two Cochrane reviews that concluded that meta-analyses were impossible to perform due to the use of different pain assessment tools.^{101,102} Among the studies that were included in the systematic review, the VAS was the most frequently used

Table 3
Number of Items per Dimension

	Intensity	Temporal pattern	Treatment	Location	Interference
Pain tools	103	18	67	76	206
General symptom/HRQOL tools	35	11	18	17	25
Total	138	29	85	93	231

Items that measure several dimensions are counted once for each dimension. Example: the RPS instructs the patients to rate intensity for a list of joints and body parts. All 38 items are counted as one item on intensity and one on location. Items in dimensions in brackets (Table 1) were counted when summarizing the total item number.

(44%). According to two recent reviews on pain assessment,^{8,12} this is suboptimal.

Ten pain dimensions were identified and confirmed by the expert panel. The expert panel regarded five dimensions as appropriate for comprehensive pain assessment in both palliative care practice and research. Although these five were considered optimal, the present results do not state that all five dimensions should be included in all situations. The response burden must be weighed against the need for information, as emphasized in the EAPC review.⁸ Intensity was ranked as the most important dimension, in line with results from the literature. Thus, it should be included in most assessments. The subsequent four dimensions are recommended for comprehensive assessment, but optional. Temporal pattern was regarded as the second most important dimension. However, only 16% of the tools assessed this dimension, providing the lowest number of items (29 items, Table 3). A recent review supports this lack of focus by demonstrating that fewer than 2% of the cancer pain tools measured temporal aspects of pain.¹² Temporal patterns are of special interest for palliative care, because of high prevalence of breakthrough pain.¹⁰³ As most tools were developed for other patient populations, this may explain why temporal aspects were omitted. The five dimensions that were recommended by the expert panel are covered by three tools only. The AB includes the suggested dimensions, and contains items that may be suitable if the word “back” is removed. The WHQOL-Pain includes the essential dimensions with 149 items covering both pain and other issues of HRQOL (+ items about background information), but is too lengthy for use in palliative care. The PAQ covers the recommended content, as well as additional dimensions, but in its present form it is just an assessment guide and not a tool.² Assessment in palliative care should be guided by a fine line between the need for full information and the patients’ limited capacity for providing it. Tool brevity is of great importance for valid and usable assessment. Many tools include dimensions of limited relevance to patients with advanced disease. Patients with advanced cancer are the target group for only a few of the multidimensional Pain Tools, such as the Brief Pain Diary (BPD),³⁰ the BPI-sf, and the PAQ. The BPD and the BPI-sf are not as comprehensive as

recommended by the experts and the PAQ needs further development. Many General Symptom/HRQOL tools contain only one or two pain dimensions and the number of items is too few to provide comprehensive pain information (Table 1). Consequently, they are inadequate as stand-alone pain tools. In addition, as many as 38% of the multidimensional tools are only two-dimensional, and do not allow for comprehensive pain assessment. At the moment there is no suitable pain assessment tool that covers the most important dimensions for pain assessment in palliative care patients according to the experts’ recommendations.

Among the 1,011 items, there is great overlap, often with minor wording differences across tools. One example is that most disease-specific tools ask about pain intensity in all the areas of interest, leading to a large number of items relating to intensity in different body parts (Table 3). The finding that most tools only ask about pain when assessing intensity might highlight a problem. Multidimensional tools, asking about pain interference with functions, pain quality, and temporal pattern, suddenly shift to a plain “how bad is your pain” item. Such wording might confuse the patients to summarize the total pain or to give pain affect information instead of rating intensity.

We recognize some limitations in this study. Due to the vast number of publications in the field, certain limitations were applied to the literature searches. Consequently, some assessment tools have been missed. The literature search aimed at covering the range of different pain dimensions and items with specific focus on their content rather than identifying all existing pain tools. We believe this strategy identified a sufficient number of relevant tools for the purpose of content evaluation. It was challenging to distinguish the different dimensions, as some were overlapping and strongly associated with each other. However, the intention of this study was to give an overview of the content of pain tools, not to provide an examination of their psychometric properties. Some dimension assignments might, therefore, be debatable. Only physicians participated in the expert panel and this may limit the generalizability of the results. However, nurses, psychologists, and physiotherapists evaluated the process and they reviewed and approved the

results from the expert panel. The rationale behind this choice of experts was that we wanted an evaluation of the content that was directly based on experience from palliative care clinical work and palliative care research. Thus, within the EAPC research network, physicians experienced in both the clinic and research were asked to participate.

In conclusion, a large number of pain assessment tools exist, but there is no agreement on what they should assess. This study offers an original recommendation on the appropriateness of the content for pain assessment in palliative care. It is our opinion that there is a need to improve and/or develop an international standard for pain assessment in palliative care in the clinic and in research. A consensus on these matters might make future meta-analyses possible. The ideal assessment tool for patients in palliative care should be precise (high validity and reliability) and short. It should be flexible in such a way that it could be used in different patient populations and various situations, for example, by assessing different combinations of dimensions. These aims can probably be achieved most efficiently by using dynamic computerized tools^{104,105} rather than paper-based questionnaires. Such tools can also be integrated with other electronic data from the hospital's database and thereby be suitable for use both in the clinic and in research.

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