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Johnsen, Anna Thit; Petersen, Morten A; Snyder, Claire F; Pedersen, Lise; Groenvold, Mogens

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How does pain experience relate to the need for pain relief? A secondary exploratory analysis in a large sample of cancer patients

Anna T. Johnsen, Psychologist, Ph.D.*^{a,b}

Morten A. Petersen, MSc.^a

Claire F. Snyder, Ph.D.^c

Lise Pedersen, MD, DMSc^a

Mogens Groenvold, MD, Ph.D., DMSc^{ad}

^aThe Research Unit, Department of Palliative Medicine, Bispebjerg Hospital 20D,
Bispebjerg bakke 23, 2400 Copenhagen NV, Denmark.

^bDepartment of Psychology, University of Southern Denmark, 5230 Odense, Denmark.

^cDepartment of Medicine, Johns Hopkins University School of Medicine, 624 N Broadway,
Baltimore, U.S.

^dDepartment of Public Health, University of Copenhagen, Øster Farimagsgade 5, 1014 Copenhagen
K, Denmark

***Corresponding author:**

Anna Thit Johnsen, The Research Unit, Department of Palliative Medicine, Bispebjerg Hospital
20D, Bispebjerg bakke 23, 2400 Copenhagen NV, Denmark. Telephone: (+45) 3531 6226. Fax:
(+45) 3531 2071. Email: anna.thit.johnsen@regionh.dk

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Abstract (max 250)

Purpose: To explore (1) the information obtained from related but conceptually different approaches to pain assessment and (2) the extent to which the EORTC QLQ-C30 can be used as a screening tool to predict patient-reported need for pain relief.

Methods: Cancer patients randomly sampled from 56 hospital departments were included. Questionnaire items assessed patients' a) pain experience using the EORTC QLQ-C30 pain scale and its two pain items separately (pain intensity and pain interference) and b) pain burden and c) need for pain relief using the Three-Levels-of-Needs-Questionnaire (3LNQ).

Results: Of the 2,364 patients contacted by mail, 1,447 (61%) completed the questionnaires. Among these, 51% reported at least 'a little' pain on the pain intensity item. The number of patients reporting pain to be a burden was similar, and pain experience and pain burden were highly correlated (correlation coefficients ranged from 0.85 to 0.91). Pain experience and pain burden were moderately correlated with the need for pain relief. A receiver operating characteristic (ROC) curve analysis showed that the EORTC QLQ-C30 discriminated between patients with and without a need for pain relief to an acceptable degree (AUC: 0.73-0.77). The cut-point 'a little' gave a sensitivity of 84% and specificity of 59% for the item 'Have you had pain?' and a sensitivity of 72% and a specificity of 72% for the pain scale.

Conclusions: The majority of patients who experienced pain felt it to be a problem. Pain experience and pain burden were substantially related to need for pain relief and the latter could be predicted from the EORTC QLQ-C30.

Key words: Cancer; Pain; Need assessment; Screening; Patient Reported Outcome; Questionnaire

Running Title: Assessment of patients' need for pain relief

Introduction

Pain is one of the most distressing symptoms and can have a significant impact on patients' quality of life [1-3]. Pain is a frequent, and often undertreated, symptom among cancer patients, with 33 to 64% of patients experiencing pain depending on disease trajectory and treatment phase [4-6]. There are many barriers to adequate pain management [7-9], including poor patient-provider communication [7]. Although pain is one of the most often discussed symptoms in the clinical setting [10,11], some patients' pain may go unrecognized, and the level of pain may be underestimated by the doctor [6]. Patients may choose not to tell their doctor about it because they do not want to burden the doctor with too many issues or because they are concerned about side effects of or addiction to pain medication [7-9].

One approach that may facilitate doctor-patient communication and improve symptom control is to introduce systematic screening with patient-reported outcomes (PRO) (for example a questionnaire asking about pain and other symptoms) in the clinical setting. Although the evidence regarding the effectiveness of PROs in the clinical setting is somewhat mixed [12], there are positive results suggesting that the use of PROs leads to an increase in the recognition and discussion of symptoms [11-15]. PROs may also have a positive impact on doctor-patient communication about goals and priorities in the long run, although these endpoints are rarely assessed in studies evaluating the effectiveness of PROs [12,14].

If PROs are to be used in the clinical setting it is important to enhance our understanding of how they should be interpreted and how they work [14,16,17]. For example, is experiencing a particular symptom the same as having a problem with the symptom? Is there concordance between experiencing a symptom and having a need for care regarding that symptom?

One widely used questionnaire for the assessment of pain in cancer patients is the European Organisation for Research and Treatment of Cancer Quality of Life Questionnaire-Core 30 (EORTC-QLQ-C30). It is used for a variety of purposes, including as a screening tool in the clinical setting [18,19]. The EORTC QLQ-C30 consists of 15 different scales, one of which assesses pain with two items. These items measure what one could label 'pain intensity' and 'pain interference' [20]. In this study, we use the term 'pain experience' to cover what is measured with the EORTC QLQ-C30 pain scale, e.g. covering both intensity and interference.

Given the EORTC QLQ-C30's application in clinical practice, it would be important to know to what extent the pain scale predicts the need for pain relief. If the need for pain relief could be predicted from the EORTC QLQ-C30 this questionnaire could assess the experience of pain and the need for pain relief simultaneously and thereby alert doctors to patients requiring attention for their pain [21]. However, as pain experience and the need for pain relief are two different aspects (not all patients with pain want additional treatment [22,23], one cannot simply assume a high concordance between them.

To improve our understanding of patient-reported measures of pain in general, and of the EORTC QLQ-C30 in particular, we conducted a study where pain was assessed using three related but conceptually different approaches. We compared pain experience (defined as including pain intensity and pain interference), pain burden (was pain a problem) and need for pain relief (did the patient receive sufficient help with pain). The aims were to investigate (1) the information obtained by using different approaches to pain assessment and (2) the extent to which the widely used EORTC QLQ-C30 can be used as a screening tool to predict patient-reported need for pain relief.

Methods

Patients

We used data from a previously reported study [24,25] where we randomly sampled cancer patients (selected based on date of birth) if they: a) were ≥ 18 years of age, b) lived in one of three hospital regions, c) had been in contact with the hospital department within the previous year, d) had cancer (solid tumors or lymphomas stages 3 or 4 [26]; cancer in the central nervous system and small cell lung cancer in any stage, or leukemia), e) spoke Danish, and f) did not have cognitive impairment or psychiatric comorbidity. The three hospital regions were selected because they are generally representative of Denmark with respect to geography and socio-demographics. Most cancer patients were in contact with one of the two largest oncology departments included in the study. To include enough patients from the other departments for the planned analyses we 'over-sampled' patients from these smaller departments. This means that we included a greater proportion of patients from the smaller departments or departments having few cancer patients than from the large oncology departments

Eligible patients received a questionnaire and a letter including informed consent by mail. The study was approved by the local ethics committee (01-116/03 and 11-143/03) and took place from October 2004 to January 2006.

Questionnaires

The experience of having pain (here defined as pain intensity and pain interference) was measured with the EORTC QLQ-C30 [27]. The EORTC QLQ-C30 has a pain scale with two items: 'Have you had pain?' and 'How much did pain interfere with your daily activities?' Response options to both items are: 'not at all', 'a little', 'quite a bit' and 'very much'. The scale was transformed to a 0-100 scale according to the EORTC QLQ scoring manual where 0 = no pain and 100 = worst possible pain.

In addition, the present study also looked at the two individual pain items separately, because, from a clinical point of view, it is important to know whether the scale or one of the items has the strongest relationship to having a need for pain relief. The two items were also transformed to 0-100 scales with 100 representing worst possible pain. Conceptually the item 'Have you had pain?' potentially covers different aspects of pain such as pain intensity, pain frequency and pain duration. The item 'How much did pain interfere...' also covers many different aspects, and both items may tap on the experience of pain being a problem and the experience of having a need for pain relief.

The experience of pain being a burden was measured with one item from the Three-Levels-of-Need-Questionnaire (3LNQ) [23]: 'How much has pain been a problem to you?' Response options were 'not at all', 'a little', 'quite a bit' and 'very much'. While being clearly different, this item probably has conceptual overlap with the two EORTC QLQ-C30 pain items.

Having a need for pain relief was measured with the need for pain relief item from the 3LNQ. This item consists of four sub-items. Sub-item 1: patients are asked to check a box if they do not have the problem. Sub-item 2: provided that they have the problem, they are asked whether they have received help for this (yes/no). Sub-item 3: if they have received help, they are asked whether or not the help was adequate (adequate/partly inadequate/inadequate). Sub-item 4: if they did not receive

help, they are asked whether they had a wish for help (yes/no). For all questions, 'help' refers to 'help and/or treatment'. There is no time frame in the question.

The need for pain relief item was categorized as illustrated in Figure 1. An 'unmet need' was defined as having received inadequate or partially inadequate help, or no help despite a wish for help. A 'met need' was defined as having received adequate help. 'No wish for help' was defined as those who had received no help and were not interested in help. 'No problem' was defined as those who said they did not have pain. Missing answers consisted of those who had not answered any of the sub-items in the need for pain relief item, or who had an invalid response by answering both that they had received help and they had not received help.

Statistics

The analyses were performed using SAS statistical software version 9.3 [28]. Participants and nonparticipants were compared using t-test (age) and chi-square.

To investigate the association between pain experience and pain burden, we calculated a) cross-tabulations, b) polychoric correlations and c) Wilcoxon signed-rank test (only for the individual EORTC QLQ-C30 items and not for the scale) testing the differences between the two measures. To investigate the association between pain experience and pain burden, respectively, and the need for pain relief we calculated a) cross-tabulations and b) polychoric correlations. We only provide details on the cross-tabulation of pain experience and the need for pain relief. In the polychoric correlation the need for pain relief item was categorized into having an unmet need versus all other responses (met need, no wish for help, no problem). In addition, we investigated whether pain experience (the two EORTC QLQ-C30 items individually and as a scale) and/or pain burden could discriminate between patients with and without an unmet need for pain relief according to the need for pain relief item. This was done by performing a receiver operating characteristic (ROC) curve analysis where the area under the curve (AUC) was calculated. The AUC is a measure of how well a variable discriminates between two classes (here: whether pain experience can discriminate between having an unmet need or not).

An AUC equal to 1.0 indicates perfect discrimination, and AUCs ≥ 0.7 are generally considered acceptable discrimination [29]. The ROC curve gives measures of sensitivity and 1-specificity using different cut-points of the discriminating variable.

Results

Patients

From the patient registers of the 56 participating hospital departments, we extracted a list of 7,663 patients with cancer, of whom 2,643 met the eligibility criteria. Of the 2,479 who fulfilled the inclusion criteria and were alive, 2,364 patients received a questionnaire and 1,447 (61%) completed it.

Characteristics of participants can be seen in Table 1. Non-participants were slightly older, more frequently hospitalized, more frequently from a medical department, and less likely to come from a haematological department than participants. In addition, they were more frequently living in the capital region and had a slightly different diagnosis distribution.

(Table 1 about here)

Frequencies of pain experience, burden and the need for pain relief

Table 2 shows the frequencies of pain experience measured with EORTC QLQ-C30 (individual items and scale), and Table 3 shows the frequencies of pain burden and need for pain relief measured with the 3LNQ. According to the pain experience item 'Have you had pain', 7% had 'very much' pain and 17% 'quite a bit'. The distribution of responses to the pain burden item was substantially the same as for pain experience. According to the 'need for pain relief' item, 47% had 'no problem' (no pain), 28% had a 'met need', 23% had an 'unmet need' and 3% had 'no wish for help'. Thus, on each of the three measures, approximately one-quarter of patients reported problems that seem to call for attention.

(Table 2 and 3 about here)

(Figure 1 around here)

Relation between pain experience and pain burden

Correlations between pain experience (the two items and the scale) and pain burden reflected that the more the patient experienced pain, the more pain was experienced to be burdensome (correlation coefficient of 0.91 for 'Have you had pain?', 0.85 for 'How much did pain interfere...' and 0.91 for the scale). The cross-tabulation (Table 4) between 'Have you had pain?' and pain burden showed that for 80% of the patients, the extent to which they experienced pain was identical to the experience of pain being a burden (it was identical for 68% of the patients for the QLQ-C30 item 'How much did pain..'). There was a slight and insignificant tendency for patients to rate the pain experience (intensity) higher than pain burden, and a significant ($p < 0.001$) tendency to rate pain experience (interference) lower than pain burden. When both interference and burden were converted to a 0-100 scale where 100 represented worst possible pain, the mean difference between the two items was six points on a 0-100 scale, which is a difference that is only borderline clinically significant. When also considering the high correlation, the two measures must be judged to measure virtually the same.

Relationship between pain experience and the need for pain relief

Table 5 shows a cross-tabulation between pain experience ('Have you had pain?') and need for pain relief. Going through the cross-tabulation one can see in the 1st column that among the 632 patients who reported having 'no problem' on the need for pain relief item (1st column), the vast majority also reported no or 'a little' pain (97%) on the pain intensity item. Among the 379 patients, who reported a 'met need' (2nd column) 62% reported no or 'a little' pain. Finally, among the 310 patients who had an 'unmet need' (3rd column), 49% reported no or 'a little' pain.

Looking at the rows in Table 5, one can see that among the 662 patients who reported 'no pain', 513 (77%) reported 'no problem', 49 (7%) an 'unmet need', 81 (12%) a 'met need' and 19 (3%) 'no wish for help'. The proportion of patients with an 'unmet need' increased with increasing pain experience. Thus, among the 372 patients reporting 'a little' pain, 102 (27%) reported an 'unmet

need'; among the 227 patients reporting 'quite a bit' pain, 110 (48%) reported an 'unmet need', and among the 95 patients reporting 'very much' pain, 49 (52%) reported an 'unmet need'.

The cross-tabulations between need for pain relief and the QLQ-C30 pain item 'How much did pain..' and for the pain scale were similar. This tendency was reflected in the polychoric correlations between pain experience and need for pain relief, which were 0.56 for 'Have you had pain', 0.54 for 'How much did pain interfere with your daily activities', and 0.57 for the pain scale.

(Table 4 and 5 around here)

The relation between pain burden and need for pain relief was nearly identical to the relation between pain experience and need for pain relief (results not shown in the paper).

To what extent do the EORTC QLQ-C30 pain items identify patients with a need for pain relief?

The ROC curves of the abilities of the EORTC QLQ-C30 items to discriminate between patients with and without an 'unmet need' showed acceptable AUCs of 0.76 ('Have you had pain'), 0.73 ('How much did pain interfere...') and 0.77 (pain scale).

Contingency tables showing the performance of the EORTC QLQ-C30 pain items and the pain scale as screening tests for having an 'unmet need' (according to the need for pain relief item) was made for the cut-points 'a little' and 'quite a bit', and for the scale it was also made for a cut point of 50 which is between 'a little' and 'quite a bit'. With the cut-point 'a little', the item 'Have you had pain' had a sensitivity of 0.84 and a specificity of 0.59 for predicting an unmet need. With the cut-point 'quite a bit', sensitivity was 0.51 and specificity 0.84. With the cut-point 'a little', the EORTC QLQ-C30 item 'How much did pain interfere...' had a sensitivity of 0.71 and a specificity of 0.73 and the pain-scale had a sensitivity of 0.72 and a specificity of 0.72. With the cut-point 'quite a bit', the EORTC QLQ-C30 item 'How much did pain interfere...' had a sensitivity of 0.37 and a specificity of 0.89 and the pain-scale had a sensitivity of 0.35 and a specificity of 0.90. With a cut-point of 50 for the scale, the sensitivity was 0.53 and the specificity 0.84.

Discussion

We compared three related but conceptually different approaches to pain assessment: Pain experience defined as including pain intensity and pain interference, pain burden (was pain a problem?) and the need for pain relief in a large sample of cancer patients. To the best of our knowledge this is the first study to make such a comparison in a large group of patients.

The prevalence of pain experience was measured with the EORTC QLQ-C30 questionnaire, a widely used questionnaire in cancer research and clinical practice [18,19]. We first investigated if asking patients about pain experience was conceptually different from asking patients about their pain burden. There was a high concordance between pain experience and pain burden, especially between the EORTC QLQ-C30 item 'Have you had pain?' and pain burden, and between the pain scale and pain burden. These findings suggest that, on an individual patient level, it can often be assumed that patients who report pain also experience pain to be a problem for them. The correlation between pain experience and burden was somewhat higher in this study than the average correlation between intensity and distress found by Portenoy et al. using the Memorial Symptom Assessment Scale questionnaire [30]. This may be because the item about pain experience in this study also included some aspects of pain burden (i.e., interference).

Acknowledging that pain experience is conceptually different from the need for pain relief, we then investigated whether the EORTC QLQ-C30 would be effective as a screening tool predicting whether or not patients experienced a need for pain relief. Pain experience did discriminate between patients with and without an unmet need: the more pain, the more likely patients were to report an 'unmet need' with AUC's from 0.73 to 0.77. This finding supports using the EORTC QLQ-C30 as a screening tool to identify patients with a need for pain relief, which is in line with the conclusion by Snyder et al. [17,21]. With the cut-point 'a little' the pain item 'Have you had pain?' identified the majority of patients with an 'unmet need', but a large proportion of patients who did not have an 'unmet need' were incorrectly identified using this cut-point (sensitivity: 0.84 and specificity: 0.59). Depending on the purpose, the relatively low specificity may or may not be a problem. With its high sensitivity, this item is relevant for screening purposes where one wishes to identify as many patients with a potential need for pain relief as possible, which is often the case.

The pain item 'How much did pain..' and the pain scale had sensitivity and specificity that were well balanced when using the cut-point 'a little' (e.g. both sensitivity and specificity were above 70%). The sensitivity and specificity were not perfect, but we believe that they were quite high

given the fact that pain experience and the need for pain relief are two different concepts. This means that when measuring pain experience, one can, to a quite large extent, predict whether or not the patient has a need for pain relief using the cut-point 'a little'.

All items and scales had low levels of sensitivity if using cut-points higher than 'a little'. Both the individual items and the scale have advantages and those interested in using these EORTC QLQ-C30 items can determine which question (and which cut-point) is most advantageous in terms of the trade-offs between sensitivity and specificity for their particular application. For example, if one wants to maximize the identification of patients who have a need for pain relief, one should use the 'Have you had pain' item. This may also be the simpler question to ask.

Regardless of which item is used as the screener and what level you use as the cut-point, screening has to be followed up by health care professionals asking patients about their situation and needs because some patients will not have a need despite having pain [22,23]. Also, again regardless of which item and cut-point, some patients will be overseen in the screening. Therefore screening cannot stand alone and should only be used as part of the clinical assessment.

The 3LNQ felt need item or another item measuring the need for pain relief could of course also be used as a screener if one wished to find those patients in need of pain relief. However, often one will wish to know the prevalence or intensity of pain, and not only the patients' needs [3]. Also, items measuring the patients' needs will tend to be more complex and more difficult for the patients to answer and therefore less suitable as screeners.

It is important to interpret the findings with an understanding that we did not expect full concordance between the three conceptually different ways to measure needs – in fact that would have been a problematic result, as it would indicate that patients overlooked the differences. Experiencing pain will not always be associated with a need for pain relief.

It must also be noted that there is no gold standard for patients' need for pain relief. Our earlier validation study [23] confirmed that patients answering that they had an unmet need in the 3LNQ did indeed very often have an unmet need (as judged in an interview). However, to better understand 'needs', further studies should clinically validate and investigate the association between the answers in questionnaires, as for example the 3LNQ, and the patients' needs when discussed with the doctor in the clinical setting.

In the sample, 49 patients reported an unmet need despite reporting having had no pain in the past week. This may reflect a limitation in the study design. Either the patients did not answer one of the items as intended or the seemingly contradictory answers were caused by the two items having a different time frame. We did not provide a recall period for the felt need item because we wanted to assess if patients had received sufficient help, and sufficient help is not given within a specific time frame: a need may be met or unmet due to activities over a longer period of time. However, it is most likely that they were answering according to how they felt at the present time. We reiterated the analyses excluding these 49 patients. This made the relationship between pain experience and the need for pain relief stronger, but did not affect the remaining results.

There were a few minor differences between participants and non-participants. These differences are not likely to bias results, as it is not very likely that age, hospitalization, hospital department or region will affect the relationship between pain intensity, burden and the need for pain relief.

Conclusion

The study showed that asking patients about pain experience (pain intensity/interference) and asking them whether pain was a problem for them gave similar results. Thus, for most purposes it will be sufficient to measure either experience or burden. Experiencing pain or experiencing pain to be a problem was only moderately correlated with having a need for pain relief, which implies that not all patients with pain have a desire for treatment. However, the EORTC QLQ-C30 could predict the need for pain relief to a quite large extent as shown by AUC of 0.73-0.77, even though the need for pain relief is conceptually different from pain experience. However, cut points higher than 'a little' gave low levels of sensitivity for both EORTC QLQ-C30 items and scales which is important to know for clinicians.

Compliance with Ethical Standards^a

The authors declare that they have no conflict of interest. The funding source did not have any involvement in study design, data collection, analysis and interpretation or in the dissemination of results.

All procedures performed in the study were in accordance with the ethical standards of the

institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all individual participants included in the study.

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Table 1. Characteristics of participants and non-participants.

Characteristics		Participants		Non-participants		P-value
		N	Mean	N	Mean	
Age	Years	1447	63	915	65	0.0006
		N	%	N	%	
Gender	Male	678	47	419	46	0.6138
	Female	769	53	496	54	
Primary tumour site	Lung	86	6	81	9	0.0055
	Head and neck	72	5	45	5	
	Gynecological	94	7	60	7	
	Prostate	119	8	71	8	
	Breast	237	16	146	16	
	Gastrointestinal	202	14	117	13	
	Bladder	35	2	37	4	
	AML	34	2	9	1	
	CLL	132	9	92	10	
	CML	34	2	8	1	
	Hodgkin's	33	2	11	1	
	Non Hodgkin's	164	11	102	11	
	Multiple myeloma	54	4	32	4	
	Other ^a	151	10	104	11	
Cancer stage	Stage 3	474	33	315	34	0.9221
	Stage 4	455	31	303	33	
	Hematological	470	33	262	29	
	Not applicable	48	3	35	4	
Time since cancer diagnosis	0-6 months	169	12	116	13	0.3033
	6-12 months	183	13	115	13	
	1-2 years	263	18	155	17	
	2-5 years	337	23	190	21	
	5-10 years	257	18	156	17	
	>10 years	132	9	106	12	
	Missing values	106	7	77	8	
Ongoing treatment	Yes	373	26	239	26	0.2985
	No	917	63	530	58	
	Missing values	157	11	146	16	
Contact type	Hospitalized	166	11	162	18	<.0001
	Out-patient	1269	88	751	82	
	Missing values	12	1	2	0.2	
Department	Surgical	444	31	273	30	0.0006
	Medical	124	9	126	14	
	Hematological	405	28	222	24	
	Oncological	474	33	294	32	
Region	Copenhagen	629	44	450	49	0.0034
	Ringkoebing	217	15	148	16	
	Funen	601	44	317	35	

Table 2. Prevalences of pain experience^a

Response categories	Scale scores ^b	'Have you had pain?'	'How much did pain interfere...?'	Pain scale
		N (%)	N (%)	N (%)
Not at all	0	694 (49)	874 (62)	671 (47)
	16.6			215 (15)
A little	33.3	390 (27)	287 (20)	196 (14)
	50			129 (9)
Quite a bit	66.7	248 (17)	162 (11)	118 (8)
	83.3			60 (4)
Very much	100	97 (7)	87 (6)	54 (4)

^aTo measure pain experience (pain intensity and pain interference), item 9 ('Have you had pain?'), item 19 ('How much did pain interfere with your daily activities?') and the pain scale from EORTC QLQ-C30 was used.

^bScale scores: the numerical score when the QLQ-C30 items are converted to a 0-100 scale ('not at all' = 0, 'a little'=33 etc.). For the scale it is not all numerical scores that correspond to a response category because the scale is composed by more than one item. So for example, answering 'not at all' on one item and 'a little' on the other, will give a scale score of 16.6

Table 3. Prevalences of pain burden^a and need for pain relief^b

Pain burden ^b	N (%)	Need for pain relief ^c	N (%)
Not at all	705 (50)	No problem	639 (47)
A little	384 (27)	Met need	382 (28)
Quite a bit	242 (17)	Unmet need	314 (23)
Very much	90 (6)	No wish for help	35 (3)

^bTo measure pain burden, the 3LNQ item ('How much has pain been a problem to you?') was used.

^cTo measure need for pain relief, an item from 3LNQ was used: 'no problem' = patients who indicated they did not have pain; 'met need' = patients having received adequate help; 'unmet need' = patients having received inadequate or partially inadequate help, or no help despite a wish for help; 'no wish for help' = patients who had received no help but was neither interested in help (see also Figs. 1 and 2)

Table 4. Cross-tabulation of pain experience^a and pain burden^b

Pain experience ^a (%)	Pain burden ^b (%)				Total
	Not at all	A little	Quite a bit	Very much	
Not at all	621 (44.1)	50 (3.6)	9 (0.6)	1 (0.1)	681
A little	68 (4.8)	272 (19.3)	41 (2.9)	5 (0.4)	386

Quite a bit	6 (0.4)	50 (3.6)	166 (11.8)	23 (1.6)	245
Very much	2 (0.1)	9 (0.6)	25 (1.8)	59 (4.2)	95
Total	697	381	241	88	

^aWe here show the EORTC QLQ-C30 item ‘Have you had pain?’ as the measure of pain experience.

^bFor definition of pain burden, see Table 3.

Percentages are given as percentages of the total. Grey cells indicate concordance between pain intensity and pain burden.

Table 5. Cross-tabulation of pain experience and need for pain relief

Pain experience (%)	Need for pain relief (%)				Total
	No problem	Met need	Unmet need	No wish for help	
Not at all	513 (37.8)	81 (6.0)	49 (3.6)	19 (1.4)	662
A little	102 (7.5)	155 (11.4)	102 (7.5)	13 (1.0)	372
Quite a bit	16 (1.2)	99 (7.3)	110 (8.1)	2 (0.2)	227
Very much	1 (0.1)	44 (3.2)	49 (3.6)	1 (0.1)	95
Total	632	379	310	35	

^aWe here show the EORTC QLQ-C30 item ‘Have you had pain?’ as the measure of pain experience.

^bFor definition of Need for pain relief and response categories, see Table 3.

Percentages are given as percentages of the total.