

COOP–WONCA charts: a suitable functional status screening instrument in acute low back pain?

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Introduction

SINCE 1987, WONCA (World Organization of National Colleges, Academies and Academic Associations of General Practitioners/Family Physicians) has strongly recommended the integration into family practitioners' daily routine of the assessment and monitoring of improvement in patients' functional ability.¹

The revised version of the Dartmouth COOP (cooperative) functional health assessment charts, originally developed by Nelson and colleagues,² has been proven to be a valid, reliable and practical instrument to measure functional status in general practice.¹⁻⁷ It is brief, easy to use and acceptable to respondents.⁸ Its use has mainly been confined to those with chronic illness rather than acute illness.

The COOP–WONCA charts comprise six single-item scales, each representing a different aspect of functional ability: physical fitness, feelings, daily activities, social activities, change in health and overall health (two of the original Dartmouth charts were not included in the WONCA version: social support and quality of life; the pain chart was kept as optional).

The main objective of the present investigation was to determine whether the COOP–WONCA charts would prove a valid and reliable instrument for measuring functional impairment in patients suffering from acute low back pain and clinically relevant improvements in functional ability accompanying the recovery from pain.

Acute low back pain was chosen because it is one of the most common problems seen in general practice.⁹ Three out of four episodes of back pain are reported to resolve within four weeks, either spontaneously or with the help of analgesics.¹⁰ It therefore seems reasonable to assume that in most cases there will be a clinically significant reduction of pain within two weeks and this fits in well with the timescale recommended for ratings using the COOP–WONCA charts.

Method

After piloting the feasibility of the instrument, the study was conducted (between December 1991 and March 1992) in 15 single-handed general practices in Oldenburg, northern Germany (most practices in Germany are single handed). Twenty six out of 126 general practitioners had been chosen at random; 11 refused to participate in the study.

Inclusion criteria for patients were defined as follows: aged between 20 and 55 years, acute low back pain was the principal reason for consulting the general practitioner, there had been no complaints of low back pain during the previous month, and specific bone diseases (for example, osteoporosis) and neurological signs associated with intervertebral disc disease or serious comorbidity (for example, gynaecological diseases or tumours) were absent.

After the consultation the general practitioners explained the purpose of the study and invited consecutive patients presenting

SUMMARY

Background. Functional status is considered an important measure of health status in primary care. The COOP–WONCA charts, which comprise six single-item scales, have mainly been used to determine functional ability in chronically ill patients.

Aim. A study was carried out to determine whether the charts are able to measure the degree of functional impairment associated with acute illness and the improvement in functional ability accompanying the process of recovery.

Method. A total of 95 patients presenting with acute low back pain were recruited from 15 single-handed general practices in northern Germany. At presentation and at two-week follow up, these patients completed self-administered questionnaires which included the COOP–WONCA charts. The charts ask patients to use the timescale of the past two weeks when rating their condition. Baseline and follow-up measurements of the charts were compared and correlations of chart scores with patients' measurements of pain intensity on a visual analogue scale, general practitioners' ratings of impairment and patients' measurements of recovery were analysed.

Results. Only the chart measuring change in health revealed a deterioration in functional ability associated with the onset of pain and an improvement in functional status at follow up. Two of the other charts indicated a deterioration at follow up. Only the chart measuring change in health was correlated with ratings of pain and impairment at baseline. At follow up, strong correlations were found between general practitioners' assessments of impairment, patients' ratings of pain and patients' ratings of recovery for all scales except for those measuring social activities and daily activities. The patients interpreted the instructions for using the COOP–WONCA charts differently; some included the period of acute back pain while others did not.

Conclusion. Of the six charts only the change in health chart proved to be a suitable scale for measuring short-term changes in functional ability among general practice patients with acute low back pain. This may partly be a result of patients misunderstanding the instructions. If the COOP–WONCA charts are used with acutely ill patients, the fixed two-weeks timescale is not appropriate. It is suggested that patients consider their present complaints when rating their condition.

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with acute low back pain who fulfilled the study criteria to complete a questionnaire that included the German version of the COOP-WONCA charts. To make cross-cultural comparisons possible, the translation is very close to the original English version. Patients were asked to rate the six aspects of functional ability, and the pain chart, on a five-point scale ranging from one (good functional status) to five (bad functional status). Each level was illustrated pictorially, numerically and verbally. Patients were instructed to relate the ratings of their condition to the two weeks before the consultation. Questionnaires were completed by patients after the consultation, while they were still in the surgery.

Patients were also asked to mark their pain intensity on a visual analogue scale (a 100 mm line with 0 representing no pain and 100 representing the worst pain imaginable).^{11,12} To be able to differentiate retrospectively, if necessary, between different interpretations of the instructions patients were asked what time period their chart ratings were referring to and if they had taken the back pain into consideration. Information was also requested on the length of time between the onset of pain and contacting the general practitioner and on whether the patient had suffered an episode of acute low back pain in the previous year.

On a separate questionnaire, the practitioners added their own ratings of patient impairment on a five-point scale ranging from not impaired to severely impaired, supplemented by medical baseline information including expected prognosis in the next two weeks, rated on a four-point scale ranging from expected to recover completely to expected to get worse.

At a follow-up consultation two weeks later the patients again completed the COOP-WONCA charts and the visual analogue scale. In addition they rated the degree of recovery from back pain using a four-point scale (completely recovered, complaints are somewhat better, pain has not changed, or pain has got worse). The general practitioners also added their own ratings of patient impairment at follow up.

Patients received their usual treatments during the course of the study, for example oral analgesics, injectable analgesics and/or physiotherapy.

Statistical analysis

Statistical analyses were carried out using *SPSS PC*.^{13,14} For all statistical test procedures used, the level of statistical significance was set at 0.05. The following two-sided tests were performed: the Student's *t*-test for matched pairs in order to assess any differences between baseline and follow-up ratings on the visual analogue scale and the Wilcoxon matched-pairs signed-ranks test to examine baseline and follow-up differences in the COOP-WONCA chart ratings. Kendall's τ_b was used to compute correlations of chart scores with severity of impairment as rated by the general practitioners, as well as with the severity of pain rated by the patients on the visual analogue scale and the degree of recovery from pain as reported by the patients at follow up.

Results

A total of 100 questionnaires were returned by the end of the study period. Four of these were incomplete and one patient was too old according to the study criteria and so data for 95 patients were analysed.

More than half of the patients (54, 57%) consulted their general practitioner one day after the back pain had started. Twenty three patients (24%) had waited up to five days and 18 (19%) had waited for more than five days. Nearly 80% of the patients (75) had experienced episodes of acute low back pain during the

previous year. Thirty seven patients (39%) were assessed by the general practitioners to be severely impaired, 55 (58%) were moderately impaired and three (3%) were considered to have a slight impairment. General practitioners expected 92% of the 95 patients to make a complete recovery or at least to have a significant reduction of pain within two weeks.

At follow up, 90 of the patients (95%) reported that they had completely or partially recovered and 5% reported that their condition was unchanged; none felt worse. The general practitioners found no or a slight impairment in 79% of 91 patients (72), 13 patients were considered to be moderately impaired (14%) and six patients were considered to be severely impaired (7%); data missing for four patients. Analysis of all patients' visual analogue scale pain ratings for both time points yielded corresponding results that indicated a significant improvement in the condition: mean score at baseline 65.0 compared with mean score at follow up 20.9, paired *t*-test, $P < 0.001$.

Analysis of patients' ratings of functional ability on the COOP-WONCA charts revealed that patients rated the change in health chart significantly more highly at follow up compared with at baseline (Table 1). The other charts did not reflect an improvement in functional ability at two-week follow up. Two charts (daily activities and physical fitness) even indicated a significant deterioration.

At baseline, no correlations were found between scores on any of the functional ability scales and patients' ratings of pain on the visual analogue scale and general practitioners' assessments of the severity of patient impairment except for the change in health scale and patients' severity of pain (Kendall's τ_b 0.30, 95% confidence interval (CI) 0.11 to 0.51) and doctors' assessment of impairment (Kendall's τ_b 0.14, 95% CI -0.06 to 0.34). Correlations between the scores at follow up on the functional ability scales and general practitioners' assessments of patient impairment, patients' ratings of pain on the visual analogue scale and patients' ratings of the degree of recovery are shown in Table 2. Strong correlations were found for all the scales except for those measuring daily activities and social activities. They did not correlate with severity of pain, and social activities did not correlate with severity of impairment or with degree of recovery.

Thirty four patients (36%) reported that they had related their ratings on the COOP-WONCA charts to their back pain, 31 patients (33%) had not taken the back pain into consideration and had instead been referring to a period of two weeks before the pain had started. The other 30 patients (32%) reported having tried to create a sort of average score that included the period of acute pain as well as the time period before the onset of pain.

Table 1. Results of analysis of the 95 patients' assessments of functional ability on the COOP-WONCA charts at baseline and two-week follow up, indicating patient outcome at follow up.

Functional ability scale	No. of patients feeling		
	Better	No change	Worse
Change in health ^a	68	2	24**
Feelings	29	44	22
Pain	28	29	38
Daily activities	25	35	35* ^b
Overall health ^c	25	46	22
Physical fitness	25	20	50** ^b
Social activities	24	45	26

^aData missing for one patient. ^bSignificant in unexpected direction. ^cData missing for two patients. Wilcoxon matched-pairs signed-ranks test (2-tailed): * $P < 0.05$, ** $P < 0.01$.

Table 2. Correlations between COOP-WONCA chart scores at follow up and general practitioners' assessment of patients' severity of impairment and patients' assessments of pain severity and of degree of recovery.

Functional ability scale	Kendall's tau _b (95% CI) between chart scores and		
	Impairment severity (GP rating)	Pain severity (patient rating)	Degree of recovery (patient rating)
Change in health	0.39 (0.21 to 0.60)	0.55 (0.42 to 0.82)	0.50 (0.35 to 0.75)
Feelings	0.36 (0.18 to 0.58)	0.33 (0.14 to 0.54)	0.36 (0.18 to 0.58)
Pain	0.28 (0.09 to 0.49)	0.21 (0.01 to 0.41)	0.25 (0.06 to 0.46)
Daily activities	0.33 (0.14 to 0.54)	0.19 (-0.01 to 0.39)	0.26 (0.07 to 0.47)
Overall health	0.30 (0.20 to 0.60)	0.38 (0.20 to 0.60)	0.36 (0.18 to 0.58)
Physical fitness	0.37 (0.19 to 0.59)	0.29 (0.10 to 0.50)	0.35 (0.17 to 0.57)
Social activities	0.16 (-0.04 to 0.36)	0.05 (-0.15 to 0.25)	0.15 (-0.05 to 0.35)

CI = confidence interval.

Discussion

The main objective of this study was to determine whether the COOP-WONCA charts were able to measure short-term changes in functional ability, that is, a deterioration associated with acute illness and an improvement that parallels the process of recovery.

Contrary to expectations, analysis of the baseline and follow-up ratings of the COOP-WONCA charts revealed an inconsistent pattern. The differences between the two time points did not reflect an improvement in functional status (two charts even indicated a deterioration) despite patients and general practitioners having reported a reduction in pain and impairment at follow up.

Closer examination revealed that at baseline no correlations were consistently found between the COOP-WONCA chart scores and patients' and general practitioners' assessments. The charts recommend patients to use a two-week timescale and this may have led to imprecise ratings. More than 50% of the patients with acute pain had waited only one day before consulting their practitioner. Therefore patients' ratings based on their health over the preceding 14 days may have underestimated the functional impairment caused by acute low back pain. Moreover, one third of patients stated that they did not take the back pain into consideration when completing the COOP-WONCA charts at baseline. For these patients the chart ratings cannot be expected to reflect the impairment caused by acute low back pain.

At follow up, where patients' acute low back pain was included in their ratings, there were strong correlations between chart scores and general practitioners' ratings of impairment severity and patients' ratings of pain severity and of degree of recovery. The change in health chart (which does not refer to the two-week timescale but requires an assessment of current overall health) was the only chart to reflect a significant improvement in functional status between baseline and follow up.

In a study from New Zealand, patients faced similar problems regarding the two-week timescale when they were asked to assess their functional status on the Dartmouth COOP charts during an acute attack of asthma.¹⁵ Many patients felt a limitation in function only since the beginning of the exacerbation and much less or no limitation at all in the preceding two weeks.¹⁵ This strengthens the argument that patients' difficulty using the ques-

tionnaire in the present study is caused by the nature of the health problem (that is, the acute condition) and is not related to cultural differences or to the German translation.

Further evidence is provided by a study of acute emergency patients in which modified instructions for the charts were used.¹⁶ The patients were instructed to relate the ratings of their health status to a less circumscribed time period (they were asked how they had been feeling recently rather than in the past two weeks).¹⁷ Significant correlations were found with doctors' assessments of the severity of the disorder for all of the charts.

Comparing baseline and two-week follow-up measurements can only be expected to yield meaningful results if data are collected under comparable conditions for all subjects. Obviously this was not possible for the baseline measurements and so it is not surprising that the differences in the chart score ratings did not prove the instrument's sensitivity to change.

It seems that the instructions to patients are a decisive part of the COOP-WONCA charts and have an important influence on the validity of its measurements. It may therefore be reasonable to adjust the instructions according to the purpose of using the charts (in the present case to relate the instructions to the current episode of back pain instead of using a fixed timescale). It is probably worth asking patients to state the timescale they were using when rating their condition.

Clinical improvement might not necessarily result in improvement in all aspects of functional status. The social activities and daily activities charts revealed a pattern different from that found for the other charts at follow up. It is possible that during a new episode of acute low back pain patients suffer more greatly from their pain than from any restrictions of social or daily activities and some may even receive more social support when they are acutely ill. Future studies should consider aspects of social and daily activities when searching for an explanation of health changes over time.

In conclusion, it may be useful and necessary to consider if and how the COOP-WONCA charts and their instructions can be adjusted for different purposes, for example for acute conditions. To use the COOP-WONCA charts with patients with acute conditions the instructions may have to be modified. Otherwise, the validity and reliability of the instrument may be seriously affected.

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