The early stages of low back pain: a pilot study of patient diaries as a source of data

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\textbf{Background.} Low back pain accounts for a significant proportion of a GP’s workload, but care of the condition is widely regarded as unsatisfactory. Recent recommendations to improve primary care management include more appropriate explanatory models and early access to physical therapy.

\textbf{Objectives.} This study explored the feasibility and utility of patient diaries as a source of qualitative data on patients’ experience of low back pain presenting in primary care.

\textbf{Method.} Within a larger study of physiotherapist-led management of low back pain presenting in general practice, a random sample of patients was invited to keep a record of their illness experience over 7 days using a diary. Patients’ written accounts were then subject to qualitative thematic analysis.

\textbf{Results.} Diary respondents did not differ from the wider group of patients presenting with back pain. Patients recounted diverse experience of disability, pain and emotional reactions. The specific themes which emerged from our analysis support the relevance to patients of a biopsychosocial paradigm in the management of low back pain.

\textbf{Conclusions.} Diaries are a feasible and valid source of qualitative data in patients with new episodes of low back pain. In addition, they may provide the clinician with useful information and their completion may offer direct benefits to patients.

\textbf{Keywords.} Health diary, illness experience, low back pain, new episode, primary care.

Introduction

Back pain is among the commonest syndromes presenting in primary care in the UK: in the course of a year, approximately 7.2\% of adults consult their GPs at least once with low back pain (LBP)\textsuperscript{1} and, in the same period, some 2–3\% will be seen by physiotherapists.\textsuperscript{2} Recently, the general standard of care of this condition within the NHS has been described by the Clinical Standards Advisory Group (CSAG) as “ineffective, potentially harmful and a waste of NHS resources”.\textsuperscript{3} Among the recommendations of the Group to improve the primary care management of LBP is early access to physical therapy, in urgent cases within 72 hours. Clearly, if implemented, this recommendation will have the effect of placing physiotherapists in the front line of primary care management of LBP.

Underpinning the CSAG case for change in the care of LBP is a growing body of research evidence\textsuperscript{2–4} that traditional biomechanical explanatory models are inadequate in predicting either the severity or the outcome of an episode of LBP. Waddell\textsuperscript{5} and others\textsuperscript{6} have pointed out the discrepancy between physical pathology and symptoms, and in some studies\textsuperscript{7} psychosocial variables were superior to physical signs as predictors of chronicity. Moreover, mechanistic explanations may have disproportionate significance for patients\textsuperscript{3} and, by encouraging rest rather than mobility, may inhibit or postpone recovery.\textsuperscript{2,8}

Currently, delay in gaining access to specialist advice compounds the risk of symptoms and disability in LBP becoming entrenched.\textsuperscript{5} However, as the CSAG has recognized, for early access to physiotherapy to exert a beneficial influence on the course of new episodes of LBP presenting in primary care will require GPs and physiotherapists to review the biomechanical explanatory models of LBP, which in medical hands have proved inadequate or worse. In validating alternative
explanatory models, qualitative research has a key part to play by exploring patients’ first-hand experience of LBP.

Qualitative research methods have seldom been applied to LBP in part because they require special skills of interview and analysis. The illness diary or journal is an alternative method of capturing patient perceptions without the need for patient interviews. Moreover, while interviews must rely on recall as the source of patient perceptions, theoretically the illness diary should provide fresh insights into the day-by-day experience of patients. In particular, the diary is potentially a rich source of data on the range of individual variation in the impact and consequences of illness. We have been unable to trace any previous study which used patient diaries as a source of qualitative data on new episodes of LBP.

In parallel with the need to explore biopsychosocial explanatory models of LBP, there is the vexed issue of communication between patients and health care professionals. Potentially, a conflict exists between patients’ wishes to articulate their individual experience and clinicians’ search for specific diagnostic or prognostic data. The illness diary may help to harmonize these objectives. In terms of patients’ need to recount their experience, diaries have been used as an adjunct to therapy in a number of chronic pain clinics and by counsellors who employ personal or expressive writing techniques alongside their traditional methods. There is evidence that patients find it easier to articulate their emotional reactions to illness in writing rather than vocally. Thus, the possibility that diaries enable patients with LBP to draw attention to, and even to resolve, otherwise hidden aspects of their individual illness experience merits exploration.

A project evaluating the referral of all new episodes of LBP presenting in a group of general practices to a physiotherapist provided the context for the present study. Our aims were to devise a format for the patient diary and to examine the feasibility of using it to obtain data on new episodes of LBP occurring among patients presenting in primary care. The study involved piloting three inter-dependent processes: uptake of diaries by patients; extraction and analysis of diary data; and evaluation of the data procured. While primarily an exploration of diaries as a research method, we anticipated that the study would also shed light on the relevance of diaries to the routine care of patients with LBP.

Method

Study design

The diary study formed part of a research project investigating the feasibility and cost-effectiveness of physiotherapist-led management of new episodes of LBP presenting in primary care. The project formed one of the responses of a single health district (North Cheshire) to the CSAG recommendations on LBP. Five general practices (n = 17 GPs), with registered populations (c. 32,000) amounting to approximately 10% of the district population and demographically representative of it, were approached and agreed to participate. Over a 12-month period we aimed to detect all patients between the ages of 18 and 65 years attending the participating practices with a new episode of LBP. In line with the recommendations of Croft, we defined a new episode as a consultation with a GP for LBP where the patient’s general practice record showed no entry for this condition during the preceding 6 months.

All patients referred to the study were issued by their GP with an information pack and an appointment for a practice-based back pain clinic staffed by a research physiotherapist (MAP).

Practice-based back pain clinics. In each of the participating practices, back pain clinics were organized to provide access to our physiotherapist in line with that recommended by the CSAG for ‘urgent’ cases, wherever possible within 72 hours of referral by their GP. Arrangements were made for any patients who, at assessment by the physiotherapist, exhibited significant neurological signs to be seen promptly by a local orthopaedic specialist. For patients who failed to make progress, arrangements were negotiated for assessment by a colleague from a local back pain rehabilitation unit.

Patients were interviewed by a research assistant (JSM) on their first presentation at the clinic and reviewed by her 12 weeks later. At interview and review, patients completed the Short Form 36 (SF-36), which comprises eight dimensions of quality of life.

Information pack. At presentation to their GP with a new episode of LBP, patients were issued with a pack containing: an information sheet about the main study; the RCGP ‘back book’ and, distributed at random in 20% of packs, a back pain diary inviting morning and evening entries over the ensuing 7 days. Since most patients were to be seen by the physiotherapist within 3 days of GP referral, the intention was that the diary should cover approximately equal intervals before and after clinical assessment by the physiotherapist. Completed diaries were retrieved at clinic follow-up appointments and returned either via practice receptionists or by post in the stamped addressed envelope provided.

Diary format. The diary identified the researchers, explained its purpose and reassured respondents about confidentiality. It invited respondents to identify themselves.

After piloting several layouts and alternative wording we adopted simple open-ended questions as prompts. For the morning entries we adopted: “This morning, are there any of your normal everyday activities which you
think you won't be able to do today because of your back?"; and for the evenings, “Looking back over the day, how have you felt about and how have you coped with your back ache?” In this way we aimed to explore any differences between anticipated and experienced problems.

At the end of the 7 days, we prompted patients to respond in more general terms with the question: “Are there any other comments you would like to make about your back ache over the past week? (e.g., how you have felt; how you have coped with the pain; how you feel about coping with back ache in the future).”

**Analysis of diary contents.** Early versions of the diary were used to refine wording and procedure; the analysis reported here is based on completed diaries in the format described above. Analysis of text was inductive and followed well-established conventions for ensuring that the process was grounded in patient data rather than reflecting pre-existing notions. First, a preliminary categorization of themes was derived from independent reading and re-reading of 22 diaries by two of the authors and reconciliation of their findings. Categories were defined by commonality of meaning across the accounts of a number of patients; isolated comments were insufficient. The analysis was then tested and modified in two ways: first, these authors applied it to the remaining diaries and modified it accordingly; then the remaining author read all 44 diaries before discussion amongst all three authors. Finally, specific diaries were read and discussed, the analysis being finalized when no further modifications emerged from this process and when all relevant text could be accommodated.

‘Cycling’ between the text and the developing analysis and the use of different authors in different roles are important for validity. In addition, key criteria of validity for our purposes included coherence of the final analysis and so-called ‘catalytic validity’, i.e. the utility of the analysis in providing ways of understanding LBP from which testable implications follow.

**Results**

**Subjects**

**Diary completion and compliance.** Because of the design of the study it is only possible to estimate the proportion of patients who received a diary and chose to complete and return it. Some 130 diaries were distributed in the information packs received by 615 patients referred to the study. From the 522 patients who attended our back pain clinics and were recruited into the main study, 44 completed diaries were retrieved, giving a crude response rate of 40%. However, recent data suggest that approximately 20% of adults in the local population have difficulty with reading/language at a level needed to complete the diary. Correcting for this factor suggests that among those able to make use of the diary the response rate was closer to 50%.

Among returned diaries the level of compliance with at least seven single daily entries was high (91%).

**Characteristics of diary respondents.** All but one of our diary respondents chose to identify themselves. Using data from the initial clinic interview we compared the characteristics of diary respondents (n = 43) with those of all patients presenting to the main study with LBP (n = 479). The diary respondents were not significantly different from the main study group with respect to age, gender, occupation, duration of symptoms, previous history of LBP and SF-36 scores (Table 1).

However, in comparison with the main study, on average diary respondents were seen significantly sooner by the physiotherapist (P < 0.01).

**Table 1** Initial SF-36 scores in diary respondents and in the main study group

<table>
<thead>
<tr>
<th>Dimensions of SF-36</th>
<th>Diary group (n = 43)</th>
<th>Main study group (n = 479)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>Bodily Pain</td>
<td>34.1</td>
<td>19.4</td>
</tr>
<tr>
<td>Role limitation due to emotional problems</td>
<td>76.2</td>
<td>34.0</td>
</tr>
<tr>
<td>Mental Health</td>
<td>64.4</td>
<td>20.0</td>
</tr>
<tr>
<td>Energy/Vitality</td>
<td>52.6</td>
<td>23.3</td>
</tr>
<tr>
<td>Social Functioning</td>
<td>66.4</td>
<td>29.7</td>
</tr>
<tr>
<td>Role limitations due to physical problems</td>
<td>31.6</td>
<td>35.4</td>
</tr>
<tr>
<td>Physical Function</td>
<td>58.1</td>
<td>26.1</td>
</tr>
<tr>
<td>Change in Health</td>
<td>47.0</td>
<td>19.3</td>
</tr>
<tr>
<td>General Health</td>
<td>66.7</td>
<td>23.5</td>
</tr>
</tbody>
</table>

No significant differences in scores were found (ANOVA).
**Data extraction.** Independently, the three authors (A, B and C) recorded the time required to read each diary in a random subsample of 22. The average time ranged from 1 minute 53 seconds to 2 minutes 32 seconds. Correlation between extraction times for all 22 diaries for all three authors was highly significant [Pearson r: AB = 0.63, AC = 0.78, BC = 0.87 (P < 0.01)]. On this basis, the average time required to extract data from a diary was approximately 2 minutes 10 seconds.

**Thematic analysis**
Judged simply by the number of completed entries, respondents preferred to record accounts of experienced (evening) problems rather than anticipated (morning) ones. However, when analysed separately, we were unable to show differences in their thematic content; in the account which follows we have combined them. Summative responses at the end of 7 days were analysed separately.

Below we present the major themes and illustrate them with quotations from the text of individual diaries.

**Patients' accounts of their disability.** This aspect of patients’ experience of LBP was clearly cued by our questions. Our analysis reveals differences in individual experience of disability at three general (and overlapping) levels: difficulty with maintaining posture, with specified movements and with complex physical activities.

**Posture.** There is no consistent pattern of reported experience. For some patients, sitting was a source of pain and, therefore, of difficulty with their occupation. For others, lying down, for example in bed, was associated for some with “stiffness in the morning” and/or “pain waking me from sleep”. In contrast, yet others commented on the relief obtained from the pain by “lying on the floor or lying on stomach”. Some felt that “relaxing makes me worse”, while a common theme was the search for the best compromise between rest and mobility: “taking things at a steady pace, coped by sitting down and relaxing”.

**Movement.** General experience such as “moving hurts” and “restrictive”, or “hardly able to move” and “stiffness” was illustrated by reference to: “climbing stairs”, “walking”, “bending”, “coughing”, and “sneezing”, “getting up from sitting” and “twisting”. However, some patients described pain relief “after exercise” or “light training”, or found certain movements helpful: “stretching” or “leg stretching”.

**Activities/tasks.** Patients’ general statements of difficulty in performing their usual activities referred to “everyday” or “even the simplest task”. More specifically, in terms of personal care, references were made to: “dressing”, “putting on socks and shoes” and “washing hair”. In or around the home to: “housework”, “making beds”, “hoovering”, “looking after baby” and “gardening”. In terms of wider activities, patients recorded difficulty with: mobility, “driving” and “running for a bus”; with participation in sport, “golf”, “football”, “squash”; and other recreational pursuits, “tap dancing”.

**Patients' accounts of their pain.** Although not specifically cued by our prompts, most patients recounted their experience of pain during the week. Three themes emerged from our analysis: the site, intensity and pattern of LBP. In addition, there was evidence of patients’ search for factors that aggravated or relieved their pain.

**Site.** Most patients described pain as being in one or other side of the low back, occasionally in the “middle region”. Other sites of pain included: “foot”, “right leg to foot”, “right buttock”, “top right hip” and “down right groin”.

**Intensity.** Pain ranged from “negligible” and “some pain present” through “heavy pains” to “extremely bad”. Variation in the level of pain was also described: “pain much better, but still present”. Improvement was couched in terms of: “less intense”, “easing”, “improvement” and “diminishing”; and persistence such as “pain lingering” or “nagging”.

**Pattern.** Some patients used words which implied that their pain was continuous: “constant nagging”, a “continual ache”; while others described intermittent pain: “fits and starts” and “twinges”. Variation in pain during the day was commonplace but timing was inconsistent. For some there was “worsening of pain in morning”, “a lot of pain until afternoon” and “lessening of pain as the day progressed”; while for others there was: “worsening of pain towards evening”, “discomfort towards evening” or “bad pain became worse over the course of the day”. This variation in pattern seemed to be independent of pain intensity: while some found that “morning stiffness wears off during the day”, others found “the back tired towards evening”, or experienced “twinges” or “aching pains later on in the day”.

**Patients' accounts of their emotional reactions.** Patients recounted a range of psychological reactions to their LBP. Our analysis grouped them into two themes: feelings/mood and fears.

**Feelings and mood.** Feelings ranged from “annoyance” and “frustration” to “distress” and “hopelessness”. Some patients referred explicitly to “anxiety” and “depression”, while others illustrated their mood: “just started crying”; or described its source: “anxious about being off work, I am a very anxious person anyway, the kids are driving me mad and the housework is piling up”.

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Fears. Expressed fears fell into two groups. The first related to fear of not coping with the episode of LBP: “lack confidence”; “lack of faith in the back”; “not coping well”; and “unable to cope with back pain due to sleep loss from pain”. The second group contained fears about the future: “lack of improvement”; “worry about setback”; and “lack of confidence in case back goes again”.

Looking back over the week. Whilst there was some overlap with themes from daily entries, most patients used this section of the diary to express general observations about the week’s experience of an episode of back pain. Two new themes emerged from the analysis of these comments: insight gained and perceptions of early access to physiotherapy.

Insight. Some diary entries indicated that patients felt they had learnt from the episode: “feel I can cope in future as I realise exercise eases it”; “knew that time/patience would get over the problem”; and “I will just manage when it comes back”. However, these comments were not always optimistic and some reiterated fears about the future (see above). In addition, patients appeared to reflect on significant aggravating or relieving factors: “walking up and down stairs with pram” or “massage by daughter”.

Early access to physiotherapy. References to contact with the physiotherapist were uniformly positive. Explicitly, patients commented upon the quality of explanation and reassurance derived from the single contact during the week of the diary: “helped to explain causes/effects and remove any misconceptions”; “better mentally after talking to the physiotherapist”; and “put my mind at rest, knowing it will get better and is not serious”. More general comments supporting early access included: “exercises working well”; and “as well as curing the pain, they [exercises] would also prevent it from returning, hopefully”.

Outcomes
Among our diary respondents, 43 (98%) had recovered significantly by 12 weeks. On the basis of their SF-36 scores (Table 2), well-being resembled that in normal subjects.30 One patient (2%) required referral to an orthopaedic specialist at first presentation and another (2%) to the local back rehabilitation unit at 12 weeks.

Discussion
This study demonstrates that primary care patients with a new episode of LBP will complete a 7-day diary in sufficient numbers to make qualitative analysis feasible. However, the representativeness of diary respondents’ experience of LBP is a complex issue, even in a qualitative study.27,31 By distributing diaries in a random sample of information packs, our study design precluded any oral explanation of their purpose or encouragement to complete and return them. For this reason the study may well underestimate the completion rate in other circumstances. Diaries inevitably exclude those who do not have the basic literacy skills required to complete them. In our catchment population this amounted to about 20%29 and must be regarded as a source of systematic bias. However, LBP presenting in primary care is already a subsample of the population’s total experience of back pain.32,33 For this reason, the representativeness of our respondents’ experience of LBP needs to be considered not simply in sociodemographic terms, but also in relation to that of the generality of patients
presenting with LBP in primary care. A strength of the present study is that we were able to compare diary respondents with the much larger group from which they were drawn. In terms of observed social characteristics and SF-36 data, our diary respondents were indistinguishable from the generality of primary care patients with a new episode of LBP. In particular, the SF-36 data suggest that they form a representative sample with regard to pain, disability and emotional sequelae.

Among other issues influencing the validity of our findings are the format and duration of the diary and the wording used to prompt patient responses. These necessarily involve judgements about potential ambiguity, comprehensibility and the tolerance of potential respondents. While the diary used in this study was a prototype, we found no evidence to suggest misunderstanding by respondents. Our decision to seek separate morning and evening data, while theoretically sound, did not prove useful. The preference of our patients for evening over morning responses can be accounted for, simply, by their greater convenience or by respondents’ wishes to report experienced rather than anticipated problems.

The face validity of our thematic analysis is supported by two overall aspects of the findings: first, the familiarity of the biophysical themes to the specific symptomatology of LBP seen in clinical practice; and, second, the heterogeneous, and sometimes contradictory, nature of the experience of the condition for individual patients. In the latter respect, our findings resemble those derived from patients with LBP by other studies using qualitative methods of interview and analysis. In terms of coherence of the analysis, our data reinforce the relevance to patients of all three dimensions of the biopsychosocial paradigm. Thus accounts of individual disability, pain experience and emotional reactions during the early stages of an episode of LBP can be seen as products of varying combinations of the following: the site and severity of the physical lesion; personality and coexistent mental state; and prevailing social pressures, including family and work.

In terms of catalytic validity, a number of testable implications emerge from the analysis. In some of our patients, improvement after 1 week was accompanied by adjustment and insight; early exposure to reassurance and encouragement to exercise by a physiotherapist may have been instrumental in empowering patients. The wide variation observed in disability, pain and emotional reactions raises questions about the utility of ‘low back pain’ as a diagnostic label. Whilst studies of the predictive validity of initial psychosocial variables for the outcome of an episode of LBP have not proved useful to clinical practice, a key research question remains unanswered: “does active management of psychosocial variables influence outcome?” We suggest that a classification of LBP in primary care which more sensitively reflects these variables is needed; qualitative methodologies have a major part to play in defining the elements of such a classification.

Given the ease and speed with which data can be extracted from patient diaries, we suggest that their use is feasible and could be beneficial in routine clinical practice. Over and above their potential to capture the individuality of patients’ experience within an heterogeneous condition, diaries may reveal factors which common sense suggests will be useful to the GP or physiotherapist providing care in an episode of LBP. These include: day-to-day variation and progress of symptoms; self-management strategies found to be effective; and clues about the level of patients’ understanding of and adjustment to the condition. Recently, the direct benefits to patients of writing about their illness have been reviewed; keeping a daily diary may help the patient gain new insights into the illness, with new meanings and connections arising from reflection. Overall, we conclude that patient diaries merit further investigation as a qualitative research tool, and as an adjunct to the management of LBP in primary care.

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References


