The use of patient partners with back pain to teach undergraduate medical students

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Objectives. To assess the impact of teaching about back pain to medical students using trained patient partners (PP).

Methods. An initial training programme for four PPs (two with sciatica and two with ankylosing spondylitis) followed by teaching to alternate groups of medical students at the Whittington Campus of the Royal Free and University College Medical School (RFUCMS). A control group of students did not receive the PP teaching. All students received standard Whittington Campus rheumatology teaching. Performance in an end of year objective structured clinical examination (OSCE) was compared between the two groups. Student and PP perceptions of the teaching and training were evaluated using focus groups and questionnaires.

Results. Students receiving the PP teaching performed significantly better in a summative OSCE, but no difference was seen in analysis of a single station assessing history-taking skills in a patient with back pain. Students felt that the PP teaching improved their ability to elicit information from a patient during the consultation. PPs enjoyed the experience of teaching and felt empowered to self-manage their medical conditions, and were better able to seek medical advice when needed.

Conclusions. Using PPs with back pain to teach medical students has a positive effect on student learning and patient well-being. The feasibility of delivering this programme will depend on faculty resources. The effects on examination performance are small but significant.

Key words: Patient partners, Back pain, Education, Medical students.

Back pain is a common cause of disability and pain in the community, affecting 17.3 million people in the UK [1]. The direct health costs of back pain are significant: over £500 million is spent on hospital care, with £140 million spent on primary care [1]. Back pain forms a substantial component of time off work due to sickness. In the UK it is the second commonest cause of long-term sickness absence, and led to up to 180 million working days lost in 1997/8 [2]. Pain is non-specific in most cases, with the prevalence of prolapsed intervertebral discs being 1–3%, and other diagnoses such as infection, malignancy or ankylosing spondylitis less common. Acute back pain is usually self-limiting, with 90% of people recovering within 6 weeks. A small proportion (2–7%) develop chronic pain lasting 12 weeks or more.

Exposure of medical students to patients with back pain may be limited due to the fact that most patients are seen in out-patient clinics and primary care rather than as in-patients. Students are therefore disadvantaged in not gaining experience in managing this common condition. Also, other health professionals such as physiotherapists have a major role in management of patients, and exposure of medical students to allied health professionals is extremely limited. A way of solving this problem is to use trained patients (PPs)/patient instructors (PIs).

A review of 13 articles discussing the roles of patient partners in teaching examination skills found that they had a positive effect on learners’ experiences. Patients enjoyed the teaching role and the high quality of the patients’ teaching was commented on in several papers [3]. PPs with stable cardiovascular, respiratory, musculoskeletal and neurological signs have been used to teach medical students. Those taught by the PPs had comparable skills to those taught by faculty members [4]. Laywoman gynaecological teaching associates have been used to teach pelvic examination to students, and led to better student interpersonal skills [5]. Patients with HIV have been successful in helping students increase the intimacy of the teaching process and to realize that patients are people with real lives rather than a ‘pathology’ [6].

In musculoskeletal examination, PPs have been found to be as effective as consultant rheumatologists in teaching musculoskeletal examination techniques [7]. Teaching by PPs in arthritis has led to improved retention of information, confidence and examination skills in second-year students [8]. Similar interventions in residents led to a persistent increase in examination skills [9]. Students taught by PPs with rheumatoid arthritis had significant increases in knowledge, confidence and attitude [10]. Graduate students taught hand and wrist examination by arthritis patient educators had higher levels of examination skill than those taught by non-specialist doctors [11].

Methods

A novel training programme for PPs with back pain was developed. The effect of this teaching on student confidence and performance in examinations was then assessed.
Patient recruitment

Recruitment took place in September and October 2001 in the rheumatology out-patient clinics of the Whittington Hospital NHS Trust. Information leaflets and posters advertising the project were displayed in the waiting area and clinic rooms. It was initially planned to recruit patients with non-specific back pain, but this proved difficult over the short recruitment period for several reasons: patients with non-specific pain were often working and unable to attend the training programme. Some patients were too well, and others had marked psychosocial problems that would hinder their training and ability to teach students. We therefore widened the scope of recruitment to include patients with inflammatory spinal disease and sciatica. Four patients were recruited. Written informed consent was obtained from all patients prior to the start of the programme in accordance with the Declaration of Helsinki. Ethical approval was obtained from the Whittington NHS Trust Local Ethics Committee.

Patient demographics

Three male patients and one female patient were recruited. The mean age was 45.5 yr (range 29–56 yr). The female and one male patient were in employment. Two male patients had retired. Two patients (male) had ankylosing spondylitis. The remaining male patient had chronic back pain with intermittent sciatica. The former had been treated conservatively and the latter had undergone spinal surgery.

Patient partner training programme

Training took place in November and December 2001 at the Clinical Skills Centre, Whittington Hospital. Content was based on the undergraduate rheumatology curriculum requirements for back pain at the Royal Free and University College Medical School (RFUCMS). Training took the form of interactive seminars, and was delivered by members of the rheumatology department at the Whittington Hospital and staff from the Academic Centre for Medical Education (ACME). Training comprised two full-day and four half-day workshops. A pre-training questionnaire investigated their expectations of the PP project.

Sessions 1 and 2

(i) How to teach and structure teaching effectively. The material for this was taken from established Teaching Improvement Project System (TIPS) courses run by ACME.
(ii) Seminar on the causes of back pain.
(iii) History taking and the gait, arms, legs, spine (GALS) screen: The GALS screen was demonstrated and PPs had the opportunity to practice it on each other. The structure of a clinical history was explained, as well as a discussion about what the doctor is trying to achieve. The communication skills needed for history-taking were explained, for example the use of empathy and the differences between open and closed questions.
(iv) The concept of feedback and how to give it was also explained as this was what the PPs would be doing with students.
(v) The PPs then prepared a 5-min presentation (microteach) on a topic covered in the first 2 days. Feedback on the presentations was given by the investigators.
(vi) Revision of content from days 1 and 2.
(vii) Spinal anatomy, including surface anatomy, dermatomes, reflexes, sciatic and femoral nerve stretch tests.
(viii) ‘Red flags’ in back pain and their significance.
(ix) Group discussion on non-drug therapies for back pain, facilitated by investigators and a senior physiotherapist.

Session 6. PPs took part as examiners in a four-station objective structured clinical examination (OSCE). Students from the current rheumatology firm were assessed on their history-taking and examination skills regarding back pain and feedback on their performance was given by PPs.

A post-training satisfaction questionnaire was completed by all PPs to help ensure that they felt ready to teach. Unfortunately at this point one PP with ankylosing spondylitis then withdrew from the programme due to work commitments.

Medical student teaching

‘Standard’ teaching. This was given to all students (intervention and non-intervention groups) and comprised the normal rheumatology timetable for the 5-week block. This included attendance at rheumatology clinics, where students had the opportunity to take histories and examine patients with a variety of musculoskeletal problems, including back pain. Consultant and specialist registrar teaching covered musculoskeletal examination skills. Students had a weekly teaching morning led by the rheumatology consultants which included clinical problem-solving exercises and seminars in which they delivered on the following subject areas: inflammatory arthritis (specifically including ankylosing spondylitis), connective tissue disease, osteoarthritis and crystal arthropathy. The PP teaching sessions ran instead of one of these mornings, ensuring that faculty input was available as this would be a time when they would be teaching anyway.

Medical student teaching by PPs. Teaching began in January 2002, and initially took place in weeks 2 and 4 of the 5-week rheumatology/orthopaedics firm at the Whittington Hospital Campus of RFUCMS. Each firm was made up of 12–15 students in year 3 of their medical training.

In order to assess the impact of the training programme on knowledge and skills, only alternate groups of students on the Whittington Campus were given the PP teaching. Each session lasted approximately 75 min. Subsequently, both sessions were amalgamated into a whole morning of teaching in response to student and PP feedback.

In teaching session 1, students took a history from the PPs who would then give feedback on the student performance. Then PPs taught students how to perform the GALS screen, the straight leg raise and sciatic/femoral nerve stretch tests. Facilitation was provided by the investigating team if required.

Session 2 included an interactive seminar on non-drug treatments for back pain, led by the PPs. This covered areas such as physiotherapy, exercise and complementary therapies. PPs and the study investigators produced a video showing a physiotherapist talking to the PPs about how to manage back pain and demonstrating core stability exercises. Students had the opportunity to practice these exercises.

Evaluation of PP training programme

Using free text questionnaires and group interviews, PP views on the initial training programme and the student teaching were obtained. The interviews were transcribed and analysed thematically.

Evaluation of student teaching programme

Students completed questionnaires before and after teaching. The pre-teaching questionnaire covered how confident students
felt in aspects of history-taking such as gathering and giving information. The post-teaching questionnaire asked the same questions regarding confidence, but also asked students to rate how useful they found the teaching, using a 5-point scale and space for free text. A random sample of 10 students were chosen to take part in a focus group discussion to gain further insights into their evaluation of the teaching. The focus group interview was transcribed and analysed for emerging themes by two investigators independently to ensure that there was no bias in interpretation.

Quantitative data on the possible effect of the teaching used in performance in an end-of-year summative OSCE examination taking place in July 2002. This examination was taken by all year 3 students on three campuses over 1–2 days. The OSCE covered general medicine and general surgery. OSCE stations tested history-taking, examination and communication skills, practical procedures and data interpretation. The overall OSCE score and score in a station specifically assessing history-taking skills in a young male patient presenting with back pain and symptoms of ankylosing spondylitis was compared between the intervention and non-intervention groups. The passing score for the OSCE as a whole and each OSCE station was set by an independent standard setting group using the modified Angoff method. This pass score was applied to the whole of year 3.

Results
Sixty students received PP teaching between January and August 2002. Quantitative data were analysed using SPSS v11.5. A P value of <0.05 was taken to be statistically significant. The questionnaire looking at consultation skills before and after PP teaching was analysed using non-parametric methods and adjustments were made for multiple testing. A P value of <0.006 was taken to be significant in this case. Qualitative data were analysed using standard qualitative methods of transcription and development of themes. No computer software was used for this part of the analysis. Ninety per cent (54/60) of student questionnaires were suitable for analysis. All PP questionnaires were suitable for analysis.

PP pre-training evaluation questionnaire
PPs wanted to give medical students a better understanding of how back pain affects the individual in their daily life. PPs wanted to encourage students to develop a holistic approach to management. The PPs themselves wanted to improve their interpersonal skills and discuss their experiences with other back pain sufferers. However, there were concerns expressed about having to lead a discussion and talking to students.

PP post-training questionnaire
PPs felt that their understanding of the causes and treatment of back pain in general and knowledge of their own condition had improved after the training programme. Confidence in their ability to teach medical students also increased. This was measured using a 1–5 Likert scale (1 = not at all confident; 5 = very confident). The median confidence level prior to training was 3.0 compared with 4.0 after training.

Effect of teaching on student consultation skills
Table 1 summarizes the median and mean values for student responses to the anchor statements. A 1–5 Likert scale was used, with 1 = not at all confident and 5 = extremely confident.

<table>
<thead>
<tr>
<th>Effect of teaching on student consultation skills</th>
<th>Pre-teaching</th>
<th>Post-teaching</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establishing rapport with a patient</td>
<td>4 (3.8)</td>
<td>4 (3.6)</td>
<td>0.17</td>
</tr>
<tr>
<td>Finding an appropriate questioning style</td>
<td>3 (3.2)</td>
<td>3 (3.3)</td>
<td>0.19</td>
</tr>
<tr>
<td>Listening to patient needs and concerns</td>
<td>3 (3.6)</td>
<td>3 (3.5)</td>
<td>0.59</td>
</tr>
<tr>
<td>Eliciting information</td>
<td>3 (2.9)</td>
<td>3 (3.3)</td>
<td>0.001*</td>
</tr>
<tr>
<td>Presenting information in clear fashion</td>
<td>3 (2.9)</td>
<td>3 (3.1)</td>
<td>0.12</td>
</tr>
<tr>
<td>Agreeing a course of action with patient</td>
<td>3 (2.7)</td>
<td>3 (2.9)</td>
<td>0.04</td>
</tr>
<tr>
<td>Prioritizing problems</td>
<td>2.8 (0.74)</td>
<td>3.0 (0.82)</td>
<td>0.08</td>
</tr>
<tr>
<td>Concluding an interview successfully</td>
<td>3 (3.2)</td>
<td>3 (3.3)</td>
<td>0.26</td>
</tr>
</tbody>
</table>

*Statistical significance at P < 0.006 due to correction for multiple testing.

Results were analysed to find out whether there was a difference in pre- and post-teaching questionnaire scores using the Wilcoxon signed ranks test with adjustment for multiple testing.

Student evaluation of PP teaching
A Likert scale was used with 1 = not at all useful and 5 = very useful. The median scores are listed below:

- usefulness of history-taking with feedback: 4
- usefulness of examination skills teaching: 4
- usefulness of non-drug therapies seminar: 4
- overall usefulness of this teaching method: 4

Several themes emerged from the focus group and free text comments. Students found the environment safe and non-threatening. Immediate feedback on performance after history-taking was appreciated. There was more time to listen to patient experiences, and students became aware how much the PPs knew of their conditions. Themes also emerged about improving the teaching. Students would have preferred more time to develop examination skills and an improved ratio of PPs to students. The learning experience was most valuable when both a PP and clinician were facilitating together. Students commented that the back pain PPs were less confident than other PPs they had encountered with rheumatoid arthritis. However, they appreciated that the RA group had been running for a much longer period.

Student quotes
‘The concept is good...you don’t see people with back pain and sciatica on the ward.’
‘...time to practice examination without time pressure, and nice to speak to someone who is happy to talk to students.’
‘...relaxed way of learning, with less pressure than in the actual hospital setting.’
‘...they give a more rounded picture of living with a chronic illness and are able to give us feedback.’
‘...the PPs couldn’t answer some of the medical questions, but it was OK because they were answered by Dr X.’

Effect of teaching on student examination performance
Total score in a summative OSCE, and specific performance in an OSCE station assessing history-taking skills in a patient with ankylosing spondylitis were analysed. The mean OSCE score was calculated for the intervention and non-intervention groups and analysed for statistical difference using a t-test for equality of means (see Table 2).
PP evaluation of training programme

The main reason PPs volunteered for the project was to increase the knowledge of future doctors about how to manage patients with back pain.

PP evaluation of student teaching

PPs initially had concerns about students asking questions they could not answer. The presence of a faculty member who would be available for support if needed was felt to be useful, and the need for faculty input reduced as the PPs gained in confidence. The student objectives and learning outcomes were felt to be appropriate.

Focus group interviews were held to ascertain how PPs felt about the teaching programme, as well as the effect of the teaching on themselves. Themes arising from analysis of the interviews were that the PPs were surprised that students knew so little about back pain and its treatment, and how they tended to concentrate on the nature of the pain rather than the effect of the pain on the daily life of the patient. They felt that most students benefited from the teaching, but were surprised by the variability in enthusiasm in different student groups. PPs also felt the teaching improved the management of their own back pain as well as enabling them to advise members of their families with similar problems. Improved confidence in voicing their needs in consultations with doctors was also mentioned. The question of financial reimbursement also arose in the focus group. PPs felt that they should be paid appropriately for their time, especially if they have had to take time from employment.

PP quotes

Patient A: ‘...before this programme I didn’t know much about my back pain... now when I go to the doctor I know what to say... I’ve become more involved.’

Patient B: ‘...it makes me a little more confident in dealing with people...’

Patient C: ‘If I was to carry on with this I would want more money I am afraid, in recognition of what I am doing.’ (This patient was in paid employment.)

Discussion

We have described an innovative way of teaching medical students about back pain, which has not been described previously. The teaching has been successfully piloted with undergraduate medical students. PPs are now successfully working with GPs to discuss issues around diagnosis and treatment of back pain.

The teaching has been well received by students who have found it a valuable experience, allowing more time to talk to patients in a non-threatening atmosphere. PP feedback on their performance is appreciated. Students preferred facilitation by a PP with a clinician available to answer any medical questions beyond the scope of the PP’s knowledge. As PP confidence increased through the teaching programme, the need for a clinician to help became less.

Students who received PP teaching performed significantly better overall in a summative OSCE, but no difference was seen on analysis of a single station assessing history-taking skills in a patient with back pain and features of ankylosing spondylitis. Quantitative methodologies probably do not fully display the beneficial effects of the teaching, as the differences in total OSCE score may be explained by factors other than the PP teaching.

The qualitative data suggest a more profound impact on student attitudes, which is difficult to assess in an OSCE setting. In the future, using reflective practice of their experience with PPs as part of a student portfolio may be a better form of assessment.

The PPs themselves have enjoyed the teaching experience. It increased their confidence in managing their own conditions and also improved their communication with medical professionals. Anecdotally, it was very rewarding to see the PPs gain in confidence throughout the teaching period.

PP teaching only took place on one campus of RFUCMS. Ideally, we would like to extend the teaching to the other two campuses. In order to achieve this, we would need to recruit and train further PPs, and find a suitable place for the teaching in an already crowded curriculum. The question of financial reimbursement and cost-effectiveness of the teaching programme is a difficult issue and this has to be taken into account when allocating resources for any similar programmes.

Table 2. Effect of PP teaching on summative OSCE scores

<table>
<thead>
<tr>
<th>No of students (n)</th>
<th>Mean OSCE score in back pain station (%) (for n students)</th>
<th>Mean total OSCE score (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PP teaching (58)</td>
<td>79.3 (60)</td>
<td>79.2</td>
</tr>
<tr>
<td>‘Standard’ teaching alone (56)</td>
<td>75.8 (54)</td>
<td>77.2</td>
</tr>
<tr>
<td>P value</td>
<td>0.14</td>
<td>0.03*</td>
</tr>
<tr>
<td>95% confidence interval of difference in mean scores</td>
<td>$-1.25$–$3.38$</td>
<td>$0.11$–$3.77$</td>
</tr>
</tbody>
</table>

*Significant.

Table 3. Cost estimate for a PP teaching programme

<table>
<thead>
<tr>
<th>Item</th>
<th>Time</th>
<th>Cost per session (£)</th>
<th>Cost per year (£)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Room hire</td>
<td>3 hours</td>
<td>150</td>
<td>1200</td>
</tr>
<tr>
<td>Senior clinician time</td>
<td>3 hours</td>
<td>135</td>
<td>1080</td>
</tr>
<tr>
<td>PP honorarium (£10)</td>
<td>–</td>
<td>30</td>
<td>240</td>
</tr>
<tr>
<td>PP travel reimbursement (£5)</td>
<td>–</td>
<td>15</td>
<td>120</td>
</tr>
<tr>
<td>Total annual cost</td>
<td></td>
<td></td>
<td>2640</td>
</tr>
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</table>

This estimate is based on three PPs teaching students on one campus for one morning (3h) every 5-week rheumatology firm. At RFUCMS, this would mean eight teaching sessions with a total of 120 students. Clinician facilitation of thses sessions did not take up extra time as it took place during a timetabled student teaching morning. Rooms in the Clinical Skills Centre did not accrue a cost. Estimates will include clinician time and room hire based on values at RFUCMS.

Our initial aim was to recruit patients with simple mechanical back pain. This proved difficult because such patients were often unable to attend training, or their symptoms were very mild or intermittent. Many patients with self-limiting mechanical back pain are seen in the community and it may have been better to recruit patients from primary care. Using PPs with inflammatory back pain and sciatica has proved successful. Although these conditions are less common than simple back pain, the students can still learn from such patients about the effects of chronic illness on daily life.

It can be argued that the time taken in designing and delivering the PP training programme could have been used in direct student teaching, but this view does not take into account the positive effects of the intervention on students and patients. A theoretical advantage of PP teaching is a reduction in the need for clinician involvement. However, PP training required significant clinical input, and students preferred teaching with a combination of PP and medical teachers. As PPs gain in confidence, the need for clinician involvement may decrease. However, the authors feel
that this should not detract from the educational value of this approach. As mentioned before, the PP teaching took place during a time when clinical teachers would normally be available for the standard weekly teaching morning.

It would be interesting to see whether patients with other stable chronic rheumatological conditions such as osteoporosis or osteoarthritis could also be used to teach medical students and health professionals. Further research is needed in this area.

<table>
<thead>
<tr>
<th>Key messages</th>
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<tbody>
<tr>
<td>• Back pain is common but opportunities for students to learn about it may be suboptimal.</td>
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<tr>
<td>• Training patient partners with back pain to teach medical students is feasible.</td>
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<tr>
<td>• Teaching provides benefit to both patients and students.</td>
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References