

COMMISSIONING CHIROPRACTIC SERVICES WITHIN A MULTIDISCIPLINARY SETTING

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Background

A service was commissioned by North East Essex PCT in March 2009 to provide patients with back and neck pain a choice of manual therapy delivered in the community by chiropractors, osteopaths and physiotherapists working in the independent sector.

With a registered population of over 318,000 people, served by some 43 GP practices, there has historically been an unsustainably high demand on the spinal manual therapy service at the local acute trust. The existing service utilised traditional physiotherapy outpatient clinics held within the local hospitals.

In order to reduce the demand on local services, to maximise patient and GP choice and access, and to secure short waiting times, the PCT commissioned 16 local independent sector chiropractic (3), osteopathic (3) and physiotherapy (10) providers under the Any Willing Provider (AWP) contract.

Patients presenting to their GP with back or neck pain were given a choice of provider and profession, and were provided with an appointment within 14 calendar days of referral.

Service design

The PCT and local Practice Based Commissioning groups worked with local NHS and independent sector clinicians, practitioners (including chiropractors, osteopaths and physiotherapists) and a patient representative to develop the new back and neck pathway. This stakeholder work commenced approximately two years prior to start up of the Manual Therapies Service.

In June 2008, all existing independent sector providers of chiropractic, osteopathy and physiotherapy operating within the North East Essex location were contacted individually to invite them to bid for provision of the new service under the AWP contract. Under the AWP contract, no guarantee of activity is offered and volume is dependent entirely upon patient choice and GP referral patterns. The Manual Therapy Service meets recommendations arising from the NHS Musculoskeletal Services Framework (2006) that was aimed at helping local health communities to deliver the maximum wait of 18 weeks by improving orthopaedic services. These recommendations include:

- Full exploitation of skills
- High quality managed patient pathway
- Care close to home
- Rapid access
- Use of the bio-psychosocial model
- Multidisciplinary approach

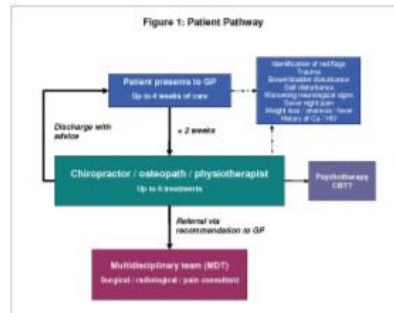
In addition, NICE guidelines issued in May 2009 (Early management of persistent non-specific low back pain, CG88) provide evidence and recommendation of the treatment of low back pain by manual therapists, including spinal manipulation, spinal mobilisation and exercise advice, which can be delivered by chiropractors, osteopaths and some physiotherapists. The guidelines also recommend the use of acupuncture. Acupuncture is provided by the majority of the manual therapists within the North East Essex PCT scheme as part of the treatment package for the patient if deemed appropriate by the therapist, and if desired by the patient.

The Pathway

The patient pathway is illustrated in figure 1. Patients presenting to their GP with back or neck pain were initially assessed to rule out 'red flag' pathologies and receive conservative management for up to four weeks prior to referral into the service, with provision for those requiring more urgent access.

Following referral:

- Patients had choice of discipline and clinic or could discuss with GP
- Patients were offered an appointment within 14 days
- All patients assessed using a bio-psychosocial questionnaire
- An assessment and up to 6 treatments offered
- Additional treatments required GP approval
- Patients discharged to GP with report and recommendations.



Data collection

The service was run initially as a one-year pilot, during which time clinical and quality outcomes were measured using the following methods:

- Through referral data supplied to the PCT by manual therapy providers on a monthly basis that recorded referral patterns and patient choice, treatment outcomes and recommendations, access times, number of sessions provided, uptake of the service by GPs and patients, equality of access in terms of ethnicity, geographic location and age, and cost.
- Patient satisfaction and GP surveys. All patients were asked to complete a satisfaction survey that was sent directly to the PCT. All GPs were surveyed using an on-line anonymous survey tool.
- Patient experience of manual therapies, gained by carrying out face-to-face interviews on a one-to-one basis with patients in their own home.
- An evaluation pilot using a patient reported outcome measure called the Bournemouth Questionnaire, which was supported and analysed by Professor Jenni Bolton (Anglo-European College of Chiropractic). Analysis of the Questionnaire was used to conduct a sub-type analysis and to determine clinical outcomes, psychosocial factors, fear avoidance, locus of control and back to work times, impact of treatment and responsiveness of therapies.
- Monthly project steering group meetings were held to aid continuous development and evaluation of the service, and to ensure a consistent clear pathway and process.
- Individual monitoring and feedback meetings with all providers held on a quarterly basis and a program of education events were held for the providers and GPs.

Service outcomes

A total of 2810 patients (38% male and 63% female) with back and/or neck pain conditions were referred into the service (see figure 2). Of these patients, 23% were seen by chiropractors, 32% by osteopaths and 45% by physiotherapists. The mean patient age was 52 years (range 16-96 years).

The average wait time from referral was 4 days and 97% of patients were seen within 2 weeks of referral.

The median number of treatments was 6 and 77% of patients had completed their treatment within 12 weeks of referral.

Clinical outcomes

Only 6% of patients did not gain improvement in their condition from the Manual Therapy Service, compared with 74% whose condition was very much or much improved (Figure 3).

At least 97% of patients referred into the Manual Therapy Service were kept out of secondary care. Only 3% of patients discharged were recommended for referral to the MDT (Figure 4).

Satisfaction & impact analysis

The Manual Therapy Service is highly popular with GPs and patients - patient surveys reflect a 96% response of either excellent or good in terms of satisfaction with the service overall, and a positive GP satisfaction response of 92%.

Referrals levels to the spinal surgeon at Colchester Hospital University Foundation Trust have reduced by almost 30% since introduction of the Manual Therapy Service.

Access to the Manual Therapy Service was temporarily restricted during February and March 2010. During that time, referrals to the spinal triage service increased by an average of 30%, which proved to be unsustainable.

Due to the success of the pilot study the service has been extended until April 2011.

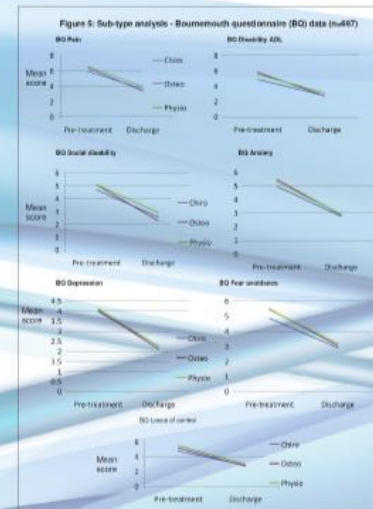


Figure 2: Referrals into service and presenting complaint (n=2810)

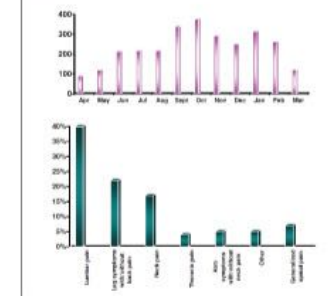


Figure 3: Clinical outcome using a Clinical Global Impression Scale

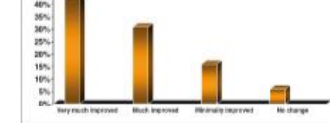
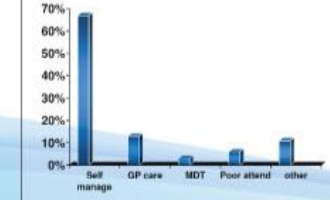


Figure 4: Recommendations on discharge



Conclusions

The results of the pilot study demonstrate that it is possible for the NHS to successfully commission independent chiropractors, as part of a multidisciplinary service, to treat back and neck pain.

The resultant service utilised a bio-psychosocial approach that was safe, effective and cost effective and delivered:

- High quality care
- Care closer to home
- Value for money service
- Improved choice
- Proven clinical outcomes
- High levels of satisfaction

Acknowledgements

We are grateful for the help and support from our colleagues, in particular Sarah Esson from NHS North East Essex and Professor Jenni Bolton from the Anglo European College of Chiropractic, Bournemouth UK.

NHS Alliance Acorn Award

NHS North East Essex was awarded an NHS Alliance Acorn Award in 2009 for the Manual Therapy Service for the treatment of back and neck pain.

Evaluation of a GP referral service for manual treatment of back and neck pain

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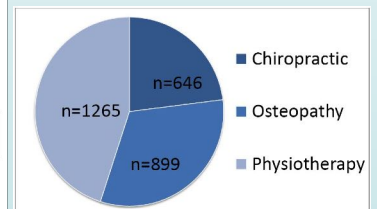
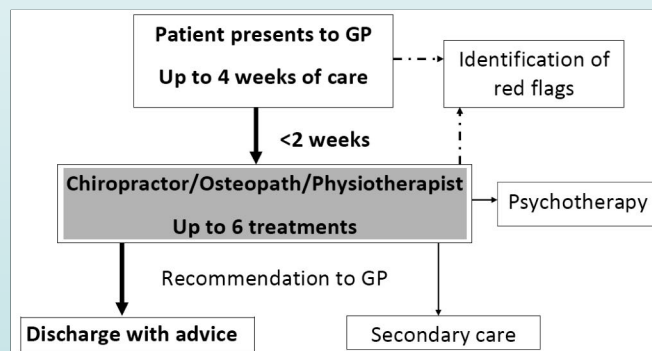
Background

- One in seven GP consultations is for a musculoskeletal problem
- Refer patients consulting for >6w in line with NICE guideline (2009)
 - Manual therapy by a chiropractor, osteopath or physiotherapist
- Most manual therapy services are physiotherapist-led at the primary-secondary care interface

Objectives

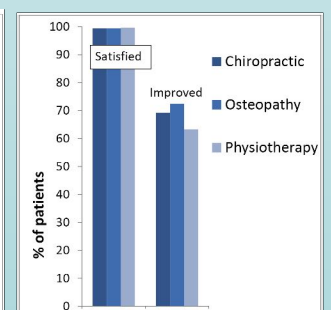
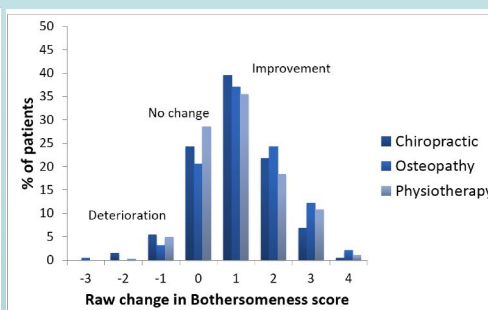
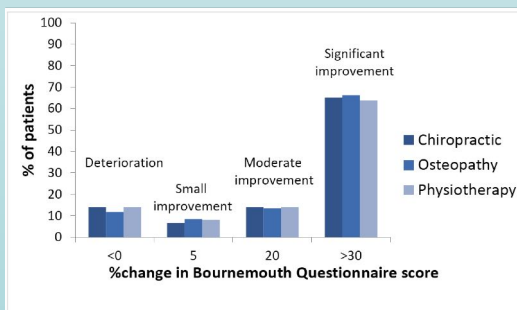
- Implement a novel primary care service of chiropractors, osteopaths and physiotherapists working in the independent sector
- Evaluate this service:
 - Patient-reported outcomes
 - Patient experiences
 - Impact on NHS resources

Service pathway

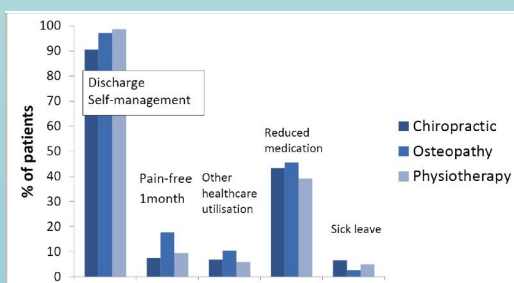


Results

Outcomes



Patient status at discharge



Impact analysis

- 92% of GPs were satisfied with the service
- Referrals to orthopaedic services reduced by ~30%
- Temporary suspension of the service resulted in an unsustainable rise in referrals to spinal triage services
- The service was extended to April 2011, thereafter to April 2012

Acknowledgements

We are grateful to all those practitioners who participated in the service and in collecting outcomes from their patients
 Our thanks to NHS NE Essex, in particular Ms. Sarah Esson



KEY MESSAGES

- This study describes an innovative primary care manual therapy service
 - Delivered high quality, evidence-based care to patients:
 - Shorter waiting times
 - Patient preference and choice of provider
 - Community-based
 - Cost savings:
 - Reduced GP workload (and costs)
 - Reduced secondary care services (and costs)
 - Patients discharged with self-management advice

WFC AWARD WINNING PAPER

CLINICAL OUTCOMES IN A LARGE COHORT OF MUSCULOSKELETAL PATIENTS UNDERGOING CHIROPRACTIC CARE IN THE UNITED KINGDOM: A COMPARISON OF SELF- AND NATIONAL HEALTH SERVICE–REFERRED ROUTES

Jonathan R Field, MSc, DC,^a and Dave Newell, PhD^b

ABSTRACT

Objective: An innovative commissioning pathway has recently been introduced in the United Kingdom allowing chiropractic organizations to provide state-funded chiropractic care to patients through referral from National Health Service (NHS) primary care physicians. The purpose of this study was to examine the outcomes of NHS and private patient groups presenting with musculoskeletal conditions to chiropractors under the Any Qualified Provider scheme and compare the clinical outcomes of these patients with those presenting privately.

Methods: A prospective cohort design monitoring patient outcomes comparing self-referring and NHS-referred patients undergoing chiropractic care was used. The primary outcome was the change in Bournemouth Questionnaire scores. Within- and between-group analyses were performed to explore differences between outcomes with additional analysis of subgroups as categorized by the STarT back tool.

Results: A total of 8222 patients filled in baseline questionnaires. Of these, NHS patients (41%) had more adverse health measures at baseline and went on to receive more treatment. Using percent change in Bournemouth Questionnaire scores categorized at minimal clinical change cutoffs and adjusting for baseline differences, patients with low back and neck pain presenting privately are more likely to report improvement within 2 weeks and to have slightly better outcomes at 90 days. However, these patients were more likely to be attending consultations beyond 30 days.

Conclusions: This study supports the contention that chiropractic services as provided in United Kingdom are appropriate for both private and NHS-referred patient groups and should be considered when general medical physicians make decisions concerning referral routes and pain pathways for patients with musculoskeletal conditions. (*J Manipulative Physiol Ther* 2015;xx:1-9)

Key Indexing Terms: *Patient Outcome Assessment; Musculoskeletal Pain; Chiropractic; Health Services Evaluation*

Musculoskeletal conditions are common in all countries and cultures and are a major burden on health system.¹ In the next 50 years, this burden is predicted to increase as the population ages and public health issues such as obesity and lack of activity take their toll.²

In the United Kingdom (UK), back pain accounts for 4.8% of all social benefit claims³ with the overall cost of musculoskeletal (MSK) conditions estimated at £5 to 7 billion per year and the number of general medical physician (GP) visits estimated at more than 30% of all consultations.⁴ As national health systems strive to accommodate increasing demands and resources are stretched, the direct and indirect costs of shouldering the MSK burden are increasingly considered a national priority in the UK and in other developed economies.

Historically, in the UK, MSK conditions have been managed predominantly within the state health care system, although successive governments have attempted to bolster the contribution of the private (ie, independent) sector by providing funded access for patients to care normally considered to be outside the state system. Traditionally, outpatient MSK services have been provided by single large

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organizations covering 1 or more National Health Service (NHS) region. In the “new” NHS England, MSK care is envisaged to focus more on outcomes rather than targets and to be more patient focused, with greater empowerment, individualized plans, and evidence-based pathways in care choice as well as extending the freedom of payers to commission new services.⁵

An example of recent changes in such service provision was the development of contracts whereby independent or state sector organizations able to demonstrate achieving a priori excellence and clinical governance criteria as set by the UK government were able to apply to provide care funded by the NHS. These were termed *Any Qualified Provider (AQP) contracts*, and for the first time, they enabled organizations providing chiropractic services to accept and be remunerated for patient care as referred from primary care physicians (ie, general medical practitioners [GPs]) within particular NHS regions. These patients' health care treatments are paid for by the NHS through a set tariff not related to the number of treatments.

Previous research suggests that demographic and condition-based differences exist between private and state-funded patients with MSK conditions, with state-funded patients being somewhat less healthy (eg, greater severity, duration, and comorbidity) than private patients.⁶ However, it is not known if these differences affect response to chiropractic care.

In addition, pretreatment screening of patients with nonspecific low back pain (LBP) using the STarT Back Tool (SBT) has been developed and is intended to help GPs, and others direct such patients to targeted treatment.⁷ Given that its use has increasingly been included in NHS back pain pathways, the authors have described the prognostic utility of this tool in patients presenting privately for chiropractic care.⁸ However, little is known about the utility of SBT for patients seeking chiropractic care through state-funded services

The purpose of this study was to examine the outcomes of NHS and private patient groups presenting with MSK conditions to chiropractors under the AQP scheme and compare the clinical outcomes of these patients with those who presented privately. A second purpose was to examine the differential outcomes of patients with LBP who were classified as low, medium, and high risk of not improving by the STarT Back stratification tool in both patient groups.

METHODS

Participants

The design of the study was observational using routinely collected data from patients over the age of 16 years at a consortium of UK-based practices located in the south of the UK. These clinics, in addition to providing care for private self-referring patients, also provided services to

the NHS through an AQP contract with NHS patients being referred by local GPs.

Data Collection

Patient characteristics and outcomes were collected via a Web-based patient-reported outcome measure collection system (Care Response, <https://www.care-response.com/CareResponse/home.aspx>). This methodology has been developed to provide validated measures to patients by e-mail links sent automatically at set follow-up time points throughout and beyond the provision of face-to-face care. Using this system, baseline data that included patient- and condition-related characteristics, SBT, and the Bournemouth Questionnaire (BQ) were collected before the first visit using either the patients' e-mail collected by consent during the initial booking or at the clinic before the first appointment. Patients could designate areas of pain according to a pain manikin diagram and were able to indicate more than one area. Care Response enables exporting of anonymized information from participating practices to a secure encrypted server, thus facilitating collation and analysis of large sets of data collected as part of normal practice activity.

Patient-Reported Outcomes

The BQ is a condition-specific outcome measure and has been extensively validated and characterized.⁹⁻¹² It consists of seven 11-point numerical rating scales (0-10) each covering a different aspect of the back pain experience. These were (i) pain, (ii) disability in activities of daily living, (iii) disability in social activity, (iv) anxiety, (v) depression, (vi) fear avoidance behavior, and (vii) locus of control. Subscales are summed to produce a total BQ score (maximum of 70).

Using the Patients' Global Impression of Change (PGIC), patients were asked “How would you describe your pain/complaint now, compared to how you were when you completed the questionnaire before your first visit to this clinic?” The scale ranges from 1 (worse than ever) to 7 (very much improved). This outcome was dichotomized for each of the follow-up points with improvement being defined by a PGIC response of better or much better (score of ≥ 6).¹³

The BQ and a PGIC were collected at 14, 30, and 90 days after the initial visit. In addition, participants also completed a 7-point Likert scale measuring satisfaction at the 30-day follow-up. The satisfaction scale consisted of 7 items and was preceded by a question asking “Overall, how have you found the service and care you received? This would include the way you have been treated by our reception, practitioners or any other contact from us. Please select one of the following”: (1) unacceptably poor; (2) not as good as I was expecting, I would be concerned if a friend

wanted to come to you; (3) reasonable but nothing special; (4) as I was expecting and I am satisfied with this; (5) better than I was expecting; (6) good, I would be happy to recommend to a friend to you; and (7) a very high level, I would recommend friends with similar problems to consider.

Analysis

For all participants, baseline and follow up data were analyzed using descriptive statistics with comparisons between groups using appropriate inferential methods. Bouremouth Questionnaire percent change scores were calculated using the following formula: (follow-up score – baseline score/baseline score) × 100.¹¹

For LBP and neck pain (NP) patients only, further categorization of BQ percent change scores was calculated. We chose the minimal clinical important change cutoff points for back pain and NP subjects of greater than and equal to 46% or greater than and equal to 35%, respectively.^{11,12}

Within- and between-group analyses were investigated using repeated-measures general linear methods (GLM) with adjustment for significant baseline differences between groups with change in percentage of total BQ scores as the dependent variable. Time interactions were also included. Regression models were constructed using the dichotomized PGIC as the dependent variable (where improvement was determined as ≥ 6 points) for each follow-up point and within the NHS or self-referral groups. An identical analysis was also carried out with dichotomized percent change in BQ scores as the dependent variable. A forward likelihood ratio logistic regression procedure was used for this purpose.

For the subgroup analysis, we analyzed only nonspecific lower back pain patients who had been categorized as low, medium, and high risk by the SBT. Within- and between-group analyses were carried out using GLM as above with the grouping variable set as NHS or private patients. In addition, we also generated crude and adjusted odds ratios for the likelihood of improvement in self-referring patients as compared to NHS patients as defined by dichotomized PGIC outcomes (≥ 6 points) within each of the SBT risk group categories. For this, we used a logistic regression procedure adjusting for all baseline variables indicated as significantly different between these 2 referral routes.

Ethics

The Anglo-European College of Chiropractic ethics board confirmed that this service evaluation study was exempt from institutional ethical review (<http://www.aecc.ac.uk/research/about/>).

RESULTS

Baseline Descriptors

A total of 8222 patients completed the initial questionnaire. Of these, 41% were NHS patients referred by their GP. Table 1 describes the characteristics of this cohort of patients

at baseline as split into NHS and private patient groups. The greatest proportion of patients indicated either back pain, NP, or both as an area of pain.

Comparison of groups showed significant differences across a range of both demographic and clinical measures. The NHS patients were more likely to be female, more chronic, and have higher severity including radiating pain and have a higher BQ scores across all domains (Table 1). Of those patients who identified low back, NP, or both as an area of pain, similar differences between NHS and private patients were seen as with the whole cohort (Tables 2 and 3).

Specifically for patients with LBP, NHS patients were significantly more likely to be placed in the high-risk SBT group (39.1% vs 21.6%), whereas similar proportions were classed as medium risk (Table 2).

Outcomes

Both private and NHS patients referred for LBP and NP showed substantial improvement across the range of

Table 1. Baseline Characteristics of Patient Groups Across Whole Cohort

	NHS Funded (n = 3371)	Private Patients (n = 4851)	Significance
Age (mean)	49.1	49.2	NS
Days to first appointment (mean)	1.5	0.43	^a
Female (%)	60.2	48.3	^a
New patient (%)	78.0	61.1	^a
Seen before (%)	2.7	21.1	^a
Head pain (%)	5.8	2.8	^a
NP (%)	36.7	31.0	^a
Shoulder pain (%)	23.7	23.1	NS
Back pain (%)	78.6	73.8	^a
Upper arm pain (%)	5.5	4.9	NS
Lower arm pain (%)	6.1	4.3	^a
Above knee pain (%)	32.8	23.1	^a
Below knee pain (%)	13.7	8.5	^a
Pain >30 d in a year (%)	54.9	46.5	^a
Reoccurring (%)	76.0	64.1	^a
Days since 30 d of no pain (%)			^a
<3 mo	32.7	56.0	
3-12 mo	33.4	21.6	
1-5 y	21.5	13.1	
6-10 y	4.6	3.3	
>10 y	6.8	4.8	
BQ scores (mean)			
Pain	6.7	6.2	^a
ADL	6.2	5.5	^a
Social	5.7	4.9	^a
Anxiety	5.6	4.5	^a
Depression	4.4	3.0	^a
Work	5.9	4.8	^a
LOC	5.7	4.9	^a
Total	40.2	34.0	^a

ADL, activities of daily living; BQ, Bouremouth questionnaire; LOC, locus of control; NHS, National Health Service; NP, neck pain; NS, not significant.

^a $P < .01$, χ^2 test.

Table 2. Baseline Characteristics of Patient Groups Reporting Back Pain

	NHS Funded (n = 2591)	Private Patients (n = 3537)	Significance
Age (mean)	47.7	48.0	NS
Female (%)	60.1	47.7	^a
Head pain (%)	3.5	1.8	^a
NP (%)	27.7	23.8	^a
Shoulder pain (%)	17.8	15.9	NS
Above knee pain (%)	37.8	24.3	^a
Below knee pain (%)	15.1	7.9	^a
Pain >30 d in a year (%)	77.1	46.3	^a
Reoccurring (%)	54.9	64.1	^a
Days since 30 d of no pain (%)			^a
<3 mo	32.7	56.7	
3-12 mo	33.7	21.9	
1-5 y	22.0	12.1	
6-10 y	4.7	3.3	
>10 y	7.0	4.8	
SBT categories (%)			
Low	26.4	46.3	^a
Medium	34.5	32.0	
High	39.1	21.6	
BQ scores (mean)			
Pain	6.8	6.3	^b
ADL	6.4	5.6	^b
Social	5.9	5.1	^b
Anxiety	5.7	4.6	^b
Depression	4.6	3.1	^b
Work	6.1	5.0	^b
LOC	5.7	5.0	^b
Total	41.2	34.7	^b

ADL, activities of daily living; BQ, Bournemouth questionnaire; LOC, locus of control; NHS, National Health Service; NS, not significant; SBT, STarT back tool.

^a $P < .01$, χ^2 test.

^b $P < .01$, Mann-Whitney U test.

outcome assessments at each of the 3 follow-up points (Tables 4-7). Using the published cutoff for minimally clinically important change (MCIC) in percent change BQ, a smaller proportion of NHS LBP patients achieved important clinical change over the course of the treatment as compared to private patients (Table 4). This is most marked in the initial 2 weeks from after the initial consultation. Crude odds ratios indicate that overall NHS patients were around 2 to 3 times less likely to improve in comparison to private patients. However, when adjusting for key baseline confounders, these differences became insignificant at 1-month follow-up re-emerging at 90 days. Using the PGIC as a dichotomized outcome, ostensibly identical results emerged, although these 2 measures are substantially different, one being a summed score across multiple condition-based and psychological domains questioning how the patient feels now and the other a 7-point scale asking individuals about their perception of improvement thinking back to how they were when they initially presented.

When adjusted for baseline confounders, differences in percent change in BQ scores for patients with LBP in the 2 referral groups remained significant only up to 2 weeks into treatment (Table 5 and Fig 1A). Differences were minimal

Table 3. Baseline Characteristics of Patient Groups Reporting Neck Pain

	NHS Funded (n = 1207)	Private Patients (n = 1486)	Significance
Age (mean)	49.0	46.1	NS
Female (%)	66.3	56.1	^a
Head pain (%)	13.2	6.8	^a
Back pain (%)	59.4	56.7	^a
Shoulder pain (%)	45.4	42.2	NS
Above elbow pain (%)	10.5	8.1	^a
Below elbow pain (%)	11.1	6.9	NS
Pain >30 d in a year (%)	79.7	66.5	^a
Reoccurring (%)	54.8	63.8	^a
Days since 30 d of no pain (%)			^a
<3 mo	32.7	56.7	
3-12 mo	32.7	21.9	
1-5 y	22.0	13.1	
6-10 y	4.7	3.3	
>10 y	7.0	4.8	
BQ scores (mean)			
Pain	6.6	6.1	^b
ADL	6.1	5.3	^b
Social	5.4	4.5	^b
Anxiety	5.8	4.9	^b
Depression	4.5	3.3	^b
Work	5.8	4.9	^b
LOC	5.6	5.0	^b
Total	40.0	34.0	^b

ADL, activities of daily living; BQ, Bournemouth questionnaire; LOC, locus of control; NHS, National Health Service; NS, not significant.

^a $P < .01$, χ^2 test.

^b $P < .01$, Mann-Whitney U test.

at 1 month but increased slightly at 90 days. However, this remained statistically insignificant. Mean response profiles as determined by analysis of time/group interaction was statistically insignificant over time between groups ($F = 0.75$; $P > .05$) indicating the pattern of change was essentially the same between the 2 referral groups.

For patients with NP, a similar pattern in the risk of improvement is apparent both in terms of MCIC for the BQ and the PGIC (Table 6). After adjusting for key baseline differences, the differences in outcomes were not statistically significant after 2 weeks of chiropractic care. This is more apparent in the adjusted change in percent BQ scores where there was no substantive difference in adjusted changes scores at any follow-up point (Table 7 and Fig 1B).

Table 8 shows that there were significant differences between the number of treatments for each group over time with NHS patients receiving more sessions over a shorter time, having effectively ended treatment by 30 days, whereas private patients were still attending for further consultations. The number of treatments received by those presenting with either LBP or NP was similar.

Most patients in both groups reported being satisfied with the care they had received (Table 9). National Health Service patients were more likely to have had their expectations exceeded than private patients (98.5% vs 89.2%).

Table 4. Clinical Outcomes for Back Pain Subjects at Each Follow-Up Point

	NHS Funded		Private Patients		Odds of Improving (Private vs NHS)	
	% Improved	% Improved	Crude OR (95% CI)	Adjusted OR (95% CI) ^a		
BQ change score ≥46%						
14 d	43.3	50.5	1.6 (1.3-1.8)	1.8 (1.5-2.2)		
30 d	57.0	58.7	1.2 (1.0-1.5)	1.2 (1.0-1.6)		
90 d	54.6	60.9	1.5 (1.2-1.7)	1.7 (1.3-2.2)		
PGIC ≥6 points						
14 d	43.9	69.3	2.9 (2.4-3.4)	2.0 (1.7-2.4)		
30 d	68.2	75.3	1.4 (1.2-1.7)	0.9 (0.8-1.2)		
90 d	63.7	79.7	2.2 (1.8-2.8)	1.6 (1.2-2.1)		

BQ, Bournemouth questionnaire; CI, confidence interval; NHS, National Health Service; PGIC, Patients' Global Impression of Change; OR, odds ratio.

^a Adjusted for sex, visits so far, days since 30 days of no pain, pain more than 30 days in a year, recurrence, baseline BQ total, leg pain above knee, and leg pain below the knee.

STarT Back Categorization

A GLM analysis was carried out for between- and within-group and time multiplied by group interactions for percent change in BQ scores as adjusted for the same baseline variables as in the whole cohort back pain analysis above (Fig 2). In the low-risk group, there were no significant group or group multiplied by time interactions, although both groups changed significantly over time ($F = 5.3; P < .01$). However, in both medium- and high-risk groups, both group (medium [$F = 5.4; P < .05$] and high [$F = 5.3; P < .05$]) and time (medium [$F = 5.9; P < .01$] and high [$F = 8.3; P < .001$]) effects were significant with NHS, although as percentage outcomes, these effects did not persist at 90 days except in the high-risk groups. In terms of clinical change, around 80% of private patients and 60% to 70% of NHS patients achieved a minimally important change of 30% by 90-day follow-up.

DISCUSSION

This study analyzed a large data set of patients with MSK conditions seeking chiropractic care either as self-referring private patients or as referred through the NHS via a GP. This is one of the largest prospective cohort studies of patients undergoing chiropractic care, and reporting of the

Table 6. Clinical Outcomes for Neck Pain Subjects at Each Follow-Up Point

	NHS Funded		Private Patients		Odds of Improving (Private vs NHS)	
	% Improved	% Improved	Crude OR (95% CI)	Adjusted OR (95% CI) ^a		
BQ change score ≥35%						
14 d	43.3	50.5	1.3 (1.1-1.7)	1.6 (1.2-2.2)		
30 d	57.0	58.7	1.1 (0.8-1.4)	1.3 (0.9-1.9)		
90 d	54.6	60.9	1.3 (1.0-1.7)	1.5 (1.0-2.1)		
PGIC ≥6 points						
14 d	45.0	62.3	2.0 (1.6-2.6)	1.6 (1.2-2.1)		
30 d	66.8	68.2	1.1 (0.8-1.4)	0.9 (0.8-1.3)		
90 d	58.9	71.5	1.8 (1.3-2.4)	1.3 (0.9-1.9)		

BQ, Bournemouth questionnaire; CI, confidence interval; OR, odds ratio; NHS, National Health Service; PGIC, Patients' Global Impression of Change.

^a Adjusted for sex, visits so far, days since 30 days of no pain, pain more than 30 days in a year, recurrence, baseline BQ total, arm pain above elbow, and arm pain below the elbow.

characteristics and outcomes of patients presenting for such a large group of patients is unique in the UK. Results of this study are similar to other UK studies,^{8,14} and the descriptions of both baseline characteristics and outcomes may provide robust condition-specific metrics generalizable to the wider UK populations of patients presenting for private and NHS chiropractic care.

Generally, NHS patients were more chronic, in more distress, and displayed more comorbidity than private patients. Private patients, who are a self-selecting group, tend to be healthier and less severe at the time of presentation. Similar differences were found between chiropractic patients and those in general practice at baseline in a recent report from Denmark.⁶ Analysis of secondary data in the present study showed that those presenting privately are more likely to have had previous experiences of chiropractic care. This bolsters the idea that patients return for such care when presented with future MSK episodes.

On average, NHS patients attended more treatment sessions than those attending privately. The AQP contracts provide a fixed tariff for a course of care to the NHS patient irrespective of the number of sessions, whereas private patients pay per visit. We do not have information about

Table 5. Percent Change in Total BQ for Back Pain Patients at Each Follow-Up Point (Crude vs Adjusted for Covariates)

	Crude Change (%)		Estimated ^a Marginal Means (95% CI)		F	P	Difference ^a (95% CI) (NHS – Private)
	NHS	Private	NHS	Private			
14 d	30.0	46.3	33 (29-37)	43 (39-47)	11.8	.01	-10.3 (-16.2 to -4.0)
30 d	44.3	56.4	47 (45-50)	50 (47-54)	1.4	.24	-3.0 (-8.0 to 2.0)
90 d	48.2	60.4	52 (48-56)	58 (53-63)	3.2	.07	-6.5 (-13.7 to 1.0)

CI, confidence interval; NHS, National Health Service.

^a Univariate GLM adjusted for sex, visits so far, days since 30 days of no pain, pain more than 30 days in a year, recurrence, baseline BQ total, leg pain above knee, and leg pain below the knee.

Table 7. Percent Change in Total BQ for Neck Pain Patients at Each Follow-Up Point (Crude vs Adjusted for Covariates)

	Crude Change (%)		Estimated ^a Marginal Means (95% CI)		F	P	Difference ^a (95% CI) (NHS – Private)
	NHS	Private	NHS	Private			
14 d	30.0	40.0	2.3 (28-36)	37.3 (33-42)	2.6	.11	-5.0 (-11.2 to 1.1)
30 d	42.1	45.5	43.5 (39-48)	42.6 (36-49)	0.05	.82	1.0 (-7.0 to 9.0)
90 d	40.1	42.9	41.8 (36-48)	51.1 (45-57)	3.9	.47	-9.0 (-18.0 to -0.1)

CI, confidence interval; NHS, National Health Service.

^a Univariate GLM adjusted for sex, visits so far, days since 30 days of no pain, pain more than 30 days in year, recurrence, baseline BQ total, arm pain above elbow, and arm pain below the elbow.

compliance with clinicians care plans; therefore, it is possible that private patients were unwilling to attend as many sessions. However, given that as a group their care was extended over a longer period, a more likely explanation is that differences in visit numbers were not due to financial factors but more likely related to the more complicated health needs of the NHS patients.

Despite the more chronic and complex nature of the presentation of NHS patients, it was more common for private patients to continue to receive care beyond 30 days. However, the NHS pathways preclude providing supportive care beyond settling symptoms. In a physiotherapy setting in Ireland, public setting patients had more treatments than those who were self-referring.¹⁵ However, in the study by Casserley-Feeneya et al,¹⁵ there was no upper limit on public-funded treatments, and it is unknown whether removing such an artificial barrier in this study might ameliorate any differences seen in treatment numbers.

For patients with low back and NP, both private and NHS patients experienced large and clinically significant reductions in percent change BQ scores. When corrected for baseline differences in severity of symptoms, there were no significant differences between the private and NHS patients at 30 days, a small difference at 90 days, but this was only for patients with NP. Private patients as a group continued to improve at each follow-up assessment, whereas the improvement of the NHS group leveled off or slightly deteriorated after 30 days.

When dichotomizing the change in BQ scores as determined by a minimal clinical cutoff point for both back and NP, large proportions of patients were categorized as having clinically important improvement over the course of the 90 days, although fewer NHS patients fell into this category. However, after adjusting for baseline severity, statistically significant differences in odds of improvement only remained at early and later follow-up points in LBP patients and only at early follow-up in NP patients.

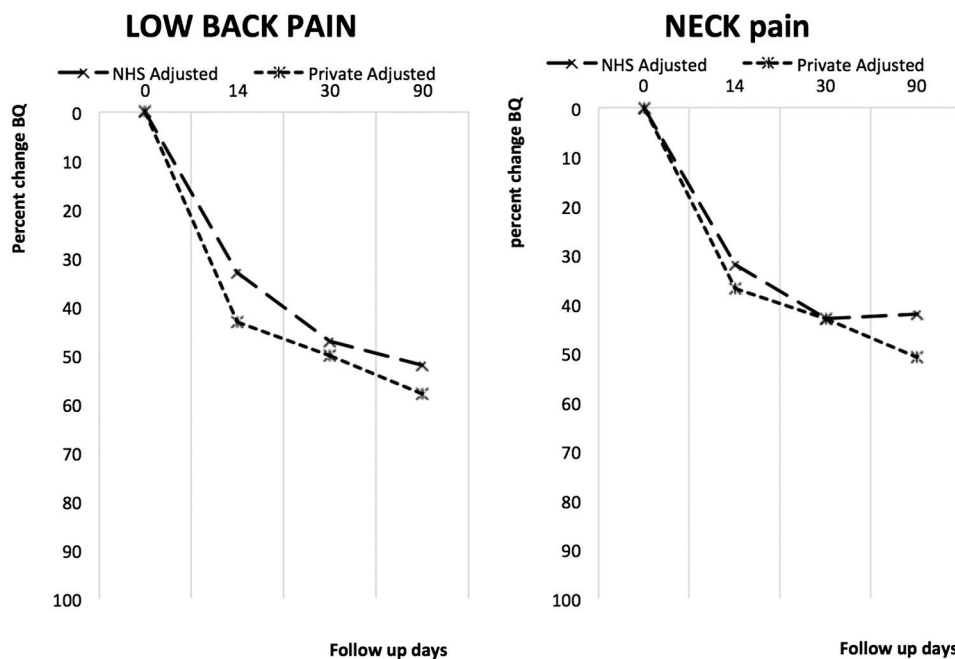


Fig 1. Percent change in BQ scores as compared between referral routes for patients with LBP and NP. Values are adjusted for all variables significantly different at baseline between the 2 referral routes. NHS, National Health Service.

Table 8. Number of Treatments at Each Follow-Up Point for Back and Neck Pain Patients

	Back Pain			NP		
	NHS	Private	Significance	NHS	Private	Significance
14 d	3.5	2.7	<0.001	3.5	2.6	<0.001
30 d	6.6	3.6	<0.001	6.7	3.9	<0.001
90 d	6.7	4.1	<0.001	6.7	4.3	<0.001

NHS, National Health Service; NP, neck pain.

These proportions were mirrored by a global impression of change outcome as reported by the patient directly, indicating improvement anchored to the phrases “improved” or “very much improved.” Given that the MCIC as calculated in previous studies used a similar PGIC to determine such cutoff points, this might be expected. However, the large proportion of patients reporting important clinical change is notable over the course of this cohort care.

Generally, when looking at SBT risk groups, NHS patients in medium- and high-risk groups did less well, with this difference being marginally more marked in medium- and high-risk groups. However, these differences, although being statistically significant, were clinically small with most patients achieving clinical change in both referral groups by 90 days. This similarity in outcomes for SBT groups of patients undergoing chiropractic care has been reported before.¹⁶

The large majority of patients sampled here reported being satisfied with the care they received even if they did not achieve a positive outcome. This is in concord with prior work on patients’ descriptions of their experiences having attended chiropractors.¹⁷ In this study, those referred by their GP were more likely to have had their expectations of treatment exceeded. There are differences in the care provided to the 2 groups with NHS patient’s attending more sessions, which may account for this. In addition, higher proportions of private patients had previously seen a chiropractor and so are likely to have appropriate expectations of how they will be treated. It is possible that, in general, those paying for private care expect a different standard of service than those whose care is funded by the state.

The pattern of change in patients in this cohort is similar to other studies¹⁸ and mirrors the expected clinical course for LBP at least. In addition, a secondary analysis of expected regressions to the mean values as calculated using

Table 9. Satisfaction With Treatment for Whole Cohort and Back and Neck Pain Patient Subgroups

Cohort	NHS	Private
	PGIC score	
≥ 4 (as I was expecting and I am satisfied with this)	98.7%	93.7%
≥ 5 (better than I was expecting)	98.5%	89.2%

NHS, National Health Service; PGIC, Patients’ Global Impression of Change.

R^2 regression coefficients between baseline and follow-up total BQ scores¹⁹ was marked indicating that this phenomena probably contributed, along with natural history^{20,21} and treatment effects to the changes seen in BQ scores over time, although these were generally smaller in the NHS group.

There was a deterioration of outcomes noted in the NHS group after they had finished attending for treatment (by 30 days), whereas further improvement was seen in the private group who were more likely to continue care beyond this. Previous work has suggested that prolonged treatments in the form of supported or maintenance care improve longer term prognosis.^{22,23} National Health Service patients received more sessions but, at higher frequency, early in care, and this may suggest that duration of care is a significant factor separate from number of visits. Further work is needed in this area.

Limitations and Strengths

The size of the cohort of this study is a strength. The use of an automatic electronic patient-driven patient-reported outcome measure system within the participating clinic directly facilitates the ability to collect such large numbers.

This study design precludes any conclusions regarding putative treatment effects associated with chiropractic care as factors including regression to the mean or natural history may underlie a significant proportion of the improvements seen. In addition, NHS-referred patients in this sample have been subject to selection by their GP and, as such, may not represent all those presenting with spinal pain to GPs, limiting generalizability to this wider population.

Furthermore, it is possible that the higher proportion of NHS patients indicating care had exceeded expectations may have had differing expectations of care compared to self-referring patents and the history and experience within a different health care setting may have influenced self-reporting of these outcomes.

Lastly, patients were recruited from a limited group of clinics in the south of England, and it is possible that demographic and condition-specific characteristics may be different in other parts of the UK or for other countries.

CONCLUSION

This study characterized a large number of private and NHS-referred patients as cared for by chiropractors and provides a unique and robust description of characteristics and outcomes in this patient group for the UK. Those presenting for chiropractic care either privately or by their NHS GP experienced excellent results across a range of patient-reported outcome and experience measures. This remained true regardless of the STarT back category where substantive improvements in outcomes were seen in all 3 risk groups regardless of referral status.

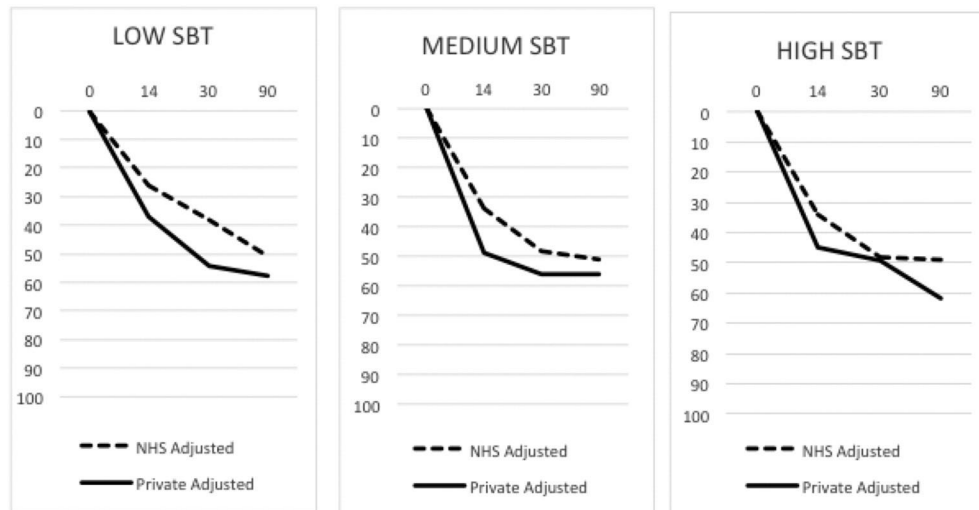


Fig 2. Percent change in BQ scores as compared between patients categorized by the SBT (STarT back tool) into low-, medium-, and high-risk groups. Values are adjusted for all variables significantly different at baseline between the 2 referral routes.

FUNDING SOURCES AND POTENTIAL CONFLICTS OF INTEREST

No funding sources or conflicts of interest were reported for this study.

CONTRIBUTORSHIP INFORMATION

Concept development (provided idea for the research): J.F. and D.N.

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Supervision (provided oversight, responsible for organization and implementation, writing of the manuscript): J.F.

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Writing (responsible for writing a substantive part of the manuscript): J.F. and D.N.

Critical review (revised manuscript for intellectual content, this does not relate to spelling and grammar checking): J.F. and D.N.

Practical Applications

- This study characterized a large number of private and NHS-referred patients as cared for by chiropractors and provides a reliable description of this group in the UK.
- Those presenting for chiropractic care, either privately or via their NHS GP, experienced excellent outcomes across a range of patient-reported outcome and experience measures.
- This study supports the contention that chiropractic services as provided in UK are appropriate for both private and NHS-referred patient groups and should be considered when GPs make decisions concerning referral routes and pain pathways for MSK patients.

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