



# The adoption of person-centred care in chiropractic practice and its effect on non-specific spinal pain: An observational study

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## ARTICLE INFO

### Keywords:

Patient-centered care  
Low back pain  
Empathy  
Chiropractic  
Observational study  
Pain  
Share decision making  
Education  
Consultation  
Clinical appointment  
Students  
Person-centred care  
Participation  
Cross-sectional study  
Spinal pain  
Neck pain  
Thoracic pain  
Ceiling effect  
Lumbar pain

## ABSTRACT

**Objectives:** The objectives of this study were to identify: 1) the extent to which final year chiropractic students used components of person-centred care in a clinical setting; and 2) determine the effect of chiropractic students' use of person-centred care on musculoskeletal pain.

**Design/setting:** An observational study was conducted at three Western Australian chiropractic teaching clinics. **Interventions:** Pragmatic individualised chiropractic care was delivered to 108 adults who experienced non-specific spinal pain.

**Main outcome measures:** The instruments used in this study were the Consultation and Relational Empathy questionnaire, Picker Musculoskeletal Disorder Questionnaire, and Numerical Rating scale for Pain intensity.

**Results:** Participants experienced reductions in pain that exceeded the level required for minimal clinically reported improvement. In addition, high levels of empathy and patient-centred care were reported. Ceiling effects for the measures assessing empathy and patient-centred care precluded analyses examining the relationship between changes in pain intensity, empathy, and patient-centred care.

**Conclusions:** The participants in this study displayed very positive attitudes about most aspects of the chiropractic students' person-centred care skills. Person-centred care processes for which there was considerable scope for improvement included advice about alternative treatment options, and the adaptation of lifestyle and workplace situations to alleviate pain and enhance health. Our findings also showed that the participants experienced clinically important improvement in pain. However, the skewed nature of our dataset precluded identifying whether the students' person-centred care skills influenced such improvement.

## 1. Background

Person-centred care is based on clear empathetic communication, shared decision-making, individualised interventions, and the promotion of psycho-social comfort.<sup>1</sup> This tailored approach has improved the quality of healthcare and has become a critical indicator in evaluations of the quality of healthcare services.<sup>2,3</sup> Its adoption in clinical practice enhances people's adherence to treatment plans, improves numerous health outcomes, and results in higher levels of satisfaction with care.<sup>1,4–6</sup> Person-centred care also leaves individuals less stressed and better informed, which improves their ability to self-manage health conditions.<sup>6–9</sup> In addition, the implementation of person-centred care has beneficial impacts on health services delivery, which include fewer pathology investigations, reductions in the length of hospital stays, less

readmissions, and decreased need to access specialised care.<sup>6,9–11</sup>

To the best of our knowledge, only one previous study has examined the use of person-centred care in chiropractic practice.<sup>12</sup> That study, which was a small pilot study conducted in Canada with the use of the Patient Assessment of Chronic Illness Care measure, found that the extent to which chiropractors used person-centred care was consistent with the level general practitioners reported. The results also demonstrated that scores on the Patient Assessment of Chronic Illness Care measure were higher than average for the following scales: patient activation; delivery system design/decision support; and problem-solving/contextual.<sup>12</sup> However, scores on the goal setting/tailoring and follow-up/coordination scales were below average.<sup>12</sup>

Research is entirely lacking about chiropractic students' acquisition of person-centred care skills. Becoming competent in the use these skills

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<https://doi.org/10.1016/j.ctim.2019.03.023>

Received 25 January 2019; Received in revised form 29 March 2019; Accepted 29 March 2019

Available online 30 March 2019

0965-2299/© 2019 Published by Elsevier Ltd.

is important, given the aforementioned improvements in health outcomes people may experience.<sup>1,4–9</sup> This study bridges the literature gap through addressing the following aims: 1) establish the extent to which final year chiropractic students used components of person-centred care in a clinical setting, and 2) determine the effect of chiropractic students' use of person-centred care on musculoskeletal pain.

## 2. Methods

### 2.1. Study design

We used a single arm prospective study design to assess patients' perceptions of final year chiropractic students' use of person-centred care and its effect on non-specific spinal pain. Ethical approval for this study was obtained from Murdoch University's Human Research Ethics Committee (approval number 2016/087).

### 2.2. Setting

This study was situated at university chiropractic student training clinics, one of which was located within the university, and two of which were situated in outreach clinics, in Western Australia. All consultations are undertaken by fifth year students and supervised by registered chiropractors. Fifth year chiropractic students were involved in this study as this constitutes the time when they are required to complete a year-long clinical practicum unit. Chiropractic students at the institution in which this study was conducted receive comprehensive training in person-centred care principally in the latter half of their fourth year building on earlier curricular content.

Contact between patients and chiropractic supervisors is typically limited to an initial assessment confirming the student findings, wherein the supervisors determine that the patients' clinical presentation is suitable for chiropractic care. Thereafter, contact between patients and supervisors may occur when students encounter difficulties performing chiropractic techniques or as routine supervision at the discretion of the supervisor. Finally, patients generally only consulted with one chiropractic student throughout the entirety of their treatment.

The clinical encounter typically follows a pattern of; the person presents to the facility and fills out a detailed intake questionnaire followed by a consultation with the student who obtains a thorough health history, performs a physical examination and makes a verbal report of the case to the supervising clinician. The student will be challenged from a teaching and learning perspective with respect to clinical reasoning and diagnosis often in the presence the patient. If the person is considered to have a condition that fits within the scope of practice of a chiropractor, the student prepares a management plan and written informed consent to procedures obtained and witnessed. Management then will commence consisting of active and passive components after being explained to the patient in the presence of the supervisor.

The management of musculoskeletal conditions in the chiropractic student clinics is informed by evidence-based clinical guidelines. It typically includes a description of the diagnosis and prognosis, advice to stay active, avoid bed rest, reassurance that the ailment is not a serious/malignant problem, notation imaging was unlikely to be useful, and a demonstration of gentle back stretches and exercises consisting of simple core exercises; and manual and manipulative therapy including soft tissue and joint mobilisation alongside high-velocity low-amplitude thrust-type chiropractic manipulation.

### 2.3. Participants

Adults with non-specific spinal pain who attended the training clinics were eligible to participate, as long as they were not Murdoch University family members of the student providing the treatment. Non-

specific spinal pain was defined as neck (cervical region), mid-back (thoracic region), or low back pain (lumbar region through to lower gluteal fold) of unknown aetiology.<sup>13</sup> The location of the pain site is identified during the clinical examination, as described above in the paragraph detailing the clinical encounter. All eligible prospective participants attending the training clinics on their fourth visit were given an information letter and invited to participate in this study. Interested prospective participants were invited into a private room where the study was explained in full detail and asked if they had any further questions. After confirming their interest, participants were required to provide written consent before enrolment in the study. Enrolled participants were then left alone to complete the outcome measures.

### 2.4. Measures

Pain intensity was assessed by the Numerical Rating Scale (NRS), which is routinely administered at the training clinics after each consultation.<sup>14</sup> In addition, immediately after the fourth consultation enrolled participants completed the Consultation and Relational Empathy (CARE) questionnaire and Picker Musculoskeletal Disorder Questionnaire (PMSDQ).<sup>15</sup> The CARE and PMSDQ were administered at the fourth consultation as it was deemed a sufficient period of time for the chiropractic students to have established a therapeutic relationship with the participants.

The CARE questionnaire is a validated instrument, which was originally developed to assess general practitioner consultations but has widely used to assess person-centred care across a diverse range of health care providers, including medical specialists, nurses, complementary medicine practitioners, and allied health professionals.<sup>16</sup> The CARE measure comprises 10 items that capture details about empathic medical consultation processes.<sup>15</sup> These items are based on a conceptualisation of empathy in health care consultations as involving the following three primary process: 1) understanding peoples' feelings, perspectives, and situation; 2) sharing that understanding and verifying its accuracy; and 3) using that understanding to inform the delivery of healthcare.<sup>15</sup> Each CARE item is scored on a five-point Likert scale, ranging from "poor = 1" to "excellent = 5". All item scores are aggregated to produce an overall mean scale score. Higher scores indicate higher levels of empathy.<sup>15</sup>

The PMSDQ is a validated measure that enquires about processes involved with medical consultations for musculoskeletal disorders. It consists of the following domains: before appointment (10 items); before consultation (4 items); consultation (14 items); treatment (6 items); continuing care (10 items); and overall impression (8 items). The PMSDQ assesses several integral person-centred care processes, including consultation length, involvement in decision-making, and individualisation of care. Each PMSDQ item is dichotomously coded as a "problem score", indicating either a "problem" or "no problem". In this case, a problem is conceptualised as a component of health care that could be better delivered.

Finally, we extracted routinely collected demographic characteristics from the training clinics' database, which included age, gender, and presenting complaint.

### 2.5. Data analysis

All data were entered into SPSS v.24. The original intention was to use generalised linear mixed models to examine the association between empathy, involvement in decision-making, individualisation of care, and change in pain intensity. However, data skewness precluded inferential analyses. Data is therefore presented descriptively.

**Table 1**  
Item Frequencies for Picker Musculoskeletal Disorder Questionnaire.

Questionnaire Items	Proportion Indicating “No Problem”
<b>Before Appointment</b>	
Were you able to get an appointment for a consultation as soon as you wanted?	91.2
Did you receive an appointment with the care provider of your choice?	89.1
Was your appointment ever cancelled?	99.0
Was your appointment with the person you were told it would be with?	91.0
<b>Before Consultation</b>	
Seen on time or early	51.0
Did someone explain the reason for the delay?	21.7
Did someone explain how long the delay would be?	26.3
Did someone apologise for the delay?	76.5
<b>Consultation</b>	
During the consultation did you have a chance to explain your symptoms?	97.2
During the consultation do you think that your condition was taken seriously?	97.2
Did you have questions about your treatment that you wished to discuss but didn't?	90.6
In your opinion was the consultation length the right amount of time, too little time, or too much time?	84.5
Did you ever think that the person treating you was deliberately withholding information?	93.3
During the consultation were you given a physical examination?	99.1
During the consultation, did you feel involved in decisions about your care?	84.9
During the consultation, were you asked about how your family/living situation might affect your condition?	97.1
During the consultation, were you asked about how your work and work environment might affect your condition?	97.1
Did the person treating you seem aware of your medical history?	96.8
During the consultation do you think your reports of back/neck pain were taken seriously?	97.1
Did the person treating you address your anxieties and/or worries?	81.1
<b>Treatment</b>	
Did you get information about different treatments available for your condition?	68.6
<b>Continuing Care</b>	
During the consultation were you told how you could reduce your pain or improve your health by changing lifestyle or behaviour?	56.1
Did you get advice/recommendations adapted to your family and living situation?	37.3
Did you get advice/recommendations adapted to your work situation?	70.5
Was a follow-up appointment arranged?	99.0
Were you given information about who to contact if you were worried about your condition or treatment?	57.5
Do you think the provider you visited was appropriate for your help needs?	80.6
<b>Overall Impression</b>	
Was the main reason you went to this health care provider addressed to your satisfaction?	87.4
How well organised was the clinic/health care provider you visited?	84.5
Overall, did you feel like you were treated with respect and dignity?	98.0
How would you rate the courtesy of the provider?	99.0
Overall, how would you rate the care/help you received?	99.0
Would you recommend this health care provider to your family and friends?	83.4
Did you have confidence and trust in the person treating you?	84.3

### 3. Results

#### 3.1. Participant demographics

In total, 108 participants were enrolled in this study. The respondents' mean age was 36.3 (SD = 13.8) years. Slightly over half of the participants were male (59.4%). The most common complaints for which the participants received treatment at the student clinics were low back pain (55.0%), neck pain (25.7%), and mid-back pain (11.0%).

#### 3.2. Subjective pain levels

The mean NRS at baseline and four-week follow up were respectively 4.1 (SD = 2.0) and 2.1 (SD = 1.5). The change in the NRS score between baseline and four-week follow-up was 2 points, which equals the minimal clinically important improvement.<sup>14</sup>

#### 3.3. PMSDQ scores

Table 1 displays the proportion of “no problem” values for all PMSDQ items. As can be seen from Table 1, responses for most items were highly skewed towards “no problem”. The only items that did not demonstrate a highly skewed distribution were: “seen on time or early”; “did someone explain reason for delay”; “did someone explain how long delay would be”; “were you told how you could reduce your pain or

improve your health by changing lifestyle or behaviour”; “did you get advice/recommendations adapted to your family and living situation”; and “were you given information about who to contact if you were worried about your condition or treatment”.

#### 3.4. CARE scores

Table 2 displays the frequencies for the CARE items. Across all 10 CARE items, the proportion of participants who provided either “very

**Table 2**  
Item Frequencies for the Consultation and Relational Empathy Measure.

How good was the practitioners at...	Poor	Fair	Good	Very Good	Excellent
Making you feel at ease	0.0	0.0	3.8	20.8	75.4
Letting you tell your "story"	0.0	0.0	7.5	19.8	72.7
Really listening	0.0	0.0	4.7	22.6	72.7
Being interested in you as a whole person	0.0	0.9	7.5	21.7	69.9
Fully understanding your concerns	0.0	0.0	3.8	23.6	72.6
Showing care and compassion	0.0	0.0	4.7	21.7	73.6
Being positive	0.0	0.0	2.8	18.9	78.3
Explaining things clearly	0.0	0.0	2.8	26.4	70.8
Helping you to take control	0.0	0.9	8.5	25.5	66.1
Making a plan of action with you	1.0	3.0	7.9	23.8	64.4

good” or “excellent” responses, ranged from 88.2% to 97.0%. The mean CARE measure was 46.3 (SD = 5.0). Finally, almost half (45.4%) of the participants achieved the maximum CARE score, which reflects considerable ceiling effects for the use of the CARE measure in this cohort.

#### 4. Discussion

The results of this study indicate that the participants’ attitudes were in general very positive about the chiropractic students’ person-centred care skills. The skewed nature of these results precluded an examination of the effect that person-centred care skills had on reducing musculoskeletal pain. Our results could be taken at face value, but our view is that the particular nature of student consultations, which differs considerably from typical chiropractic practice, produced the highly skewed findings observed in this study.

The students in this study spend 90 min in the consultation with the patient at the first visit, 45 min on the second consultation, and 30 min in the third and fourth consultations, which equals 195 min over the four consultations. In contrast, Australian chiropractors typically devote about 80 min with patients over four consultations.<sup>17,18</sup> Hence, it is evident that the consultations observed in this study were substantially longer than typical chiropractic consultations. Studies of general practitioners have shown that longer consultations improve patient satisfaction and may also produce better medical outcomes.<sup>10,19–22</sup> As such, the extensive period of time spent on consultations in this study seems likely to have in itself influenced the participants’ highly positive attitudes towards the students’ person-centred care skills. Whether patients receiving typical care where consultations are markedly shorter would also report such highly positive attitudes about chiropractors’ interpersonal attributes needs to be established in pragmatic studies.

The substantial length of the teaching clinics consultations enables the chiropractic students to undertake comprehensive clinical assessments. These assessments must adhere to a structured format that includes: pain features; functional behaviour; psychosocial factors; general health; and work and lifestyle considerations. The requirement to comply with this format could explain to some extent highly positive attitudes that the participants, in general, expressed about the students’ clinical assessment and shared-decision-making skills. In contrast, chiropractors in everyday practice can approach consultations in a manner of their own choice. It is unclear if registered chiropractors would undertake clinical assessments in the same way as the students in this study, which means that the findings of this study about clinical assessments cannot be generalised to pragmatic clinical practice.

A factor that appears likely to have influenced our findings concerns social desirability bias.<sup>23,24</sup> It may have been the case the participants thought that the students’ competency in performing person-centred care skills was incorporated in assessments that determined whether the students successfully completed the course. Consequently, the participants in this study may have reported unduly favourable views about the students’ person-centred care skills in order to support the students.

It should also be considered that the administration of person-centred care measures at the fourth visit may have biased the results of this study. In comparison to the enrolled participants, people who attended fewer than four appointments could have been less satisfied with the quality of their interpersonal interactions with chiropractic students.

Our findings indicated that the reduction in non-specific spinal pain reported by the participants equalled the change required for minimal clinically important improvement.<sup>14</sup> However, this finding should be treated cautiously for several reasons. As previously noted, social desirability may have influenced the manner in participants reported outcomes in this study.<sup>23</sup> Also, the lack of a control group meant that non-specific effects such as the Hawthorne effect could not be separated from specific intervention effects.<sup>25,26</sup> Hence, controlled studies are

warranted to better understand the contribution that non-specific effects, including the influence of person-centred care, make to chiropractic care’s overall treatment effect.

The ceiling effects that were observed in this study for the CARE measure also appear to have been an issue in previous studies that have used this measure. For instance, the developers of the CARE measure in identifying normative values reported the mean CARE score was 45.8, which is very similar to the mean CARE score of 46.3 reported in this study. In addition, a systematic review of the CARE measure noted that the mean score across five studies of allied health professionals ranged from 43.1 to 47.6, which again is consistent with the value reported in this study.<sup>16</sup> Although the presence of ceiling effects was not explicitly detailed in these aforementioned studies, it seems likely that it was also an issue given the similarity between the mean score in this study and other prior studies.

Notwithstanding the skewness of most findings, our results provide some direction about components of chiropractic undergraduate education that could be improved. Only about one-third of the participants noted that they received advice or recommendations that were adapted to their living situation. Also, slightly over half of the participants were given information about how changing lifestyle could reduce pain and improve health, and details about who to contact if they had concerns about their treatment or condition. Finally, around one-third of the participants stated that they did not receive information regarding alternative treatments or advice that was adapted to their work situation. Such aspects are integral components of shared decision-making, a key factor in person-centred care, which suggests that chiropractic educational programs could place more emphasis on these clinical skills.

#### 5. Conclusions

The participants in this study displayed very positive attitudes about most aspects of the chiropractic students’ person-centred care skills. Person-centred care processes for which there was considerable scope for improvement included advice about alternative treatment options, and the adaptation of lifestyle and workplace situations to alleviate pain and enhance health. Chiropractic educators may consider placing more emphasis on the person-centred care attributes that could be improved upon. Our findings also showed that the participants experienced clinically important improvement in pain. However, the skewed nature of our dataset precluded identifying whether the students’ person-centred care skills influenced such improvement.

#### Declarations of interest

None.

#### Funding

No funds were received in support of this work.

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