

A content analysis of the interventions for low back pain promoted on the websites of Australian pain clinics

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ABSTRACT

Background. The Internet is a widely used source of health information, yet the accuracy of online information can be low. This is the case for low back pain (LBP), where much of the information about LBP treatment is poor. **Methods.** This research conducted a content analysis to explore what pain treatments for LBP are presented to the public on websites of Australian pain clinics listed in the PainAustralia National Pain Services Directory. Websites providing information relevant to the treatment of LBP were included. Details of the treatments for LBP offered by each pain service were extracted. **Results.** In total, 173 pain services were included, with these services linking to 100 unique websites. Services were predominantly under private ownership and located in urban areas, with limited services in non-urban locations. Websites provided detail on a median of six (IQR 3–8) treatments, with detail on a higher number of treatments provided by services in the private sector. Physical, psychological and educational treatments were offered by the majority of pain services, whereas surgical and workplace-focused treatments were offered by relatively few services. Most services provided details on multidisciplinary care; however, interdisciplinary, coordinated care characterised by case-conferencing was infrequently mentioned. **Conclusions.** Most websites provided details on treatments that were largely in-line with recommended care for LBP, but some were not, especially in private clinics. However, whether the information provided online is a true reflection of the services offered in clinics remains to be investigated.

Keywords: consumer information, Internet, low back pain, medical informatics, online information, rural health.

Introduction

A 2017 consumer poll of Australians found that 78% reported using the Internet to obtain health information in the past 12 months (Research Australia 2017). These findings are similar to those from the cross-sectional survey by Volkman *et al.* (2014) that found 68% of participants reported searching for health information online prior to consulting any other sources of information (Volkman *et al.* 2014).

Despite the large health burden of low back pain (LBP), online information about LBP and LBP treatment remains poor. A recent review of 79 websites from six English-speaking countries found that much of the information on treatment recommendations was of low credibility, inaccurate and not comprehensive (Ferreira *et al.* 2019). Similarly, a content analysis of online information about decompression and fusion surgery for spine pain found that only 25% of web pages provided an accurate description of the evidence for the benefits of spine surgery, and although 65% provided details of the potential harms of surgery, only 15% provided quantitative estimates for the mentioned harms (Ferreira *et al.* 2022).

PainAustralia is the leading pain advocacy body in Australia. On their website, PainAustralia provides a National Pain Services Directory, which consumers can use to explore the pain service providers in specific regions (<https://www.painaustralia.org.au/pain-services-directory/pain-directory>). The websites provide information on the range of pain services for LBP offered at each clinic. As the websites are listed in the PainAustralia Directory, it could be argued that they encourage expectations among the general public about how LBP should be managed.

Accessing care services is particularly problematic for Australians living outside of major cities. Compared with people in metropolitan settings, those living outside of major cities are frequently found to have poorer health outcomes, although data on the prevalence of LBP for 2017–2018 showed that it was comparable across major cities (15.9%, 95% CI 15.2–16.7), inner regional (18.1%, 95% CI 16.6–19.5), and outer regional and remote (16.7%, 95% CI 14.7–18.8) areas (Australian Institute of Health and Welfare 2023). Whether sufficient care services are available to provide equitable access to care and to specific treatments across the different regions remains unclear though.

The aims of this study were: (1) to explore what pain interventions for LBP are presented to the public on websites of Australian pain clinics listed in the PainAustralia National Pain Services Directory, and (2) to explore if there are differences in the coverage of interventions across health care settings (urban vs rural, public vs private clinics).

Methods

For this content analysis, we adopted the perspective of a consumer with LBP searching for pain services via the PainAustralia National Pain Services Directory. The Directory only features clinics with specialist expertise in pain management. The clinics' websites were used to characterise the services offered for the treatment of LBP.

Search strategy

The PainAustralia National Pain Services Directory was used to identify pain clinics within Australia and their respective websites. Details of all pain clinics listed on the Directory were extracted on 18 May 2022. If a listing for a clinic did not include a website address, [Ecosia.com](https://www.ecosia.com) was used to search for a website address. If this was unsuccessful, the clinic was excluded. All internet searches were conducted from within Australia.

Eligibility criteria

For inclusion in the analysis, clinics had to have a website providing information relevant to the treatment of LBP. Information provided via links to other forms of presentation (e.g. booklets, leaflets or brochures) was also included. Where multiple clinics shared the same website (e.g. a group practice with offices in multiple suburbs), the same website data were used for each clinic, unless it was clear that each clinic offered different services.

Data extraction

The name, geographical location and URL of all clinics were extracted. Details of the treatments for LBP offered by each clinic were extracted from their website.

Treatments offered by each clinic were extracted using a framework derived from the treatment classes used in the World Health Organization LBP guideline (World Health Organization 2022) and the treatments described in the recent National Institute for Health and Care Excellence chronic primary pain guideline (NICE 2021) and 2021 Lancet Chronic Pain series (Cohen et al. 2021; Supplementary Table S1). The original extraction framework was revised after pilot testing on a subset of 20 clinic websites where good agreement was found between reviewers (67% treatment agreement). Treatments were broadly grouped into six categories: education, invasive non-surgical (e.g. corticosteroid injections), pharmacological (e.g. opioids), physical (e.g. physiotherapy), psychological (e.g. cognitive behavioural therapy) and surgical. In addition, it was noted where websites provided no description or non-specific description of treatments; where multidisciplinary, multimodal or interdisciplinary management were offered; where social work was mentioned; and where links to the workplace were offered.

Data extraction was completed in duplicate, with two reviewers (SG and CSH) independently extracting data for all pain clinic websites. The reviewers subsequently met to discuss their findings to ensure completeness of data extraction and agreement on grouping of treatments. The reviewers have different professional backgrounds (exercise science and chiropractic), but both have >10 years of research experience. Discussion between reviewers for data extracted from all studies ensured the broadest possible expertise was applied to the data extraction process. Where there were disagreements in findings or grouping between the reviewers, this was resolved through discussion or consultation with a third reviewer (CGM).

Statistical analysis

Descriptive statistics were used to describe the coverage of interventions across clinics and remoteness areas. Clinics were considered to be comprehensive when they offered treatments in all six treatment categories (educational, invasive non-surgical, pharmacological, physical, psychological and surgical). Remoteness was defined for each clinic using the remoteness area boundaries provided by the Australian Bureau of Statistics (<https://maps.abs.gov.au/index.html>): major cities, inner regional, outer regional, remote and very remote. These five categories were collapsed into urban and non-urban. Chi-squared analysis was conducted in Microsoft Excel to examine if statistical differences were present between categories, with statistical significance set at $P < 0.05$.

Results

There were 173 pain clinics included in the analysis from the 204 clinics listed in the directory. Of the 31 clinics excluded, no website or further information could be identified for 29

clinics, and no information relevant to the management of LBP was provided by two clinics. From the 173 clinics, there were 100 unique websites (73 clinics used websites that were duplicates of another clinic). Details of the included websites are provided in Table S2.

The distribution of the 173 pain clinics with regard to public/private ownership and remoteness is shown in Table 1. More than 80% of clinics were located in urban locations. Two-thirds of clinics (66%) were privately owned at least in part, whereas 7% of clinics did not specify if they were publicly or privately owned.

The frequency with which treatments were offered by the 173 pain clinics, and the distribution of these clinics across urban and non-urban locations is shown in Table 2. Physical, psychological and education interventions were offered at ≥75% of clinics, whereas <25% of clinics offered links to social care services or made reference to interdisciplinary coordinated care.

The treatments offered across the 100 unique websites, and the distribution of these across public and privately owned clinics are shown in Table 3. Of the 100 websites linked to

pain clinics, 38 were linked to public clinics, 49 were linked to private clinics, two were listed as both private and public, and 11 did not specify if they were public or private. Physical, psychological and educational interventions remained the most frequently offered treatments across all websites, and in both public and private clinics. Privately owned clinics were more likely to offer invasive non-surgical procedures (49% vs 15%) and workplace-focused treatments (23% vs 7%) than public clinics.

Overall, websites provided details on a median of six (IQR 3–8) different treatments in three (IQR 2–4) different treatment categories. Public clinic websites provided detail on 4.5 (IQR 1.75–7) different treatments in three (IQR 1–4) different treatment categories, whereas private clinic websites provided details on seven (4–11.5) treatments in three (2–5) different treatment categories. Physical therapies were the most frequently offered treatment modality overall (on 76% of all websites), and by both public (70%) and private (82%) clinics. Non-specific description of treatment was provided by 23% of websites, with the frequency of non-specific treatment descriptions being higher among public clinics (32%) than private clinics (18%).

Table 1. Distribution of pain services by remoteness area and public/private ownership.

	Major city	Inner regional	Outer regional	Remote	Total
Public	38	6	2	1	47
Private	92	18	2	0	112
Both public and private	2	0	0	0	2
Not specified	9	2	1	0	12
Total	141	26	5	1	

Discussion

This study aimed to: (1) explore what pain interventions for LBP were presented to the public on websites of Australian pain clinics listed in the PainAustralia National Pain Services Directory, and (2) explore if there were differences in the coverage of interventions across health care settings (urban vs rural, public vs private clinics). The treatments most frequently promoted by Australian pain clinics for the treatment of LBP were physical, psychological and education interventions,

Table 2. Treatments described on the websites of urban and non-urban pain services.

Treatment class	Urban		Non-urban		Total (173) ^A	Urban vs non-urban, X ² , P-value
	Major city (141)	Inner regional (26)	Outer regional (5)	Remote (1)		
Education	104 (74%)	21 (81%)	4 (80%)	0 (0%)	129 (75%)	0.26, P = 0.61
Invasive non-surgical procedure	75 (53%)	14 (54%)	2 (40%)	0 (0%)	91 (53%)	0.11, P = 0.74
Pharmacological	84 (60%)	16 (62%)	1 (20%)	0 (0%)	101 (58%)	0.45, P = 0.50
Physical intervention	116 (82%)	24 (92%)	4 (80%)	0 (0%)	144 (83%)	0.51, P = 0.47
Psychological intervention	113 (80%)	23 (88%)	3 (60%)	0 (0%)	139 (80%)	0.02, P = 0.87
Surgical intervention	31 (22%)	12 (46%)	1 (20%)	0 (0%)	44 (25%)	4.78, P = 0.03
Workplace-focused	47 (33%)	8 (5%)	3 (60%)	0 (0%)	58 (33%)	0.01, P = 0.91
Social work	13 (9%)	1 (1%)	0 (0%)	0 (0%)	14 (8%)	1.30, P = 0.25
Interdisciplinary coordinated care	18 (13%)	3 (11%)	1 (20%)	0 (%)	22 (13%)	0.28, P = 0.59
Comprehensive pain service ^B	29 (21%)	9 (35%)	1 (20%)	0 (0%)	39 (23%)	1.70, P = 0.19

^AThe 173 pain services featured on the PainAustralia website offering treatments relevant to LBP. Some websites were included multiple times due to having practices in multiple locations.

^BTo be considered a comprehensive pain service, a website had to describe educational, invasive non-surgical, pharmacological, physical, psychological and surgical interventions.

Table 3. Treatments offered on the 100 unique websites overall and across public and private sectors.

	Overall (100)	Public (40)	Private (51)	Public vs private, χ^2 , P-value
Education	64 (64%)	25 (62%)	31 (61%)	0.03, $P = 0.87$
Invasive non-surgical procedure	35 (35%)	6 (15%)	25 (49%)	11.55, $P = 0.0006$
Pharmacological	41 (41%)	11 (27%)	24 (47%)	3.62, $P = 0.06$
Physical intervention	76 (76%)	28 (70%)	42 (82%)	1.93, $P = 0.17$
Psychological intervention	71 (71%)	25 (62%)	40 (78%)	2.79, $P = 0.09$
Surgical intervention	6 (6%)	1 (2%)	5 (10%)	1.94, $P = 0.16$
Workplace-focused	17 (17%)	3 (7%)	12 (23%)	4.18, $P = 0.04$
Social work	9 (9%)	5 (12%)	5 (10%)	0.17, $P = 0.68$
Interdisciplinary coordinated care	16 (16%)	6 (15%)	9 (18%)	0.11, $P = 0.73$
Comprehensive pain service ^A	4 (4%)	0 (0%)	4 (8%)	3.28, $P = 0.07$

Of the 100 pain services with unique websites, 11 did not specify if they were public or private. Two stated providing both public and private care, and so were counted in both public and private facilities.

^ATo be considered a comprehensive pain service, a website had to describe educational, invasive non-surgical, pharmacological, physical, psychological and surgical interventions.

which were described on 83%, 80% and 75% of websites, respectively. Pain clinics across Australia are largely recommending treatments that are in line with the recommendations of the Lancet Series on LBP (Buchbinder *et al.* 2018) and the recent LBP Clinical Care Standards (Australian Commission on Safety and Quality in Healthcare 2022), which emphasise non-pharmacological person-centred care. One exception was the promotion of invasive non-surgical treatments (like radiofrequency lesions, nerve blocks etc.), and these were more commonly promoted by private clinics rather than public clinics (49% vs 15%, respectively). Low promotion of interdisciplinary care was observed across both public and private clinics. Although there was a high rate of websites offering services from more than one discipline, interdisciplinary, coordinated care, where there was a clear statement of clinicians working together through multidisciplinary assessments or case-conferencing, was very limited. It may be that many clinics still use the term ‘multidisciplinary care’ to mean it is interdisciplinary, but these findings would suggest this needs to be clarified and updated. This finding, together with the low rates of websites mentioning linking with community support services, is suggestive of pain services working with little outreach to other health care providers to support a consistent approach for maintaining their patients in the community.

Approximately 28% of the population (~7 million people) live in rural and remote (non-urban) locations (Australian Institute of Health and Welfare 2022), yet only 17% of the listed pain services are in these areas, and 80% of those are in the inner regional area, with only 7 facilities (3% of all services in the directory) in outer regional and remote areas. The greater challenge in accessing pain services in non-urban regions is not reflective of a lower requirement for these services. Although the prevalence of LBP has been shown to be comparable across Australian geographic regions

(Australian Institute of Health and Welfare 2023), the lack of pain services outside of metropolitan centres means there is a ratio of pain services to patients of 1:21 514 in major cities, 1:35 196 in inner regional areas, and 1:70 360 in outer regional and remote areas.

The 2020–2021 Australian Commission on Safety and Quality in Healthcare’s (ACSQHC) report on opioid medicine dispensing showed that opioid dispensing was higher in inner and outer regional areas than in major cities or remote areas (Australian Commission on Safety and Quality in Healthcare 2021). The findings of the ACSQHC contrasts the results of this study, which found no differences in the frequency of pharmacological treatments being promoted on websites between regions. However, the findings of the ACSQHC may reflect the practices of general practitioners instead of the specialist pain services included in this study. The limited number of pain clinics across regional areas does support the ACSQHC interpretation that variation in opioid prescription may be linked to the availability of appropriate non-pharmacological treatments, particularly in rural and remote locations, where availability of pain services is limited.

Although most pain clinics only offered a limited number of different treatments, it is notable that pain clinics in the private sector offered a higher number of treatments than those in the public sector. One potential explanation for this is that some treatments are more frequently available to people who are able to pay gap fees. For example, although this is not related to pain clinics, the second Australian Atlas of Healthcare Variation reported that rates for hospitalisation due to lumbar spinal decompression and lumbar spinal fusion were more than four times higher for privately-funded patients in comparison with publicly-funded patients (Australian Commission on Safety and Quality in Healthcare 2017).

Strengths of the study are that PainAustralia, not the researchers, selected clinics deemed to be specialised in

pain management, and that two independent raters were used to extract information. A study limitation is that the information on websites may not fully reflect the practices of the pain clinic. However, due to the penalties businesses face for false advertising, it is in the interests of the clinic to ensure accuracy on their websites, so these sites would be expected to be largely reflective of the treatments provided by the clinics. For this study, reviewing websites in this manner provided the only logistically feasible manner of describing the treatments being offered by pain clinics across Australia, and is relevant given the high use of websites by the public for health care information. The conclusions may also be limited by other pain clinics operating across the country that are not included on the PainAustralia pain services directory. PainAustralia is the leading advocacy body for pain in Australia and could be expected to be the most comprehensive list of clinics available, and a site likely to be used by consumers searching for reputable pain services.

Although there is limited research into the online information provided by pain clinics for patients with LBP, the findings of this study can be compared with the 'Waiting in Pain' project. This project reviewed the Australian persistent pain clinics (Hogg *et al.* 2012), with an update to the original study recently published (WIP-II; Hogg *et al.* 2021). Pain services responding to a survey participation request were included in the analysis. Similar to our findings, they reported that the majority of clinics were located in urban areas and that most provided patient education programs. Interestingly, most services in WIP-II were in public ownership rather than the predominantly privately owned services in our findings. This may be a result of privately owned clinics being less inclined to engage with the participation requests to be included in WIP-II, or a feature of different services listed in the Australian Pain Society database, which was also used to identify services for WIP-II. Use of allied health-led pain management programs also differed between the studies. Although few cases of pain clinics linking to other allied health services were found in this analysis, WIP-II reported >80% of clinics have allied health-led multidisciplinary pain management group programs. This difference in findings could be indicative of information on websites not fully reflecting the services provided in the manner WIP-II survey respondents described, highlighting a problem with using online material for selecting medical treatments. It is also possible that many pain services would seek to avoid providing a comprehensive list of interventions, as it could promote 'treatment-shopping'. Most pain services would argue that the optimal treatment to offer patients should depend on a combination of expert clinical assessment of the patient, the evidence of a treatment for the identified problem, and the patients' values and preferences for treatment. This discrepancy in findings could also be influenced by the nature of websites hosted on the different directories. Although PainAustralia provides details on the criteria for inclusion in their directory, little information is available on the criteria

for inclusion on the Australian Pain Society Database. Additionally, neither PainAustralia nor the Australian Pain Society provide clear detail on when details of pain services were last updated, making it unclear whether all information being included is a clear reflection of current practice.

If consumers are using the websites to understand how LBP should be managed, they are likely being appropriately educated about the importance of many guideline-endorsed treatments (e.g. education, exercise), but may fail to gain an understanding of the value of treatments, such as interdisciplinary coordinated care. It is also possible that many will perceive pain clinics to be a matter of finding the 'right' procedure for them, which would be undesirable. If consumers are using the PainAustralia directory to find a trusted provider near to them, many are going to have limited or no options available, as there were only 204 services across Australia for a population of 25.7 million. As with other health services, people in regional and remote Australia do not have the same access to pain services as those in major cities.

Future studies should seek to expand upon these findings by exploring whether the treatments being offered on the websites of pain clinics are a true reflection of the services available to consumers visiting the clinics. Moreover, it would be of interest to gain greater insight to the consumer view of online information to understand how their health care decisions are impacted by what information they are seeing online.

Supplementary material

Supplementary material is available [online](#).

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Data availability. The data that support this study will be shared upon reasonable request to the corresponding author.

Conflicts of interest. Professor Michael Nicholas works part-time in a pain management centre. He is also co-author on a book for pain self-management for patients (*Manage Your Pain*, ABC Books), for which he receives royalties. There are no other conflicts of interest to declare.

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