ISSN 0008-3194 (p)/ISSN 1715-6181 (e)/2020/32–42/$2.00/©JCCA 2020

Patients with cancer. Is there a role for chiropractic?

Maria Tsampika Laoudikou, MChiro[1]
Peter William McCarthy, PhD[1]

People who have a diagnosis of cancer may develop, or already have musculoskeletal conditions, just like any other person. However, discussion about potential benefits of chiropractic treatment to this group has generally been avoided related to the fear of misrepresentation. We aimed to derive a consensus from a group of experienced chiropractors regarding their perception of what chiropractic care offered to patients with cancer. An anonymous, two stage, on-line, Delphi process was performed using experienced chiropractors (n=23: >10 yrs practice experience, who had treated patients with cancer) purposively selected and recruited independently. One opted out of the study, 13 actively engaged in two rounds of questions and verification; agreeing such patients gained benefit from chiropractic care but use of spinal manipulation was not essential. There was no clear consensus regarding a protocol for interaction within any multidisciplinary

Comme tout le monde, les personnes atteintes d'un cancer peuvent développer des troubles musculosquelettiques, si elles n'en ont pas déjà. En règle générale, on évite de discuter des éventuels bienfaits des traitements chiropratiques pour ce groupe de personnes de peur de faire de fausses déclarations. Nous avons cherché à obtenir un consensus auprès d'un groupe de chiropraticiens d'expérience à qui on a demandé ce qu'ils pensaient des traitements chiropratiques administrés aux patients cancéreux. On a mené une enquête Delphi anonyme, en deux étapes et en ligne, auprès de chiropraticiens d'expérience (n =23 : >10 ans d'exercice, ayant déjà traité des patients atteints d'un cancer) choisis et recrutés de manière indépendante. L'un d'entre eux a abandonné l'étude, 13 ont répondu à deux séries de questions et se sont soumis aux vérifications. Les chiropraticiens ont convenu que ces patients bénéficiaient des traitements chiropratiques, mais que le recours aux manipulations vertébrales n'était pas essentiel. Aucun consensus clair ne s'est

[1] Faculty of Life Sciences and Education, University of South Wales, Treforest, Wales, UK

Corresponding author: Maria Tsampika Laoudikou, Life Chiropractic Clinic. 58 East St, Southend-on-Sea, Essex, SS2 6LH, United Kingdom
Tel: 0044 07860805212

The authors have no disclaimers, competing interests, or sources of support or funding to report in the preparation of this manuscript.

List of Abbreviations:
- ECU: European Chiropractic Union,
- WHO: World Health Organization
- CAM: Complementary and Alternative Medicine
- SMT: Spinal Manipulative Therapy
- MSK: Musculoskeletal

team treating the patient. Concerns were raised about misinterpretation of advertising any benefits for cancer patients from chiropractic care. Lack of evidence in this area was acknowledged.

(JCCA. 2020;64(1):32-42)

KEY WORDS: cancer, chiropractic, Delphi, evidence based care, integrated care, manual therapy, multidisciplinary practice, patient management, spinal manipulation

dégagé autour d'un protocole d'interaction entre les membres d'une équipe multidisciplinaire traitant le patient. On s'inquiétait des idées fausses qu'on se fait sur les bienfaits des traitements chiropratiques administrés aux personnes atteintes d'un cancer et on a reconnu le manque de preuves sur cette question.

(JCCA. 2020;64(1):32-42)

MOTS CLÉS : cancer, chiropratique, Delphi, traitements fondés sur des preuves, soins intégrés, thérapie manuelle, pratique multidisciplinaire, prise en charge du patient, manipulation vertébrale

Introduction

Cancer is the second leading cause of death globally, accounting for 8.8 million deaths in 2015.[1] This disease can affect almost any part of the body and has many anatomic and molecular subtypes each requiring specific management strategies. The greatest step forward in the increasing success in treatment of this disease has derived from the improvements in understanding and early detection.[2,3] The mixture of diversity of presentation, commonality of the condition and the rigors of treatment would make it highly likely that people with such a problem will develop or exacerbate pre-existing musculoskeletal conditions and as a result seek care from a manual therapist at some point in their therapeutic journey.[4-6] It is critically important, therefore, that a responsible profession has protocols in place to recognize the possibility of diagnosis, facilitate access to the appropriate treatment of the condition by accurate referral or provide musculoskeletal support within part of an integrated care package for those already undergoing treatment.[2,5]

Treatment of patients with cancer is an emotive subject in complementary and alternative healthcare circles.[4] Although treatment of the cancer itself is restricted to orthodox healthcare by law in many countries, this has not prevented reports suggesting that other therapeutic modalities can be used to "cure" the disease.[4] Mostly such claims are based on case reports and literature reviews and refer to a wide range of Complementary and Alternative Medicine (CAM) practice, with very little focus on chiropractic.[7-9] However, this situation has created a degree of confusion and obfuscation, which has impeded serious discussion of the potential health benefits that CAMs such as chiropractic may have on issues such as the patients' quality of life. An added problem results from the difficulty in quantifying the effects of individual components of any integrated care package as many are probably indirect benefits loosely associated with recovery and remission.[8-17] A further reason for not raising awareness of offering treatment to this group derives from allegations that CAM practitioners can delay appropriate access to care by failing to diagnose the metastatic disease in its early stages.[18]

It is generally accepted that musculoskeletal symptoms are common reasons for patients to present to a chiropractic practice.[19-21] Indeed, the motivations for the patient with cancer to seek chiropractic care appear to be primarily the presence of neuro-musculoskeletal symptoms.[22-36]

Occasionally, patients who were unaware that the underlying cause of their symptoms was cancer present to manual therapists, on occasion being appropriately diagnosed and referred.[22,25,29,30,32,34,36-38] Indeed, it is important to recognize that a number of primary tumours (lung cancer for example) may initially present with musculoskeletal symptoms.[27] The diagnosis of cancer for many of the above cases was made through a careful history and physical examination and/ or because the patient was not responsive to care.[22-38] It is generally considered that chiropractic education and continued professional development emphasises the importance of the practitioner considering progression of severity and/or frequency of

symptoms as the need to trigger re-examination, which may then warrant further investigation. Additionally, the education of chiropractors includes extensive training in the recognition of diagnostic characteristics of various cancers[9], including the use of radiographic imaging, which can play an important part in confirming the majority of such diagnoses[39-41]. A driving force for this emphasis results from the fact that failure to diagnose, make the appropriate referral, or even the delivery of chiropractic manipulation when contraindicated could have potentially fatal consequences for the patient.[41-43]

Patients undergoing treatment for their cancer usually have to battle both the psychological effects of the diagnosis and the metabolic effects of the therapeutic approaches; both of which are likely to increase the likelihood of musculoskeletal conditions adding to their burden. However, an analysis of CAM use in Washington, based on the claims data of two large insurance companies, revealed a slightly lower proportion of cancer patients (11.6%) sought chiropractic care when compared to those patients without a diagnosis of cancer (12.3%).[44] Although this change might be considered relatively insignificant, it does appear to be contrary to expectations based on the increased depression and anxiety as well as decreased activity (due to fatigue) that have been associated with having a diagnosis of cancer: all of which have been associated with increased musculoskeletal issues.[45,46] Indeed, based on this outcome, possibly erroneously, the authors of that article concluded that spinal manipulation may not be relevant to patients undertaking cancer treatment. This perception, whether made by those delivering care or those requiring care, could be damaging to both the chiropractic profession and patients if not subjected to further consideration.

Although historically treatment plans for patients with cancer were focused on the disease, recently the importance of improving the quality of life of the patient has been recognised.[8] As a proportion of patients with cancer do not have significant pain relief with the treatment received, it would be expected for these people to seek alternative options of pain relief. Hence, in order to quality control this aspect of the therapy, the concept of the cancer rehabilitation team has been developed. This concept aims at helping with the multidimensional problems faced by a patient with cancer[9]; however, interpretations such as those made from the Washington study[44] could impact on the inclusion of certain forms of CAM such as chiropractic in any integrated care package.

Currently, little information is available regarding treatment of cancer patients by the chiropractic profession[9], especially in Europe. The authors are aware of one initiative in the United States where the Cancer Treatment Centers of America (CTCA) promote themselves as being part of an integrative care plan adjusted on the needs of each cancer patient alongside other supportive therapies such as acupuncture and naturopathic medicine. Although their project aims to establish a more evidence informed approach showing how an integrative care plan could be of benefit for patients with cancer; to the authors' knowledge, there is currently no published research underpinning their approach.

We therefore chose to initiate our study of this area by gaining a range of views and maybe consensus from experienced European chiropractors who had treated patients with cancer as part of their general practice. The main issue was whether they considered their treatment to have benefitted these patients. We also wished to determine the degree of engagement with the other clinical disciplines responsible for treating the patient and what approach they might choose including use of manipulation and other therapeutic interventions.

Study Aims

Primary aim: to derive a consensus regarding whether chiropractic treatment was perceived to have any benefit for patients with cancer.

Secondary aim: to determine if there was consensus of approach regarding use of chiropractic in an integrated therapy package, as part of a multidisciplinary clinical team in the treatment of patients with cancer.

Methods

A two-stage Delphi process was performed using a panel constructed from chiropractors who were members of the European Chiropractors Union (ECU). A panellist needed to be a chiropractor with over ten years practice – based experience, during which time the panellist should have treated patients who either have or have had cancer. Members of the panel were purposively selected by a committee member of the ECU independently of the research team. The selection brief was to source chiropractors in practice who complied with the inclusion criteria

and would be interested in participating in this research process. The panel members were unaware of the names and locations of the other panel members.

To comply with current European Union legislation, each potential panel member was asked if they would like to consider being involved in this process, by giving approval to pass their email and practice addresses to the research team. At this point the person was signifying their interest in principle, without having detailed knowledge of the topic under investigation.

The contact details of 23 chiropractors were supplied to the research team who then circulated information detailing the research topic. At this point, the chiropractors who had shown an interest were free to choose to respond to the survey or not. Furthermore, the research team were not able to determine who had responded and who did not, which ensured anonymity for the participants. Both rounds of surveys were delivered to all members of this group who had not opted out (the panel). Informed consent was implied through both a statement in the introductory email text and as warnings given at the start and end of the questionnaire that submission would be considered implied consent to use the submitted data.

Panel members each received a personalised email with the link (active for two weeks) to the questionnaire that used the SurveyMonkey platform. This e-mail also contained reminders concerning the implied consent nature of the questionnaire, anonymity and the right to withdraw their involvement at any point up to the point they submitted their completed questionnaire. We also ensured panel members were aware that they could exit from the study at any time by simply asking to be removed from the email list.

The questionnaire mostly comprised free text option questions. Free text options were chosen to allow the panellists to include their opinions and experiences as well their management strategies regarding chiropractic care of patients with cancer.

The responses were collated and recirculated to the entire panel at the end of each survey, in order to verify that the responses and their synthesis were a true reflection of the panel's views. Verification was performed by uploading the summary document to the online platform (SurveyMonkey) and sending a link to all the panel, giving them the opportunity to add any further comments anonymously, if they so wished.

The questions for the second round were developed based on the responses from the first round, following verification. The aim of the second round was to delve deeper into the topic and clarify some of the issues raised about use of chiropractic treatment on cancer patients. Those questions were also distributed in the form of a survey using the same platform (SurveyMonkey). Access to the second questionnaire was available for four weeks. A similar verification procedure was completed before the final analysis.

Ethical approval was granted by the chiropractic undergraduate research ethics review subgroup (granted devolved responsibility from the Faculty of Life science and Education Ethics Committee, University of South Wales).

Results

Twenty-three chiropractors were contacted to take part in the project as part of the panel by the ECU member. One of them contacted the research team asking more details about the project and decided to opt out before the release of the first questionnaire. Thirteen of the 22 remaining panellists responded to the first questionnaire (59%) with three contributing to the first verification stage. Thirteen of the 22 responded to the second-round questionnaire, with none engaging in the second verification stage. Due to the anonymity of the respondents, it was not possible to determine whether the same 13 responded to both questionnaires or not. Those engaging in the verification did so only to suggest minor changes.

Demographics of the panel:

Although anonymous, limited information was available about the 13 panel members (from responses to direct questions on the questionnaire). Only one had less than 15 years' experience; the majority (7/13) had between 15 and 20 years' experience, with five having more than 20 years' experience. Seven of the panel had studied chiropractic outside the UK. Details on those who chose to not to respond was not available.

Areas of unanimous or general agreement:

Of those choosing to respond, it was unanimously agreed (13/13) that there were benefits that the patient with cancer could derive from chiropractic care. According to the majority of the panel (9/13) the perceived benefits were

similar to those recognised and reported by patients without cancer. The panel unanimously agreed that the role of chiropractic treatment in patients with a diagnosis with cancer should not differ from its role for any other patient. The following were mentioned by at least one of the panel members:

- Chiropractic could help a patient with cancer in terms of their: pain relief, empathy, mobility, energy levels, quality of life, sleeping patterns and function.
- Perceived benefits of chiropractic care in this group of patients were reported to include: pain relief, sleep pattern improvement, immune system improvement, wellbeing, higher energy levels and psychological reinforcement.

The whole panel agreed that a cancer diagnosis should make a difference to a chiropractic treatment plan.

- The range of reasons given for this included: the medication used, possibility of metastasis, possible bone density or ligamentous integrity alterations due to the cancer. Three of the panel stated that post-chemotherapy osteoporosis and cancer diagnosis must be considered a red flag before any treatment protocol be considered.

All the panel members concurred that SMT should not be used on all cancer patients. Although the panel stated that SMT was not considered necessary on all occasions; it was also stated that SMT should not be contraindicated in any plan of management. There were a range of different exclusion criteria offered, the main one being metastasis (6/13 responses). Other contraindications mentioned included stage, type and location of the tumour along with the extent of the area involved, the overall health of the patient, muscle weakness, atrophy and osteoporosis.

Interestingly, three of the five participants that had been in practice for 20 or more years and reported seeing 10 or more patients with cancer a year agreed it was appropriate to adjust areas other than the involved area, or considered first treating the patient without SMT if possible. One of this group reported using only Activator Adjusting Instrument based techniques on this category of patient.

The reasons that a patient with cancer will visit a chiropractor were not considered to be different from those of any other patient namely: musculoskeletal pain/ conditions (12/13). One panellist reported that *"cancer patients seek chiropractic care for neurological complications affecting eyesight, balance, dizziness, autonomic nervous system complications and weakness"*.

Additional comments made at the end of the first round included: "*most patients seek chiropractic treatment after the cancer was diagnosed*" and "*the aim should be the improvement of the function of the patient and that multidisciplinary patient centred approach could benefit patients with cancer*".

Three of the panellists stated that chiropractors should not treat the cancer but address the neuro-musculoskeletal problems of the patient and help them by improving their function.

A further panellist stated: *"patients with cancer may benefit from chiropractors and a vitalistic approach as long as it is as part of multidisciplinary management. Contraindications must be considered and weeded out very carefully. Specific chiropractic spinal manipulation guidelines must be determined, and all of the healthcare providers must work together in a patient-centred manner"*.

The areas of concern raised by the panel included:

- *a lack of evidence:* 8 panellists considered there was insufficient evidence to support the safety of chiropractic on patients with cancer, whereas 2 considered that there was. Additionally, one panellist outlined that there is enough evidence for safe chiropractic care in special populations like osteoporotic patients as the worry was instability or bone weakening; therefore one could extrapolate that there would be a good safety record for cancer patients as well.
- *a lack of communication with the medical team:* part of the panel acknowledged that they do not communicate with the medical team (7/13). The situation with the remaining respondents (6/13) was not clear.
- *a fear of the misconception that chiropractic cures cancer instead of helping the neuro-musculoskeletal aspect of the symptoms associated with the disease or its treatment*. Throughout their comments the panellists were continually underlining the need of giving a clear message that the chiropractor would not cure the cancer but only help with the MSK symptoms associated with it.
- *a lack of specific chiropractic techniques other than spinal manipulation therapy*. Two of the thirteen

actively engaged panel members suggested soft tissue work, a further two stated there was nothing specific to chiropractic and seven gave no answer. Interestingly two panellists replied that they use SMT if indicated and would apply SMT in other areas of the body if required.

- *chiropractors should not advertise the benefits of their care*. One respondent said that such advertising was not legal in their country of practice, as new rules are limiting medical advertisement, whereas the others could not find any reason to target advertisements towards patients with cancer. In the comment field, two other panellists stated that chiropractors should not advertise any treatments specifically for cancer patients as either cancer patients are to be seen as any other patient with neuro-musculoskeletal problems or because an advertisement like that could "*make things worse*". Two of the panellists responded in the comment field requesting this section be removed as there was no option not to answer.

Regarding whether chiropractic as a profession should do more to advertise the benefits of chiropractic on patients with cancer, two of the12 who responded agreed and 10 disagreed. Reasons for disagreeing were that cancer patients are not and should not be a chiropractor's primary patient (n=1), and there is insufficient evidence to claim that chiropractic could benefit these patients (n=1). Again, the comments focussed on the possibility of the message being misconstrued as being the chiropractor is able to cure cancer, instead of that chiropractic can help the MSK aspect of the patient's problem.

Treatment modalities used for treating patients who have been given a cancer diagnosis

Regarding whether the presence of a bone tumour could be a contraindication to SMT: 9/13 agreed and 4/13 disagreed with the statement. Ruling out presence of metastases and osteoporotic regions was the main point of concern. Although there was consensus that SMT could be used, low force techniques were considered to be safer (n= 9). Additionally, comments from a panel member (n= 1) indicated there was insufficient information provided in this question, with the decision being dependent on the primary tumour location.

While the panel agreed that the SMT does not appear necessary in the treatment plan of a patient with cancer (first round question, 13/13 agreed), the same degree of consensus did not exist when the panel were asked to suggest alternative treatment methods and comment on which would be considered specific to chiropractic. Two of the 13 answered that there is nothing specific to chiropractic, five out of 13 suggested soft tissue work, while one responded that the question was not clear. Respondents suggested the following to be alternative chiropractic specific therapies: dietary advice, adjustments of areas not affected by the cancer, use of Activator Adjusting instruments, active mediations, bio resonance, acupuncture, SOT, NUCCA, N.E.T., SSEP, trains of four, electrostimulation, Transcranial Magnetic Stimulation, balance training and eye exercises.

Protocol for treating patients who have been given a cancer diagnosis.

Although a large proportion of the respondents tended to agree on their approach regarding engagement with the medical team, there were some interesting differences within the group.

Many of the respondents (11/13) would not consider contacting the medical team of the patient to request permission to treat. However, one panellist stated they would contact the clinical team regardless of whether the patient was diagnosed with cancer, in chemo- or radio-therapy or in remission.

Approximately half of the respondents (7/13) considered that a clinical relationship between the chiropractor and the oncologist was not necessary, while six of 13 considered it to be necessary. Comments within the responses to this question showed some differences in terms of type of interaction. Two of nine who commented directly, stated that either oncologists are not open to chiropractic care in the country of practice (n= 1), or that the oncologist does not know what a chiropractor is or could do (n= 1).

Comments supportive of a multidisciplinary approach came from six of the 13 panel members. These are best encapsulated in the following statement: all healthcare practitioners working on a patient should have some clinical relationship for the benefit of the patient and that the patients' optimal management is based on a mutual understanding of each practitioners' role. Finally, 11/13 of the actively engaged panel agreed that a chiropractor should

offer treatment to a patient who has a current diagnosis of cancer; however, two disagreed.

Discussion

There was unanimous agreement of the panel regarding the perception that patients with cancer can benefit from chiropractic treatment. Interestingly, the main reasons that a patient with cancer seeks chiropractic treatment were considered by the panel to be no different from those of any other patient, namely MSK pain and associated disorders. A better quality of life, pain relief and improved function were reported to be the most common perceived benefits of chiropractic in relation to the panels' experience with cancer patients.

The panel agreed that a cancer diagnosis should make a difference to a chiropractic treatment plan, even if the patient seeks care when in remission. Spinal manipulative therapy was not reported as being used on all cancer patients, with exclusion criteria including the location of the tumour as well as presence of metastases or concurrent osteoporosis. Type of cancer was not mentioned as a factor by any of the panel, however, this might relate to the lack of a specific question.

One of the obvious limitations was that the panellists only had restricted clinical experience of patients with cancer, having only encountered them through their own practices. The potential lack of diversity in terms of the cancer types seen requires consideration when interpreting the comments reported here. The fact that these chiropractors have seen sufficient patients with these conditions to be comfortable discussing their treatment, however, does indicate that chiropractors should expect to see these patients in general practice.

The authors had initially considered a general questionnaire to the profession; however, a Delphi method was considered an appropriate starting place to gain some insight into the issue.

The Delphi method maximizes the benefits of using an expert/knowledgeable panel while minimizing potential disadvantages by implementing anonymity.[49-51] Furthermore, this method allows everything to be performed by email and does not require the participants to meet or interact directly. The presence of anonymity allowed those participating, the room to air their views without the inhibition that might result when discussing potentially contentious issues in a direct (face-to-face) social interaction. This was an important consideration in relation to approaching this topic area within members of the chiropractic profession, in order to gather a wide range of views. Furthermore, anonymity allows decisions to be evaluated on their merit, rather than being influenced by the strength of personality (i.e. of the person who had proposed the idea). Anonymity and confidentiality of participants are central to ethical research practice in social research.[50-53]

Using the Delphi methodology rather than focus groups allowed information exchange between numerous geographically (and temporarily) dispersed individuals in an iterative process. The belief is that there could be benefits from the exchange of information while retaining a low cost and convenience of accessing the questionnaires. In this case, the method allowed chiropractors from across Europe to answer the questionnaires in their own time and without awareness of other panel members' views. Supplying their responses to a central point and not sharing them prevented any adverse personal interaction. This approach has been criticized for limiting the potentially positive aspects of interaction found in any face-to-face exchange of information, as these often help identify the reasons for any disagreements.[50] The preliminary basis of this study accepted this minor disadvantage in relation to the major advantage of determining the nature of the issues.

Consensus development methods are being used to help clinical guidelines, which define key aspects of the quality of health care.[52] However, particularly appropriate indications/suggestions for interventions, such as those revealed in this Delphi study, do not represent any clinical guidelines. Instead, these results should only be considered as a representation of a consensus between members of a small panel of European chiropractors regarding their perspective on chiropractic management of patients with cancer.

Although 23 potential participants were invited, only one actively decided to opt out. Of the remaining 22 who indicated they were interested in participating, slightly more than half (n=13) actively participated in the first round. Reassuringly, this level of participation continued into the second round, however due to the success of the anonymization process we were not in a position to determine whether participation was by the same 13 chiropractors in both rounds. The low response rate during

the verification stages could be considered as reflecting a general agreement with the conclusions, however as this was not an active agreement, this can only be considered tacit approval at best.

Improvements in quality of life, pain relief and function were the most commonly reported perceived benefits of chiropractic in regard to patients with cancer. Importantly making potential patients more aware of these benefits was not considered appropriate. The debate in the profession regarding the "philosophy of chiropractic" seems to have made some chiropractors apprehensive regarding who they will talk to about chiropractic treatment in these patients, with the motivation apparently being a fear of possible misunderstanding about what the chiropractor could do. Indeed, when presenting our preliminary analysis at a major European chiropractic meeting one of the authors found that a number of chiropractic scientists misinterpreted the aim of the research. A small number of the panel expressed concerns about advertising any perceived benefits. Apart from local advertising restrictions and lack of evidence base, the main concern was that these patients should not be considered any differently from patients without a history of cancer, due to the treatment focus being neuro-musculoskeletal.

The panel agreed that chiropractors should view the patient as a "whole person" with needs reaching beyond the management of the disease entity. Indeed, the chiropractic profession has, ever since its inception, embraced such a "holistic" approach toward patient care. The generally accepted primary role of the chiropractor is to assist the patient with pain management and help the patient to increase mobility and function beyond a disease diagnosis.[9,47] The panel did consider that the use of spinal manipulation might be contraindicated or require careful consideration when treating patients with cancer. When challenged regarding alternative management/treatment tools, the panel reported using a variety of tools, but only a few of them appeared to be chiropractic specific. The key feature was that each patient must be evaluated thoroughly to determine which methods (chiropractic or other) will provide the greatest benefit in the particular case. In some instances, treatment may call for non-force techniques, whereas other situations could be better addressed through use of more standard manipulative procedures.[8] Interestingly, most of the techniques mentioned by the panel did not appear specific to chiropractic; as a variety of physical therapists, physiotherapists, osteopaths and sport massage therapists would also consider them part of their toolbox. It was agreed by all the panel who expressed an opinion (n=13) that more evidence would be needed in order for chiropractic adjustments and chiropractic specific techniques to be considered safe to use with such patients.

Although the attitude of health care providers and regulators to chiropractic has been historically negative, the opinion of the consumers has always been positive. It appears the public's opinion of chiropractors does not suffer because of advertising,[48] however it has been suggested that approval of the majority of clients can be helped by using a professionally designed and well-conceived advertising campaign. It has been reported that almost 77% of the general public seek and want information regarding the services a chiropractor provides.[48] This supports the need for clarity and transparency when communicating the identity for chiropractic: as we found here, what a chiropractor considers specific to chiropractic, may not be considered to be specific to chiropractors by those outside the profession.

The vast majority of the panel agreed that chiropractors should treat patients with cancer, which provides a positive answer to the initial question. However, there was a recognition of the need for evidence to indicate whether chiropractic treatment is safe for these patients which was one of the main concerns of the panel. In addition, the panel struggled to find chiropractic specific management techniques, which could raise an issue for further research.

Although anecdotal, there has been the perception of both fear and confusion in the profession regarding the role of the chiropractor in the management of patients with cancer. This was strongly reflected in the comments made by the panel. Therefore, going forward it is apparent that evidence will be needed in order to both allay fears, define roles and facilitate in the engagement of chiropractic as part of an integrated care package for these patients. This suggests there may be a need, at least initially, to create consensus based guidelines (as there is no research available to currently inform such guidelines) that support currently considered best practice and prevent more dubious and unhelpful claims of efficacy.

This research does not present evidence supporting benefits for patients with cancer from chiropractic care, or whether spinal manipulative therapy should be used on

the management of patients with a diagnosis of cancer. However, it does give evidence that experienced chiropractors both treat such patients and recognise a potential role for chiropractic in this population of patients.

Conclusions

Chiropractors treat patients who have cancer, seeking care mainly for neuro-musculoskeletal complaints. Advertising is not considered viable due to potential for adverse interpretation.

Further research is necessary regarding initially how chiropractic could gather data about the relative safety and risks of chiropractic care in such patients. Chiropractors need to establish better inter-professional relationships with the patient's medical and rehabilitation team.

It is important to send a clear message that chiropractors do not cure cancer but only aim to help with the neuro-musculoskeletal signs and symptoms. Therefore, construction and publication of consensus-based guidelines of best practice should be considered a priority.

Acknowledgements

The authors would like to acknowledge the time and contribution made by those chiropractors who responded, without which this study would not have been possible.

References

1. World Health Organization. Global status report on noncommunicable diseases 2014. World Health Organization; Geneva, 2014.
2. Centers for Disease Control and Prevention. 24/7: Saving Lives. Protecting People.TM National Center for Chronic Disease Prevention and Health Promotion. Atlanta, GA: Centers for Disease Control and Prevention (US) (2013). Available from: www.cdc.gov/chronicdisease/about/public-health-approach.htm
3. Ferlay J, Soerjomataram I, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray F. Cancer incidence and mortality worldwide: sources, methods and major patterns in GLOBOCAN 2012. Int J Cancer. 2015 1;136(5):E359-386.
4. Bao Y, Kong X, Yang L, Liu R, Shi Z, Li W, et al. Complementary and alternative medicine for cancer pain: an overview of systematic reviews. Evid Based Complement Alternat Med. 2014;2014: 170396.
5. Nissen N, Pedersen CG, Lunde A, Johannessen H. The use of CAM after the completion of hospital treatment for colorectal cancer : findings from a questionnaire study in Denmark, BMC Complementary Alternat Med. 2014;14: 388.
6. Buckner CA, Lafrenie RM, Denommee JA, Caswell JM, Want DA. Complementary and alternative medicine use in patients before and after a cancer diagnosis. Curr Oncol. 2018; 25(4): e275-e281.
7. Evans RC, Rosner AL. Alternatives in cancer pain treatment: the application of chiropractic care. Semin Oncol Nurs. 2005;21:184-189.
8. Schneider J, Gilford S. Integration of complementary disciplines into the oncology clinic: part IV. The chiropractor's role in pain management for oncology patients. Curr Probl Cancer. 2000;24: 231-241.
9. Alcantara J, Alcantara JD, Alcantara J. The chiropractic care of patients with cancer: a systematic review of the literature. Integr Cancer Ther. 2011, 11: 304-312.
10. Menefee LA, Monti DA. Nonpharmacologic and complementary approaches to cancer pain management. J Am Osteopath Assoc. 2005;105: S15–S20.
11. Goldstein MS, Brown ER, Ballard-Barbash R, Morgenstern H, Bastani R, Lee J, et al. The use of complementary and alternative medicine among Californian adults with and without cancer. Evid Based Complement Alternat Med. 2005;2: 557–565.
12. Falkensteiner M, Mantovan F, Muller I, Them C. The use of massage therapy for reducing pain, anxiety, and depression on oncological palliative care patients: A narrative review of literature. ISRN Nurs. 2011;2011: 929686.
13. Scott JA, Kearney N, Hummerston S, Molassiotis A. Use of complementary and alternative medicine in patients with cancer: A UK survey. Eur J Oncol Nurs. 2005;9: 131–137.
14. Shakeel M, Newton JR, Bruce J, Ah-See KW. Use of complementary and alternative medicine by patients attending a head and neck oncology clinic. J Laryngol Otol. 2008;122: 1360–1364.
15. Lawsin C, DuHamel K, Itzkowitz SH, Brown K, Lim H, Thelemaque L, Jandorf L. Demographic, medical, and psychosocial correlates to CAM use among survivors of colorectal cancer. Support Care Cancer. 2007;15: 557–564.
16. Chrystal K, Allan S, Forgeson G, Isaacs R. The use of complementary/alternative medicine by cancer patients in a New Zealand regional cancer treatment centre. N Z Med J. 2003;116: U296.
17. Amin M, Glynn F, Rowley S, O'Leary G, O'Dwyer T, Timon C, Kinsella J. Complementary medicine use in patient with head and neck cancer in Ireland, Eur Arch Otorhinolaryngol. 2010;267: 1291-1297.
18. Roth M, Lin J, Kim M, Moody K. Pediatric oncologists' views toward the use of complementary and alternative medicine in children with cancer. J Pediatr Hematol Oncol. 2009;31:177-182.
19. Post-White J, Fitzgerald M, Hageness S, Sencer SF. Complementary and alternative medicine use in children with cancer and general and specialty pediatrics. J Pediatr Oncol Nurs. 2009;26: 7-15.

20. Fouladbakhsh JM, Stommel M, Given BA, Given CW. Predictors of use of complementary and alternative therapies among patients with cancer. Oncol Nurs Forum. 2005;32: 1115-1122.
21. Richardson MA, Sanders T, Palmer JL, Greisinger A, Singletary SE. Complementary/alternative medicine use in a comprehensive cancer center and the implications for oncology. J Clin Oncol. 2000;18: 2505-2514.
22. Habermann TM, Thompson CA, LaPlant BR, et al. Complementary and alternative medicine use among long-term lymphoma survivors: a pilot study. Am J Hematol. 2009;84: 795-798.
23. Yildirim Y. Patterns of the use of complementary and alternative medicine in women with metastatic cancer. Cancer Nurs. 2010; 33: 194-200.
24. McEachrane-Gross FP, Liebschutz JM, Berlowitz D. Use of selected complementary and alternative medicine treatments in veterans with cancer or chronic pain: a cross sectional survey. BMC Complem Alternat Med. 2006;6: 34.
25. Curtis P, Gaylord S. Safety issues in the interaction of conventional, complementary and alternative health care. J Evid Based Integr Med. 2005;10 (1): 3-31.
26. Demetrious J, Demetrious GJ. Lung cancer metastasis to the scapula and spine: a case report. Chiropr Osteopat. 2008;16: 8.
27. French S D, Charity M J, Forsdike K, Gunn J M, Polus B I, Walker B F, Chondros P and Brit H C. Chiropractic Observation and Analysis Study (COAST): providing an understanding of current chiropractic practice. Med J Aust. 2013;199(10): 687-691.
28. Coulter ID, Hurwitz EL, Adams AH, Genovese BJ, Hays R, Shekelle PG. Patients using chiropractors in North America: who are they, and why are they in chiropractic care? Spine. 2002;27(3): 291-296.
29. Kier A, Timchur MD, McCarthy PW. A case report of an uncommon cause of cauda equina symptoms. J Manipulative Physiol Ther. 2007;30: 459-465.
30. Bussières A, Cassidy JD, Dzus A. Spinal cord astrocytoma presenting as torticollis and scoliosis. J Manipulative Physiol Ther. 1994;17:113-118.
31. Conley RN, Longnecker R. Metastatic carcinoma. ACA J Chiropr. 1983;17: 71-74.
32. Gatterman B. Bronchogenic carcinoma with metastasis of the cervical spine. ACA J Chiropr. 1987;24: 61-62.
33. Grod JP, Crowther ER. Metastatic bone disease secondary to breast cancer: an all too common cause of low back pain. J Can Chiropr Assoc. 1994;38: 139-145.
34. Malone D. Diffuse metastatic disease of the lumbo-sacral spine mimicking a lumbar disc herniation. Clin Chiropr. 2004;7: 10-15.
35. Kenny M. Bronchogenic carcinoma presenting as neuromusculoskeletal pain. J Manipulative Physiol Ther. 1991;14: 440-442.
36. Jensen A, Nolet PS, Murtaza AD. Oral squamous cell carcinoma: an atypical presentation mimicking temporomandibular joint disorder. J Can Chiropr Assoc. 2004;48: 266-272.
37. Osterhouse MD, Kettner NW, Birrer PT, Mankamyer K. Ganglioneuroma masquerading as spinal pain. J Manipulative Physiol Ther. 2002; 25: 184-187.
38. Yochum TR, Lile RL, Schultz GD, Mick TJ, Brown CW. Acquired spinal stenosis secondary to an expanding thoracic vertebral hemangioma. Spine. 1993;18: 299-305.
39. Stein PJ. A case of cerebellopontine angle meningioma presenting with neck and upper extremity pain. J Manipulative Physiol Ther. 2009;32: 776-780.
40. Farrar KL, Gardiner L. Unresolving hip tendonitis leads to discovery of malignant tumor. J Manipulative Physiol Ther. 2003;26: 207.
41. Shafrir Y, Kaufman B. Quadriplegia after chiropractic manipulation in an infant with congenital torticollis caused by a spinal cord astrocytoma. J Pediatr. 1992;120: 266-269.
42. Lennington RB, Laster DW, Moody DM, Ball MR. Traumatic pseudoaneuryrism of ascending cervical artery in neurofibromatosis: complications of chiropractic manipulation. AJNR. 1980; 269-270.
43. Brown R. Spinal health: the backbone of chiropractic's identity. J Chiropr Humanit. 2016;23(1): 22–28.
44. Lafferty WE, Bellas A, Corage Baden A, Tyree PT, Standish LJ, Patterson R. The use of complementary and alternative medical providers by insured cancer patients in Washington State. Cancer. 2004;100(7): 1522-1530.
45. Hamish R. Smith. Depression in cancer patients: pathogenesis, implications and treatment. Oncol Lett. 2015; 9(4): 1509–1514.
46. Pinheiro MB, Ferreira ML, Refshauge K, Ordoñana JR, Machado GC, Prado LR, et al. Symptoms of depression and risk of new episodes of low back pain: a systematic review and meta-analysis. Arthritis Care Res. 2015;67: 1591– 1603.
47. Rosner AL. Chiropractic identity: a neurological, professional, and political assessment. J Chiropr Humanit. 2016; 23(1): 35–45.
48. Moser RH, Freeman GL. An empirical analysis of the public's attitudes toward advertising chiropractic services: a comparative cross-sectional study. J Med Marketing. 2017; 16(1);10-20.
49. Fink A, Kosecoff J, Chassin M et al. Consensus methods: characteristics and guidelines for use. Am J Public Health. 1984; 74: 979–983.
50. Hasson F, Keeney S, McKenna H. Research guidelines for the Delphi survey technique. J Adv Nurs. 2000;32: 1008–1015.
51. Dalkey NC. The Delphi method: an experimental study of group opinion. In: Dalkey NC, Rourke DL, Lewis R, Snyder D., eds. Studies in the quality of life: Delphi and

decision-making. Lexington, MA: Lexington Books, 197213–54.
52. Schneider P, Evaniew N, Rendon JS, McKay P, Randall R, Turcotte R, Velez R, Bhandari M, Gher M. Moving forward through consensus: protocol for a modified Delphi approach to determine the top research priorities in the field of orthopaedic oncology. BMJ Open. 2016; 6(5) e011780.
53. Woolf S, Schünemann H, Eccles M, Grimshaw J, Shekelle P. Developing clinical practice guidelines: types of evidence and outcomes; values and economics, synthesis, grading, and presentation and deriving recommendations. Implement Sci. 2012; 7: 61.