PATIENT PERCEIVED EFFECTIVENESS OF A COURSE OF CHIROPRACTIC CARE IN A TEACHING CLINIC FOLLOWING INITIAL EXPOSURE TO CHIROPRACTIC THROUGH A PUBLIC SPINAL SCREENING

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ABSTRACT

Objective: To describe the attitudes and perceptions of patients introduced to chiropractic through public spinal screening, prior to and following a course of chiropractic care focused on the correction of vertebral subluxation.

Methods: Individuals receiving care at a chiropractic teaching clinic, after exposure to a public spinal screening were surveyed regarding their attitudes and beliefs about chiropractic care. Along with socio-demographic information (i.e., gender, age by decade), the respondents were asked their opinion on the effectiveness of chiropractic care, prior to and post commencement of care. Additionally, the respondents were asked what other health benefits they experienced beyond alleviation of their presenting complaint.

Results: A total of 94 respondents (47% male, 53% female) were surveyed, with the largest group of respondents (42%) being between 31-50 years old. Respondent perceived effectiveness of chiropractic care for their presenting complaint, prior to and after a trial of care, was indicated by 65% and 94% respectively. Additional benefits beyond the presenting complaints were reported by 90% of respondents. Reported benefits included improvement in digestion; energy; less stress; improved toilets habits; improved sleep; improved sense of wellbeing; improved respiration, improved strength, improvements in exercise, improvement in state of mind and increased physical stamina.

Conclusion: This study suggests that in this sample, patient perceived effectiveness of chiropractic care was beyond relief of musculoskeletal symptoms only. Furthermore, this sample may not have chosen to seek chiropractic care without the exposure from the public spinal screening. (Chiropr J Australia 2017;45:1-15)

Key Indexing Terms: Chiropractic, Non-Musculoskeletal; Perceived Effectiveness; Spinal Screening; Marketing; Chiropractic Education

INTRODUCTION

As with all healthcare student training programs, a quality learning environment for chiropractic students must provide the necessary opportunities to become “practice ready” to provide patient care. Contingent upon this are many variables that include the student’s interaction with faculty as well as their experience in developing a practice and exposure to patients within an ambulatory care setting. Similar to the way that clinicians are examining for best-practice evidence to guide patient care, clinical educators in the

health professions, including those in chiropractic colleges, are now asking questions about the effectiveness of their clinical interventions and, *de facto,* the effectiveness of their clinical teaching strategies. This is reflected in a recent survey of North American chiropractic students who expressed a preference for participating in mainstream health care, a desire to hold to traditional chiropractic theories and practices while concomitantly adhere to the principles of evidence-based practice. (1)

Part of the necessary skill in becoming “practice ready” is the ability to attract new patients, and teaching clinics within chiropractic education typically require minimum quotas to be met by each student. (2-3) Marketing practices such as spinal screenings are used as a communication and marketing tool to introduce the public to the potential benefits of chiropractic care and to generate new patients for chiropractic practices.(4-6) However, the impact of chiropractic screenings on the public’s view of the profession is an area of concern for some chiropractors and chiropractic legislators. (7)

A limited number of studies have investigated the public perception of chiropractic spinal screenings as an avenue to promote chiropractic and attract new patients. Two Canadian telephone surveys found that the respondents reacted negatively towards the chiropractor’s motive being to generate new patients for their business via a spinal screening. (8,9) A US study, held in person at various social settings, found that 88% of respondents disagreed with the statement “I would be interested to hear more about how chiropractic care can help me if I was approached by a DC in a shopping mall”.(10) However, a New Zealand study found that exposure to spinal screenings had a generally positive response. (11)

Outside of the chiropractic profession some studies have found that screening settings have little benefit in unveiling undiagnosed conditions, that the cost of this marketing can outweigh benefit, and that there can be a tendency to over-diagnose. (12-18) However, evidence does still exist that public place marketing in other healthcare fields, including medicine, have been beneficial overall in promoting health in communities.(12,13)

There is limited literature discussing patient expectations and outcomes in chiropractic teaching clinics. However, the available evidence does suggest that patients have expectations about the potential benefit to their presenting complaint (19), that presenting complaints are primarily neuromuskuloskeletal (NMSK) in nature (20-25), that there is a willingness to consider non-medial approaches to healthcare (26) and that there is a positive perceived effectiveness from the chiropractic care received in these settings. (27)

Chiropractic students at the New Zealand College of Chiropractic (NZCC) regularly attract new patients to the Chiropractic Centre through spinal screenings who present with a variety of clinical presentations. Towards surveillance efforts and as part of its on-going quality assurance measures of its clinical program, the perceived expectations and effectiveness of chiropractic care on patients attracted through spinal screenings to an outpatient chiropractic teaching clinic was examined.

METHODS

A survey was conducted at the Chiropractic Centre, the clinical training facility for the NZCC. Inclusion criteria for participation were that the respondents had to be (1) a chiropractic patient from the fee-paying general public, (2) under chiropractic care as a direct result of a chiropractic spinal screening, and (3) under continuous care for a minimum of 1 month with their assigned intern (a chiropractic student in their clinical training).

In addition to socio-demographic information (i.e., gender, age by decade, duration under care) the respondents were asked questions relating to their understanding of the benefits of chiropractic were (both prior to and post receiving care), what they thought the purpose of the screening they attended was, and whether they were aware of other health screenings. The primary focus of the survey was centred around if the respondents were of the opinion that chiropractic care could help with their primary presenting complaint, and whether following a course of chiropractic care resulted in a benefit to their primary presenting complaint. Additionally, the respondents were asked what other health benefits, if any, they experienced beyond alleviation of their presenting complaint. A list of potential benefits provided on the survey instrument included: digestion, improved energy levels, reduced stress, elimination, sleep, improved wellbeing, breathing, strength, exercise, state of mind, stamina, eating habits, or other (patient specified). See figure 1 for a detailed example of the survey instrument.

Research assistants pre-identified potential respondents based on the inclusion criteria. Surveys were collected over a 9-month period. During a regular visit respondents were asked by their intern to complete a single anonymous survey. The survey was completed after their regular visit. To ensure blinding, the assigned intern did not see the survey and the survey was collected by Front Desk staff. The request to complete the survey did not correspond to any particular visit to the Centre, instead was the next available appointment for the individual respondent. Survey completion was voluntary and no incentive was given. The survey typically took less than 3 minutes to complete. All respondents were assessed and managed under either Activator Methods, Diversified, Gonstead, Thompson Terminal Point or Upper Cervical Specific technique protocols for the correction of vertebral subluxation. No additional modalities were utilized as part of the care plans.

Due to the nature of the survey questions maintaining anonymity, this study was exempt from requiring ethical approval by the local Northern Y Regional Ethics Committee (Health and Disability Ethics Committees, New Zealand Ministry of Health). Under the Ethical Guidelines for Observational Studies: Observational Research, Audits and Related Activities, NEAC, December 2006, “no ethics committee review is required”.

1. Male / Female Age: 18-20 / 21-30 / 31-40 / 41-50 / 51-60 / 61+
2. How long have you been receiving chiropractic care now? (please circle)

   0-3 mths / 3-6 mths / 6-12 mths / 1-2 yrs / 2+ yrs
3. What did you think the purpose of the chiropractic screening was?

   _____
4. Before your chiropractic screening were you aware that chiropractic may be beneficial for? *(please tick all that apply)*

   ❑ Back pain ❑ Muscle problem ❑ Organ problems ❑ Children
   ❑ General health ❑ Performance ❑ Immune function ❑ Injuries
   ❑ Other: _____
5. Before your chiropractic screening did you think chiropractic could help with your primary concern?

   Yes / No
6. Did you notice any benefits for your primary concern as a result of chiropractic care?

   Yes / No
7. Have you noticed any other health benefits during your chiropractic care?

   Yes / No

   If yes, what have you noticed improvements in? *(please tick all that apply)*

   ❑ Digestion ❑ Energy Levels ❑ Reduced Stress ❑ Elimination
   ❑ Sleep ❑ Improved Wellbeing ❑ Breathing ❑ Strength
   ❑ Exercise ❑ State of Mind ❑ Stamina ❑ Eating Habits
   ❑ Other: _____
8. What is your understanding now of what chiropractic care can be used for? *(please tick all that apply)*

   ❑ Back pain ❑ Muscle problem ❑ Organ problems ❑ Children
   ❑ General health ❑ Performance ❑ Immune function ❑ Injuries
   ❑ Other: _____
9. Have you ever had a screening for anything else?

   ❑ Dental ❑ Diabetes ❑ Breast ❑ Cholesterol
   ❑ Hearing ❑ Bone density ❑ Mole check ❑ Vision
   ❑ Other: _____

Thank you for your valuable input and time

Figure 1: Survey Instrument

RESULTS

A total of 94 respondents (47% male, 53% female) were involved in this study. All respondents completed the survey with no potential participant refusing to participate. In terms of age based on decade ranges, the following were found: 18-20 years (N=3 (3.2%)); 21-30 years (N=19 (20%)); 31-40 years (N=21 (22%)); 41-50 years (N=18 (19%)); 51-60 years (N=20 21%)); ≥ 60years (N=13 (14%)). Duration of chiropractic care was stratified in the following manner: 0-3 months (N=32 (34%)); 3-6 months (N=27 (29%)); 6-12 months (N=18 (19%)); 1-2 years (N= 3 (3%)) and ≥ 2 years (N=12 (13%)).

Prior to receiving chiropractic care 61 (65%) respondents were of the opinion that they could benefit from chiropractic care with respect to their presenting complaint. However, following a course of chiropractic care 88 (94%) reported experiencing benefit (i.e. improvement) in their presenting complaint, which were primarily of a NMSK nature. Six respondents (6%) reported no improvement in their presenting complaint with chiropractic care, however, 4 (66%) of those respondents reported other benefits unrelated to their presenting complaint. Eight (9%) respondents reported only benefiting

from chiropractic care with respect to their presenting complaints. Overall only 2 (2%) respondents reported no benefit whatsoever during chiropractic care. The additional benefits reported (beyond improvement in the respondents presenting complaints) were categorized in the following manner: improved sense of wellbeing (N=52 (55%)); improved sleep (N= 46 (49%)); increased energy (N=42 (45%)); feeling less stressed (N= 31 (33%)); improvement in state of mind (N=30 (32%)); improvements in exercise (N=24 (26%)); improved digestion (N=23 (25%)); improved respiration (N=20 (21%)); improved strength (N=16 (17%)); increased physical stamina (N=11 (12%)) and improved toilet habits (N=6 (7%)).

Respondents reported a change in their perception of the purpose of chiropractic care when comparing their pre and post-care perceptions. Initially the majority of respondents (N=93 (99%)) perceived chiropractic care to be for 'back pain'. Post-care this perception reduced though it was still the most commonly reported purpose (94%). Other purposes such as 'general health' became highly reported (N=82 (87%)). For a complete comparison of responses to the perceived purpose of chiropractic care see table 1.

Table 1: Comparison of pre and post chiropractic care responses to the perceived purpose of chiropractic care

Purpose of chiropractic	Pre-chiropractic	Post-chiropractic
Back pain	N=93 (99%)	N=89 (95%)
Muscle problem	N=54 (57%)	N=81 (86%)
Organ problems	N=8 (9%)	N=61 (65%)
Children	N=11 (12%)	N=41 (44%)
General health	N=43 (46%)	N=82 (87%)
Performance	N=24 (26%)	N=66 (70%)
Immune function	N=13 (14%)	N=61 (65%)
Injuries	N=42 (45%)	N=61 (65%)

The perceived purpose of the chiropractic spinal screenings that the respondents had been exposed to fell into 5 main categories; spinal condition (including alignment, posture and pain) (N=39 (42%)), general health assessment (N=22 (23%)), not knowing the purpose (N=15 (16%)), to generate new clients (N=13 (14%)), and public education (N=5 (5%)).

Health screenings in general were familiar to the majority respondents (N=59 (63%)). Vision (N=43 (46%)) and dental (N=36 (38%)) screenings were the most commonly report screenings (for a complete list of respondent's awareness of health screenings see table 2).

Table 2: Respondent's awareness of health screenings

Screening type	Respondent awareness
Dental	N=36 (38%)
Diabetes	N=16 (17%)
Breast	N=21 (22%)
Cholesterol	N=28 (30%)
Hearing	N=30 (32%)
Bone density	N=11 (12%)
Mole check	N=14 (15%)
Vision	N=43 (46%)

DISCUSSION

This report sought to describe patient perceptions and reported effectiveness of chiropractic care in a clinical teaching setting following initial introduction to chiropractic through exposure to a chiropractic spinal screening. There is limited evidence that public place marketing in other healthcare fields has been overall beneficial in promoting health in communities.(13) However, this report suggests that there was a patient perceived effectiveness in both the presenting complaint, which was reported by 94% of respondents post a course of chiropractic care (an increase of 29% of respondents when compared to their pre-care beliefs). Additional benefits beyond the presenting complaint was reported by 90% of respondents. As such, marketing tools like spinal screenings may be useful not only for generating new patients, but fostering opportunities for members of the public to experience chiropractic care whom otherwise may not have had the opportunity.

Positive patient perceptions improve students' clinical training and experience, affirm their beliefs regarding the effectiveness of the care they provide, and potentially reveal unexpected health improvements experienced by patients. For clinical educators, it can provide evidence for the effectiveness of interventions taught and guide future teaching stratagems.(28)

According to the Job Analysis of Chiropractic (JAC), the majority of patients presenting for chiropractic care are female and between 31-50 years of age.(20) The findings of this study are consistent with the JAC, and a past study involving this same teaching institution. (20,21) Holt and Beck (21) retrospectively investigated the characteristics of 1004 patients over a 5-year period. Similarities in patient demographics with chiropractic teaching clinics in Australia and North America were found. However, differences to that of the general New Zealand population were noted with respect to age range. Of the new patients who presented over the course of 5 years, 64% presented with a spinal complaint, 15% with a visceral complaint, 9% with any complaints involving the extremities and 12% presented for wellness care. Consistent with the JAC patient

characterization, the majority of our respondents were female with 41% between the ages of 31-50 years. (20) As will be discussed shortly, the socio-demographics and presenting complaints of our respondents are also consistent with those of patients attending chiropractic college teaching clinics in North America.

The use of Complementary and Alternative Medicine (CAM) is a complex interaction between market, social, and cultural factors.(29) Key predictors of CAM use has been found to be gender, chronicity of problem, previous exposure to CAM as well as perceived effectiveness care.(19) Perceived effectiveness of a CAM intervention by conventional practitioners are often cited as reason to refer patients for CAM care.(30) CAM users' high compliance with conventional treatment and high perceived effectiveness of CAM have been argued as supporting a collaborative approach to patient care. (31) With respect to chiropractic, the current study found a high perceived effectiveness by the responders prior to receiving care. Sixty-five percent of respondents were of the opinion that chiropractic may be effective in addressing their chief complaint and following a trial of care, 94% of respondents reported effectiveness with the chiropractic care they received. A clearer understanding of the nature of this high-perceived effectiveness of chiropractic on the part of the public, prior to experiencing chiropractic care, would be instructive in examining the factors associated with use of the chiropractic services.

With respect to previous studies, Sawyer and Kassak (32) determined the attitudes of patients with their chiropractic care, to identify patient characteristics that might predict satisfaction. A survey consisting of a patient satisfaction questionnaire (i.e., 32 attitude statements based on a 5-point Likert scale in addition to patient and chiropractor demographics) was mailed to 541 new and returning chiropractic patients with 376 respondents. The survey found that patients were most satisfied with the accessibility of their doctors and least satisfied with the financial aspects of care; especially those who reported lower incomes and no insurance coverage. Factors that might influence patient satisfaction were the patient's perception of their outcome from care. Twelve percent of the responders were dissatisfied with their care concomitant with reports of either no or minimal improvement in their health problem.

Sigrell (19) examined the expectations of new patients consulting a chiropractor and evaluated differences and similarities in expectations between chiropractors and patients. The responders involved 30 chiropractors and 336 patients from 17 private practices throughout Sweden. He found that chiropractors and patients alike had expectations that the chiropractor would address the presenting complaints effectively so as to be symptom free. However, patients had lower expectations on chiropractic's effectiveness compared to that of the chiropractors but higher expectations of being given advice and exercises. There was also a tendency for the patients to expect improvements faster than the chiropractors. The author posited that differences in expectations could influence the care and outcome of the care negatively thus reinforcing the importance of communication between the chiropractor and their patients.

Gaumer (28) reviewed the literature on satisfaction with chiropractic care and offered a multivariate analysis of a national household survey to understand which aspects of care and behavior contributing to patient satisfaction with chiropractors. Using a national phone survey of US households, Gaumer found satisfaction levels with chiropractic care was quite high (83% of persons being satisfied or very satisfied).

In a similar study Gaumer and Gemmen (26) telephone surveyed randomly selected households in the United States. The study involved 400 adults who had previously experienced chiropractic care and 400 adults who did not. Respondents were asked about their use, knowledge and attitudes about chiropractic care, attitudes about personal role in health care, current source of obtaining usual and routine care and willingness to consider use of nonmedical doctors as the usual source of such care. The authors found that respondents who previously had chiropractic care had different attitudes and preferences about health and health care than those that had never experienced chiropractic care. Respondents in both groups had medical doctors that they used for routine care, a sizeable portion of both groups were willing to consider using a non-medical doctor for this role. Although willingness to use a chiropractor in this role is much higher among persons who have used a chiropractor before, both groups would prefer physician assistants and nurse practitioners than chiropractors.

In a chiropractic practice-based research network (PBRN) involving the care of children, Alcantara et al. (33) found both chiropractor and parent respondents reported a high rate of improvement with respect to the children's presenting complaints and presumed high satisfaction. In addition to salutary effects, as in the current study findings, the parents reported health benefits un-related to the children's initial clinical presentations. However, the current study's findings are results from individuals 18 years and older from a chiropractic teaching clinic while those of Alcantara et al. are those results of children from "the field." The extent to which these 2 clinical settings are similar is unknown and are less likely to be, and it must be stated that the generalizability of adult and children findings is also unknown and may not be comparable. Regardless, the unexpected reporting of improvements in health conditions unrelated to the respondents' chief or presenting complaints are of interest here. Chiropractors are mandated by their educational standards to be competent in formulating a care plan that is consistent with findings obtained from the patient history and physical examination and in certain situations, augment with appropriate diagnostic studies. Patient care provided by chiropractors has been characterized as flexible and individualized, based on each patient's response to care. Contingent upon this is the exposure to the spectrum of clinical presentations that patients will present. We would posit that chiropractic students place high value on their clinical education with general exposure to diagnosis and disease management relevant in today's practice milieu as is found among medical students. (34)

Given the frequency of NMSK conditions, such as neck and back pain, as presenting complaints by chiropractic patients (35,36) it stands to reason that the focus of training should be to address these type of presenting complaints. Indeed, the Council on Chiropractic Education (CCE) Clinical Education Meta-Competency (2) requirements

focuses on maintaining NMSK integrity for the purpose of enhancing health and performance. Towards these efforts, a graduate of a CCE accredited school must be proficient in NMSK evaluation and management. Similar codification can be seen in the documents of the Council on Chiropractic Education Australasia (CCEA), the European Council on Chiropractic Education (ECCE) and the Canadian Federation of Chiropractic Regulatory and Educational Accrediting Boards. (3,37,38) However, the CCE and similar regulatory bodies also define meta-competencies for chiropractors in health promotion and disease prevention that requires an understanding and application of epidemiological principles regarding the nature and identification of health issues in diverse populations and recognize their impact on the individual's health. Given the state of chronic disease epidemiology in today's healthcare,(39) it stands to reason that chiropractic students be trained beyond NMSK care.

As described above, Holt and Beck (21) found up to 15% of patients presented for chiropractic care with a non-NMSK complaint, supporting the rationale that chiropractic students gain experience in managing patients with a wide array of presentations. In a North American PBRN study of 7651 chiropractic patients, Hawk et. al.(40) found that non-musculoskeletal (non-MSK) complaints accounted for 10.3% of patients' chief complaints. An Australian study of 7519 patients presenting for chiropractic care also found that those presenting with NMSK problems were more likely to have a number of other chronic non-NMSK conditions, including hypertension, chronic sinusitis, asthma, dermatitis, depression and anxiety. (41)

Similar to the current study findings, Leboeuf-Yde et al.(42) found that non-MSK improvements occurred after chiropractic intervention in 9-56% of patients, with at least "some degree of improvement". Similar to the current study, common improvements reported were in breathing (27%) and digestion (26%). Collectively these studies strongly suggest training over and above that of NMSK complaints for chiropractic students is warranted.

To date and to the best of our knowledge, only a handful of studies have characterized the chiropractic student clinic. Holt and Beck (21) retrospectively analyzed 1004 files from the NZCC Health Centre over a 5-year period. The gender split of 51.9% female and 48.1% male reflects similar ranges to that of this report and the general New Zealand population.

Sawyer and Stewart (22) described a sample of 1986 patients admitted to the Northwestern Chiropractic Clinics during a 12-month period. With respect to gender, 56.2% were female and 43.8% male with a mean age of 32.3 and 32.5 years, respectively. Of all patients, 61.6% were between 21 and 35 years of age. Low back pain was the most frequent primary complaint among men and women.

Nyiendo and Haldeman (43) raised the issue that patients seen in a teaching clinic are not truly representative of patients seen by chiropractors in the field. These authors also suggested that students' clinical training and experience may not reach the level at which they will be tested by patient presentations post graduation. Nyiendo and

Haldeman (27) also examined improvements due to chiropractic care received by the above 2000 patients. Fifty-two percent of the patients were aged between 21 and 34, 79% presented with musculoskeletal complaints, and 44% had low back pain. The primary patient management approach was manipulation in 90% of cases. As a group, both patients and interns had similar expectations about the likelihood of improvement following patient management, and similar assessments of the degree of improvement actually attained. Similar to the current study, 82% of patients improved during their course of care.

In 1989, Nyiendo et al (23) sought to systematically describe the patients receiving care at 6 chiropractic colleges to identify similarities and differences in demographics, patterns of referral to and from the clinic, and complaints presented, particularly as they relate to low back pain. Among the chiropractic colleges, low back pain was the most common complaint followed by neck pain, extremity complaints and upper-mid-back problems, this is reflected in the NZCCHC population demographic. (21) The low back pain was typically chronic and commonly classified as non-specific low back pain. Sociodemographic differences in patients reflected the socio-demographic characteristics of the college location. Health complaints were fairly similar from one college to another with low back pain being common and having similar presentation across the colleges.

Morschhauser et al. (24) examined the demographic characteristics and chief complaints of patients in the teaching clinics of 4 chiropractic colleges. Fourteen participating clinics returned surveys on 1612 patients. Female patients outnumbered male patients in all except the outreach clinics. The patients in main and outreach clinics were younger than those of the satellite and inner-city clinics with over half of the patients in outreach and main clinics were <45 years of age. Satellite clinics had the largest proportion of older patients, with 25.5% ≥ 65 years of age. Pain was the primary reason chosen by patients at all clinics. The second-most common reason was a non-pain complaint (i.e., stiffness, numbness, tingling). Maintenance/wellness care was sought by 13.4% and 14.2% of patients in outreach and main clinics, respectively while 9.3% of patients at the inner city clinic and 10.3% of patients at satellite clinics were wellness patients. A majority of patients at all types of clinics indicated their current complaint as greater than 1-year's duration. Outreach patients reported a higher percentage of acute complaints of less than a week's duration than did patients in other types of teaching clinics.

Lishchyna and Mior (25) performed a retrospective descriptive cross-sectional study of new patient records completed at a teaching clinic. A total of 580 new patient files were analyzed. The majority was female (i.e., 57.7%) with a mean age of 43 years of which 42.1% presented with a chief complaint of more than 1-year in duration. The vast majority of patients complained of spinal pain (81.4%), most commonly low back pain. The majority of patients were referred by the treating intern (64.8%) and about 24% of patients were local residents.

In a recent prospective, descriptive, cross-sectional study of chiropractic patients at a free community-based clinic, Kaeser et al.(44) found that of 158 patients (50.6% women) 24.7% were tobacco users, with 48.7% expressing interest in cessation. Of 80.0% overweight or obese patients, 48.8% expressed interest in weight loss. By self-report, 16.5% were diabetic, 10.1% took hypertension medication, 36.7% used prescription pain medication (9.4% opiate use), 33.5% used nonprescription pain medication, and 9.4% were under the care of a mental health professional. As one can surmise, interests in care goes well beyond addressing low back pain complaints. Interestingly up to 12% of patients presenting to the NZCCHC do so with no complaint,(21) suggesting they may have a greater perceived benefit to chiropractic care, however this hypothesis requires further investigation.

Based on a current review of the literature characterizing patients in a chiropractic teaching clinic, the current study offers a new perspective in terms of the perceived effectiveness of chiropractic. In addition, our subjects were a priori defined as members of the general public without ties to chiropractic interns and thus more likely represent a patient from “the field.”

Limitations

We caution the reader on the generalizability of our study findings. Inferences made herein are strictly due to the interpretation of the authors. Survey responses are fraught with recall bias and the subjective nature of the responses with intentional misreporting. Nonetheless surveys are easy to administer and as in this study, provide an insight into the possible effectiveness of chiropractic care to guide and inform clinical education of chiropractors.

One limitation of this study is only respondents that had maintained their chiropractic care for at least 4 weeks were included, this does not allow for the perceptions of patients that dismissed themselves from care prior to this point. Some may have had positive results, however others may not have had positive results, and hence the findings are limited to a target population. Additionally, no information was collected on those that chose not to begin chiropractic care as a result of exposure to the chiropractic spinal screening.

Further limitations are a lack of information on the specific frequency of care and specific technique used in the chiropractic management for each respondent, there may have been a visit frequency of technique that resulted in more positive findings compared to another. Additionally, no home care that the respondent was participating in, if any, as this may impact on perceived effectiveness of chiropractic care and thus the results may not be attributable strictly to chiropractic care.

CONCLUSION

We described the perceived effectiveness of patients receiving chiropractic care in a chiropractic teaching clinic after exposure to chiropractic through a chiropractic spinal

screening. In addition to improvements in chief complaints characterized as musculoskeletal in nature, patients reported improvements in non-MSK functions. We support further research into the nature of chiropractic care resulting in salutogenic effects beyond musculoskeletal function.

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REFERENCES

1. Gliedt JA, Hawk C, Anderson M, et al. Chiropractic identity, role and future: a survey of North American chiropractic students. Chiropr Man Therap 2015;23(1):4
2. Council on Chiropractic Education. CCE Accreditation Standards Principles, Processes & Requirements for Accreditation. Accessed October 21, 2015 at: http://www.cce-usa.org/uploads/2013_CCE_ACCREDITATION_STANDARDS.pdf
3. Council on Chiropractic Education Australasia. CCEA Standards for Standardisation Programs in Chiropractic. Accessed September 5, 2016 at: http://www.ccea.com.au/files/4613/8872/1897/CCEA_Standards_for_Standardisation_Programs_-_March_2004.pdf
4. New Zealand Chiropractic Board. "Advertising Guidelines": NZ CHiropractic Board; 2011 [Available from: http://www.chiropracticboard.org.nz/Portals/12/Advertising Guideline.pdf?ver=2015-08-10-110354-053
5. Page S. An audit of health products and services marketed on chiropractic websites in Alberta and consideration of these practices in the context of chiropractic codes of conduct and ethics. J Canadian Chiropr Assoc 2007;**51**(2):91-98.
6. Cooper R, McKee, HJ. Chiropractic in the United States: trends and issues. Millbank Quarterly 2003;81(1):107-38
7. White J. Public Perception. NZCA News: New Zealand Chiropractors Association, 2006:18-19
8. Ontario Chiropractic Association. Public attitudes toward chiropractic marketing. Ontario Chiropractic Association. OCA Information Bulletin, 2006
9. Feather K. The public's view of chiropractic marketing: a message to take to heart. Dynamic Chiropractic: Dynamic Chiropr, 2006:2
10. Forese J, Gooding, T. Opinions of chiropractors and the chiropractic profession from the perspective of the public at large: An exploratory survey. J Phil Principles Practice 2013 (December 16):4-7
11. Russell D, Ellis G, Kashmiri R, Holt K, Haavik-Taylor H. A survey of the public perception of chiropractic and chiropractic spinal screenings. J Chiropr Educ 2010;24 (1):111
12. Berwick D. Screening in Health Fairs. A Critical Review of Benefits, Risks, and Costs. JAMA 1985;254(11):1492-98

13. Unite for Sight. Challenges and Failures of Health Fairs and Community Screenings 2016 [Available from: http://www.uniteforsight.org/health-screenings/health-screenings - _ftnref39
14. Lefebvre C, Banspach, S., Gans, K., Carleton, R., Lasater, T. Enhancing adherence to referral advice given at blood cholesterol screenings: impact on participant follow-up and physician behavior. Health Educ Res 1991;6(4):405-13
15. Tabaei B, et. al. Community-based screening for diabetes in Michigan. Diabetes Care 2003;26(3):668-70
16. Getliffe K, Crouch R, Gage H, Lake F, Wilson S. Hypertension awareness, detection and treatment in a university community: results of a worksite screening. Public Health 2000;114:361-66
17. Engelgau M, Narayan, K., and Herman, W. Screening For Type 2 Diabetes. Diabetes Care 2010;23(10):1563-80.
18. Ferrini R, Perlman, M., and Hill, L. American College of Preventive Medicine Policy Statement: Screening for Skin Cancer. American Journal of Preventative Medicine 1998;14:80-82
19. Sigrell H. Expectations of chiropractic treatment: what are the expectations of new patients consulting a chiropractor, and do chiropractors and patients have similar expectations? J Manipulative Physiol Ther 2002;25(5):300-5
20. Christensen M, Kollasch M, Hyland J. Practice Analysis of Chiropractic. Greeley, CO: National Board of Chiropractice Examiners; 2010
21. Holt KR, Beck RW. Chiropractic patients presenting to the New Zealand College of Chiropractic teaching clinic: a short description of patients and patient complaints." Chiropr J Aust 2005;35: 122-124
22. Sawyer CE, Stewart LA. Demographic, clinical and utilizations characteristics of chiropractic teaching clinic patients: Implications for clinical and epidemiological investigation. J Chirop 1986;21(12):59-66
23. Nyiendo J, Phillips RB, Meeker WC, Konsler G, Jansen R, Menon M. A comparison of patients and patient complaints at six chiropractic college teaching clinics. J Manipulative Physiol Ther 1989;12(2):79-85
24. Morschhauser E, Long CR, Hawk C, Boulanger K, Black J, Carpenter T, Iannelli G, Lynch OT, Stites J. Do chiropractic colleges' off-campus clinical sites offer diverse opportunities for learning? A preliminary study. J Manipulative Physiol Ther. 2003;26(2):70-6
25. Lishchyna N, Mior S. Demographic and clinical characteristics of new patients presenting to a community teaching clinic. J Chiropr Educ 2012;26(2):161-8
26. Gaumer G, Gemmen E. Chiropractic users and nonusers: differences in use, attitudes, and willingness to use nonmedical doctors for primary care. J Manipulative Physiol Ther. 2006;29(7):529-39
27. Nyiendo J, Haldeman S. A prospective study of 2,000 patients attending a chiropractic college teaching clinic. Med Care. 1987;25(6):516-27
28. Gaumer G. Factors associated with patient satisfaction with chiropractic care: survey and review of the literature. J Manipulative Physiol Ther. 2006;29(6):455-62
29. van der Sluijs C, Lombardo FL, Lesi G, Bensoussan A, Cardini F. Social and cultural factors affecting complementary and alternative medicine (CAM) use during menopause in Sydney and Bologna. Evid Based Complement Alternat Med 2013;2013:836234

30. Ko GD, Berbrayer D. Complementary and alternative medicine: Canadian physiatrists' attitudes and behavior. Arch Phys Med Rehabil 2000;81(5):662-7
31. Doering JH, Reuner G, Kadish NE, Pietz J, Schubert-Bast S. Pattern and predictors of complementary and alternative medicine (CAM) use among pediatric patients with epilepsy. Epilepsy Behav 2013;29(1):41-6
32. Sawyer CE, Kassak K. Patient satisfaction with chiropractic care. J Manipulative Physiol Ther 1993;16(1):25-32
33. Alcantara J, Ohm J, Kunx D. The safety and effectiveness of pediatric chiropractic: a survey of chiropractors and parents in a practice-based research network. Explore (NY) 2009;5950:290-5
34. O'Malley PG, Kroenke K, Ritter J, Dy N, Pangaro L. What learners and teachers value most in ambulatory educational encounters: a prospective, qualitative study. Acad Med 1999;74(2):186-91
35. 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):291-6
36. Coulter ID, Shekelle PG. Chiropractic in North America: a descriptive analysis. J Manipulative Physiol Ther 2005;28(2):83-9
37. European Council on Chiropractic Educations. ECCE Accreditation Procedures and Standards. Accessed September 5, 2016 at: http://www.cce-europe.com/downloads.html
38. Canadian Federation of Chiropractic Regulatory and Educational Accrediting Boards. CFCREAB Standards for Accreditation of Doctor of Chiropractic Programmes. Accessed September 5, 2016 at: http://www.chirofed.ca/english/pdf/Standards-for-Accreditation-of-Doctor-of-Chiropractic-Programmes.pdf
39. Smith BT, Smith PM, Harper S, Manuel DG, Mustard CA. Reducing social inequalities in health: the role of simulation modelling in chronic disease epidemiology to evaluate the impact of population health interventions. J Epidemiol Community Health 2014;68(4):384-9.
40. Hawk C, Long CR, Boulanger KT. Prevalence of nonmusculoskeletal complaints in chiropractic practice: report from a practice-based research program. J Manipulative Physiol Ther 2001;24(3):157-69.
41. French S, Densley K, Charity M, Gunn J. Who uses Australian chiropractic services? Chiropr Man Ther 2013;21:31:1-8
42. Leboeuf-Yde C, Pedersen EN, Bryner P, Cosman D, Hayek R, Meeker WC, Shaik J, Terrazas O, Tucker J, Walsh M. Self-reported nonmusculoskeletal responses to chiropractic intervention: a multination survey. J Manipulative Physiol Ther 2005;28(5):294-302
43. Nyiendo JA, Haldeman S. A critical study of the student interns' practice activities in a chiropractic college teaching clinic. J Manipulative Physiol Ther 1986;9(3):197-207
44. Kaeser MA, Hawk C, Anderson ML, Reinhardt R. Community-based free clinics: opportunities for interprofessional collaboration, health promotion, and complex care management. J Chiropr Educ. 2015 Aug 4. [Epub ahead of print]