
EDUCATIONAL RESEARCH IN ACTION

Developing a standardized curriculum for teaching chiropractic technique: *Qualitative analysis of participants' opinions from 4 intercollegiate conference workshops*

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Objective: This is a report of the results of 4 facilitated workshops aimed at developing a standardized chiropractic technique curriculum.

Methods: Workshops were held at research conferences during 2014, 2016, 2018, and 2019. Participants were tasked with developing recommendations for diagnostic and therapeutic procedures appropriate for chiropractic technique programs.

Results: For diagnostic procedures, there was general agreement among participants that chiropractic programs should include diagnostic imaging, postural assessment, gait analysis, palpation (static, motion, and joint play/springing), global range of motion, and evidence-based orthopedic/neurological tests. No consensus could be reached with respect to chiropractic x-ray line marking (spinography) nor heat sensing instruments, and there was only partial consensus on leg length assessment. For therapeutic procedures, all participants agreed that the following should be included: high-velocity, low amplitude spinal and extremity manipulation, adjustments assisted by hand-held instruments, drop tables, flexion-distraction tables, and pelvic blocks. There was unanimous support for teaching mobilization of the spine and peripheral joints, as well as for manual and instrument-assisted soft tissue therapies. There were some overarching issues: participants strongly preferred assessment methods known to be reliable and valid and therapeutic procedures known to be safe and effective. Where evidence was lacking, they insisted that diagnostic and therapeutic methods at minimum have face validity and biological plausibility. However, they cautioned against applying aspects of evidence-based care too rigidly.

Conclusions: Despite differing views on chiropractic terminology, philosophy, and scope of practice, participants' opinions were similar regarding diagnostic and therapeutic procedures that ought to be included in chiropractic technique programs.

Key Indexing Terms: Manipulation; Chiropractic; Methods; Education

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INTRODUCTION

As the chiropractic profession has matured, there has been a gradual transition away from relying on traditional diagnostic and treatment methods toward evidence-based patient care. Part and parcel of this transition has been the production of clinical practice guidelines, as well as evolving educational standards for both students and doctors of chiropractic.

There have been several efforts to develop model curricula for various domains of chiropractic education. For example, 1 college developed a model curriculum for Problem Based Learning¹ and another implemented a model public health curriculum.² There have also been

efforts to assay teaching across multiple chiropractic colleges, such as the effort of chiropractic colleges to gather information on ethics education.³ A multiyear effort among chiropractic college educators produced *A Model Course for Public Health Education in Chiropractic Colleges*, said to have begun with “a baseline assessment of the current public health attitudes, beliefs and behaviors of chiropractic students, public health faculty and a sample of field practitioners.”⁴ Other work has included a survey of faculty members at various chiropractic colleges to audit classes in jurisprudence and business management⁵; and former chiropractic college president Reed Phillips commented on a survey conducted by the California Board of Chiropractic Examiners that had assayed North American

chiropractic colleges about 19 (mostly proprietary) techniques they taught.⁶

In the current investigation, the authors convened a series of workshops focused on standardizing chiropractic technique content. We opted for this in-person methodology, rather than catalogue perusal or survey administration, because catalog information can be quite misleading, and surveys would likely lack the granularity we sought. Therefore, the authors facilitated 4 workshops aimed at developing a standardized technique curriculum for chiropractic educational programs during the Association of Chiropractic Colleges Research Agenda Conferences (ACC-RAC).⁷⁻¹⁰ The ACC-RAC meetings were selected as the most suitable venue to conduct these workshops since attendees were mostly teaching faculty at accredited chiropractic programs from both North America and other parts of the world. This format had been successfully used previously to develop a model curriculum on ethics for chiropractic programs.¹¹ Consequently, the attendees of these conferences were in a unique position to provide multiple perspectives related to this project.

These workshops were intended to address the fact that the practice patterns supported by the various stakeholders in the chiropractic profession (eg, colleges, national and state organizations, and technique developers) were highly variable, and yet it did not automatically follow that clinicians were as highly varied in their practice methods. There is some evidence that clinicians¹² and chiropractic students,^{13,14} despite some obvious differences on scope of practice, terminology, philosophy, and perception of the role of the chiropractic profession in the health care delivery system,⁷ often administer patient care using similar methods.¹⁵

In accordance with the aphorism *don't listen to what people say, watch what they do* (Stephen D. Levitt), our workshops focused less on what people thought and more on how they practiced. It has been reported that whatever their degree of satisfaction with the college they attended, chiropractors frequently practice in accordance with their education.¹² Consequently, the authors thought it would be useful to engage educators to find out how chiropractic education was being conducted and whether or how it might best be changed given the best available evidence. Assaying what was supported by current chiropractic educational programs would not only capture information on what is being taught but could also predict how clinicians might practice in the future.

The primary goal of these workshops was to inventory the diagnostic and therapeutic procedures that are currently taught at chiropractic programs. The second goal was to determine if there were consistency and agreement among the participants regarding the various procedures. Lastly, we sought recommendations as to how to improve chiropractic education and ultimately the administration of patient care.

METHODS

Ethics Review

Since feedback was requested from workshop attendees who did not provide any identifying information, the

review ethics board at Canadian Memorial Chiropractic College ruled ethics approval was not necessary, pursuant to Article 2.4 of the Tri-Council Policy Statement.¹⁶

Overall Workshop Structure

In general, workshop attendees were placed into 4 working groups, based on where they were seated in the conference room, and each group was randomly assigned 1 of the authors of this study as a facilitator (not including the principal investigator, who acted as the session moderator). The moderator then presented the topic each group was tasked to discuss. The identity of attendees was not recorded, although the members of each small group did introduce themselves and described their position at their respective chiropractic programs. The workshop attendees included practicing doctors of chiropractic along with chiropractic academicians, and a few chiropractic students. The facilitator recorded which chiropractic programs were represented in each small group during the workshop.

After the first round of deliberations, each group's facilitator summarized its comments and presented them to all workshop attendees. After each facilitator presented, the moderator presented the next topic for deliberations, which was a further refinement of the first question posed (see figures). Opinions from each group were then presented by each facilitator to all attendees once again and a summary of each group's deliberations were provided to the moderator.

Specific Topics of Each of the 4 Workshops

The topic of each workshop was scaffolded over 4 sessions. During the inaugural workshop conducted in 2014,⁷ the moderator and each of the 4 facilitators (themselves faculty members from 4 different chiropractic programs) provided a brief overview of what was taught in their respective programs and opined on the friction that appeared to exist at the interface between chiropractic technique and research.^{17,18} After that, workshop attendees addressed a series of interrelated questions related to the challenges field doctors encounter during patient care with respect to the principles of evidence-based medicine (Figs. 1–3).¹⁹

After briefly revising the foundational principles developed during the 2014 workshop,⁷ groups of participants at the 2016 workshop⁸ were tasked with developing an inventory of diagnostic tests that are taught to determine at what spinal level an intervention should be applied. After 20 minutes of deliberations, each group's facilitator presented that information to all attendees. Next, the moderator instructed each group to proffer which diagnostic tests *ought to be taught* at all chiropractic programs. After an additional 20 minutes of deliberation, the facilitator from each group recorded the group's recommendations and presented them to all attendees (Fig. 4).

In 2018,⁹ workshop participants focused on creating an inventory of therapeutic procedures that ought to be included within all chiropractic technique programs. The moderator instructed each group to create an inventory of

1. Are there areas of clinical practice where a practitioner provides patient care in the complete absence of research evidence? If so, is it appropriate to do so?
2. The article by Triano, et al (11) reported many methods used by chiropractors to determine the clinical target for care have unfavorable research evidence. Should field doctors abandon those diagnosed procedures? Should third-party payors pay for them?
3. Do patient preference and clinical experience trump research evidence?
4. Is it appropriate to continue to use a diagnostic test to identify where to adjust a patient (e.g., to find the subluxation or joint dysfunction) even if there is research evidence that indicates the test is invalid?
5. Is it inappropriate to continue to use a therapeutic procedure in the absence of studies demonstrating its clinical effectiveness?
6. Is it important to maintain the ideologies of the chiropractic profession and its traditions by continuing to use diagnostic tests and therapeutic procedures even in the absence of evidence, or in the presence of evidence that states they are invalid?
7. Should chiropractors be forced (by legislation) to only use those diagnostic tests or therapeutic procedures that have been demonstrated to be clinically effective during clinical trials?

Figure 1 - Questions participants at the 2014 Workshop were asked to consider.

the therapeutic procedures taught at the chiropractic program where each attendee teaches. Upon completion of the task (roughly 20 minutes), the results from each attendee were recorded by the group's facilitator who then presented it to all attendees. Next, the moderator instructed each group to proffer which therapeutic procedures *ought to be taught* at all chiropractic programs. The facilitator from each group recorded the group's recommendations and presented them to all attendees (Fig. 5).

Lastly, participants at the 2019 workshop¹⁰ were asked to focus on areas where consensus had not yet been reached during the previous workshops in hopes of resolving these outstanding issues. Specifically, attendees were tasked with determining whether x-ray line marking and thermography should be taught within chiropractic technique programs.

RESULTS

Demographics of Workshop Attendees

The number of participants attending each workshop varied between 25 and 35. Representatives from the following chiropractic programs attended 1 or more of the workshops: Canadian Memorial Chiropractic College, Barcelona College of Chiropractic (Spain), University of Bridgeport College of Chiropractic, Palmer University (Davenport and San Jose campuses), Southern California

University of Health Sciences, Parker University, Texas Chiropractic College, New York Chiropractic College, Cleveland Chiropractic College, University of Western States, D'Youville Chiropractic College, Life West Chiropractic College, Institut Franco-Européen de Chiropratique (France), Macquarie University (Australia), and Victoria University (Australia). Despite widespread representation, it is noted that several institutions did not have a representative attending. Several participants were not associated with a chiropractic program, and several others were employed as a chiropractor with the US Veterans Health Administration at various locations. Although it could not be said that these representatives from the Veterans Health Administration were faculty at chiropractic colleges, most, if not all of them, participated in chiropractic residency programs, which provide advanced clinical training to recent graduates that increases their scope and depth of clinical knowledge, experience, and acumen. We considered their participation in our workshops extremely valuable.

2014 Workshop: Foundational Principles

The questions participants were asked to consider at the inaugural 2014 meeting⁷ (Fig. 1) generated a great deal of discussion. Some participants suggested that treatment methods not having been found clinically effective should

Question to Workshop Participants: If a diagnostic and therapeutic procedure has not been studied or if there is not yet any supportive evidence for it, should:

1. Practitioners be forced to stop using it?
2. Should chiropractic programs stop teaching it?
3. Should insurance companies stop paying for it?

Workshop participants' opinion:

- No to all 3 questions, providing the procedures taught have construct validity and are biologically plausible.

Figure 2 - Foundational principles #1.

In general, workshop participants were **not** supportive of teaching of diagnostic and therapeutic procedures that were:

- Ritualistic in nature
- Taught due to historical reverence
- Shown to be clinically ineffective
- Shown to be clinically unsafe

Figure 3 - Foundational principles #2.

be seen as mere therapeutic rituals, or at best be used in conjunction with additional, more well-established methods. Moreover, participants cautioned that even were a treatment procedure thought to have resulted in a good clinical outcome, it was incumbent upon us to look askance if the procedure appeared to be biologically implausible or patently irrational. Turning to patient assessment procedures, I facilitated group distinguished rejecting a diagnostic procedure due to poor interexaminer reliability from rejecting it due to biological implausibility.

Other participants commented on the difficulties associated with conducting clinical trials to determine the clinical effectiveness of any given procedure. For example, more than a few attendees noted the challenge in creating convincing sham treatments and assessing the impact of placebo effects.

There was widespread support for the understanding that evidence-based care includes the best available research, clinical expertise, and patient preferences/values.¹⁹ That stated, participants were quick to add that this 3-pronged requirement was not absolute; weakness in 1 of these components did not necessarily preclude application of the technique in question, because it may be have been strongly supported by the other 2 components.

Some participants questioned whether it is ethical for a chiropractic program to teach a treatment method for which there is very limited or no supportive evidence. Others were quick to point out that when the evidence on outcomes is inadequate in quality or quantity, and yet patients with certain conditions continue to present for treatment, it may be reasonable to at least weakly support the use of the treatment in question, provided there were no contraindications to care or common serious adverse events. It was noted that the clinical imperative to treat, in the absence of strong supportive evidence, is not unique to chiropractic, as many medical procedures lack rigorous clinical testing. Participants reported frustration about chiropractic being held to a seemingly higher standard.

- Postural observation
- Gait analysis
- Palpation (static, motion, joint play)
- Global ranges of motion
- Radiography to rule out pathologies
- Orthopedic and neurological testing
- Leg length analysis to identify pelvic dysfunction

Figure 4 - List of recommended diagnostic procedures that should be taught at all chiropractic technique programs.

By the end of the first workshop, participants had converged upon a set of principles they believed should underpin any standardized chiropractic technique curriculum (Figs. 2 and 3). There was consensus that even if a diagnostic or therapeutic procedure were not fully validated, practitioners could continue using it, and teaching programs could continue teaching it, while third party payers should continue reimbursing providers and patients for the procedure. The 1 caveat was that diagnostic or therapeutic procedures should be biologically plausible and possess face validity. Participants in this foundational workshop strongly supported the view that chiropractic technique procedures should be evidence-based and patient-centered. It was also suggested that the term “evidence-based” might be more realistically rendered as “evidence-informed.”²⁰

Lastly, none of the workshop participants were in favor of deferring the decision of determining what diagnostic or therapeutic procedures are appropriate for clinical use to licensing bodies. The obvious exceptions were those procedures falling outside the scope of chiropractic practice, as defined by legislation in a particular jurisdiction. Participants unanimously agreed that the profession’s cultural authority was diminished by members using unscientific diagnostic or therapeutic procedures and that the most suitable role of licensing bodies was to discipline members who engaged in unethical practice activities.

2016 Workshop: Diagnostic Procedures

At the 2016 workshop, in general, there was a high degree of consensus among workshop participants with respect to which diagnostic procedures should be taught in chiropractic college technique programs (Fig. 4).⁸ All participants agreed such a program should include postural assessment, gait analysis, palpation (static, motion, and joint play/springing), global range of motion, and validated orthopedic tests (eg, straight leg raise, thigh thrust, Kemp test). There was also a consensus that the teaching of non-neuromusculoskeletal clinical assessment procedures (eg, vital signs) should be confined to diagnosis practical laboratories, where their importance should be stressed. Some participants recommended that standardized orthopedic tests be taught in orthopedic courses and then reviewed and drilled during technique laboratories.

The participants failed to reach consensus regarding the appropriateness of teaching leg length analysis. Not surprisingly, participants who thought that Activator Methods and Thompson Technique should be taught as their developers had intended supported the use of leg checks. Conversely, participants who preferred teaching

- Spinal manipulative therapy (HVLA manipulations of spine and peripheral joints)
- Instrument adjusting
- Drop table adjusting
- Flexion-distraction
- Pelvic blocking
- LVLA mobilizations of spine and peripheral joints
- Manual and instrumented soft tissue therapy

Figure 5 - List of recommended therapeutic procedures that should be taught at all chiropractic technique programs.

core treatment and diagnostic methods, independent of proprietary technique systems, tended to suggest leg checking was not useful. Likewise, no consensus could be reached with respect to x-ray line marking (also referred to as radiometric analysis or spinography) nor for thermography. Some of the participants were concerned that the “Site of Care” study²¹ had concluded there was high quality evidence that these methods were to be judged “unfavorable.” Participants were in support of radiographic analysis that was intended to rule out pathologies and identify congenital anomalies, but did not support using radiometric analysis to identify subluxations, to calculate a preferred line of correction (eg, line of drive) during spinal adjusting, or to optimize the outcome of spinal manipulation or other adjustive methods. None of the participants were in favor of repeat radiography to monitor patients’ progress following treatment.

2018 Workshop: Therapeutic Procedures

Consensus among workshop participants was more easily reached when focusing on therapeutic procedures taught in chiropractic technique programs (Fig. 5).⁹ All participants agreed that high-velocity, low amplitude spinal manipulative therapy and manipulation of the peripheral joints should be taught. Attendees also universally supported the use of hand-held thrusting devices, such as the Activator Adjusting Instrument,²² as well as drop tables (as used in the Thompson Technique²³), flexion-distraction tables (as used in the Cox Technique²⁴), and pelvic blocking (as used in Sacro-Occipital Technique²⁵). There was unanimous agreement among workshop participants that low-velocity, low amplitude mobilizations of the spine and peripheral joints should also be taught. Although few participants recommended using proprietary “brand-name” techniques²⁶ as originally developed, most supported teaching the core methods developed in such technique systems, without emphasizing their proprietary origins or their detailed procedures. Lastly, participants agreed that all chiropractic programs should teach both manual and instrument-assisted soft tissue therapies.

- Describe the procedure’s historical origin
- Explain how procedure is performed
- Provide a thorough review of the evidence that supports and fails to support the clinical utility of the procedure

Figure 6 - Consensus recommendation on the process of how x-ray line marking and/or thermography should be taught at those chiropractic technique programs that teach them.

2019 Workshop: Resolving Previous Failures to Achieve Consensus

Participants at the 2019 workshop¹⁰ struggled with whether it would be appropriate to teach an assessment method, which might be questionable in its own right, solely on the basis that it might be judged integral to proprietary technique systems that are lodged in the core curriculum. Examples would be thermography as deployed in Gonstead technique,²⁷ and radiometric analysis as conducted by upper cervical techniques²⁸ and Chiropractic BioPhysics technique.²⁹ Ultimately, participants recommended that chiropractic institutions instructing students on the use of x-ray line marking or thermography should follow this 3-step process: (1) Describe the origins of the procedure; (2) Explain how the procedure is performed; (3) Provide a thorough review of the best available evidence that either supports or fails to support the clinical utility of the procedure.

Some participants thought that teaching radiometric and thermographic analysis should be reserved for elective or continuing education courses, rather than presented within the core curriculum. However, it was pointed out that for those colleges sponsoring technique programs centered around these proprietary techniques, it would be impossible to remove these analyses from the core curriculum. That would not be an issue for those colleges teaching generic technique, whose technique programs are generally organized by region of the spine. A unanimous recommendation “for” or “against” teaching radiometric and thermographic analysis could not be reached, but there was consensus on how these procedures should be taught at chiropractic programs inclined to teach them (Fig. 6).

DISCUSSION

Qualitative research seeks to gain an understanding of prevalent trends in thought and opinion, including underlying reasons and motivations. The individuals who participate generally constitute a small sample of those to whom the results are thought to apply. The analysis is

usually nonstatistical, and the results are reported as summaries of group discussions.

We intended these workshops to inventory the diagnostic and therapeutic procedures that are currently taught at chiropractic programs, report on the consistency and agreement of the workshops' participants, and from this report the results relative to developing a standardized curricular technique curriculum. We were not only trying to develop a standardized curriculum but ascertaining if there were enough consensus to attempt such standardization. Although our primary intent was to report back on the views entertained by the workshop participants, the authors participated in as well as facilitated the workshops. Not surprisingly, we authors, just like the other attendees, shared some differences of opinion on certain aspects of chiropractic technique instruction and application. We were not necessarily in complete agreement regarding the various assessment and treatment methods, let alone the appropriate role of "brand-name" techniques. At no point did we consider internal discussions on the techniques considered to be part of the project, which rather emphasized hosting a forum for college delegates to have that discussion. We did not formulate any opinions as to whether or to what degree the colleges needed to achieve conformity in their choice of techniques to teach. The participants themselves seemed more concerned with their freedom to construct a technique program based on their individual interpretations of research findings than they were with some mandated push toward uniformity.

What we learned in conducting these workshops is that although educators and presumably practitioners continue to exhibit important ideological differences (eg, on terminology, scope of practice, professional image, role among the health care delivery professions, and public health issues), they tend to support very similar diagnostic and therapeutic techniques. The major fault lines in technique show up among the appropriateness of some diagnostic procedures, such as radiometric spinal analysis and thermography.

The relative consistency of the participants' views on chiropractic technique procedures may seem surprising at first glance, given how many authors have called attention to widespread variations among chiropractors.^{30,31} No doubt many educators and clinicians do pledge allegiance to different professional identities, ideologies, lexicons, and acceptable practice behaviors. Some authors have gone so far as to characterize these differences as tribal in nature.³¹

On the other hand, the severity and importance of such ideological differences may be routinely overestimated. As McDonald et al¹⁵ put it, after surveying 1102 North American chiropractors: "Practicing chiropractors in this survey form a consensus on many scope of practice and philosophical issues, in contrast to the history of conflict among leaders in the profession." For example, in our workshops the participants did not seem to have any issue with continuing the use of the term "subluxation," despite it having become controversial in recent years.

The key to understanding the paradox that chiropractors appear so very different from one another, and yet mostly agree on how they practice, is the difference

between a mere definition and an operational definition. An operational definition of a concept, rather than abstractly defining its essence, describes the concrete behaviors of those individuals who embrace the concept. As an example, chiropractors have been quarreling for decades on how to define "subluxation" and whether to even continue using the word. That stated, when individuals are asked to describe exactly how they determine a patient has a subluxation, or "subluxation-equivalent"³² (any other term suggesting there is something wrong with the spine that appears related to the patient's complaint), they would likely identify very similar history-taking and examination procedures, such as those taught in nearly every chiropractic program. These would include the history of the chief complaint (typically the site of pain), static and motion palpation, ortho/neuro examination, leg length evaluation, gait analysis, postural assessment, and perhaps radiography or thermography. Treatment techniques for the subluxation or "subluxation-equivalent" would likely be even more homogeneous than the assessment technique. These include high-velocity, low amplitude thrusting techniques and/or drop table spinal manipulation, pelvic blocking, flexion-distraction, mobilization procedures, and/or instrument-assisted spinal adjustment.

In our opinion, the considerable attention focused on putative inconsistencies between various chiropractors may simply serve to dampen the enthusiasm and pride that chiropractic students take in their choice of a profession. For example, a survey of 740 Canadian chiropractors resulted in the observation that the chiropractic program a chiropractor attended was a significant predictor of what the investigators characterized as either "orthodox" or "unorthodox" group membership.³³ The authors of this survey uniquely employed medical orthopedists to define what was orthodox or unorthodox—terms which on paper might seem coldly anthropological but in context suggest rational vs irrational behavior. As the paper makes abundantly clear, the survey in question only addressed perspectives, not actual practice patterns. Another publication³¹ called for ostracizing from the profession those chiropractors who disagreed with the authors on issues of scope of practice, and furthermore demanded that the "middle group" of chiropractors side with them, rather than respect the professional stature and practice rights of "traditionalist" chiropractors.

The Standardized Chiropractic Technique Package

For many years, the technique program at Palmer Davenport Chiropractic College has emphasized the "Palmer Package," which includes Diversified, Thompson, Gonstead, Activator, and Palmer Upper Cervical Specific.³⁴ A similar package was proposed by Triano and McGregor,³⁰ recommending techniques that had been reported by the National Board of Chiropractic Examiners to be used by more than 50% of all practicing chiropractors: Diversified, Gonstead, Thompson Terminal Point, Activator Methods, Cox Flexion-Distraction, and extremity adjusting.³⁵ As a recurrent theme manifested in each of the workshops, the participants were inclined to support

the core methods used in these proprietary technique systems, but many were reticent to support the proprietary techniques per se, preferring that proprietary technique courses be limited to elective courses or only offered as continuing education programs. As an example, they believed all chiropractic students be taught instrument adjusting, drop table methods, and pelvic blocking, but not necessarily Activator Methods Chiropractic Technique, Thompson Technique, and Sacro-Occipital Technique, respectively. Other attendees took a contrary opinion, opining that based on their clinical experience deploying only parts of a technique system might limit its effectiveness.

The participants were more homogenous in their preferred treatment methods than in their patient assessment methods. Turning to the assessment methods, the participants were quite homogenous, excepting their views on thermography and especially on radiography for biomechanical assessment. The last workshop, which focused on attempting to resolve remaining differences, was unable to do so. We can only hope that evidence for or against the use of these procedures will eventually become overwhelming and tip the scales.

Limitations

Qualitative research, as used in this project, has some inherent weaknesses that must be acknowledged. The researchers' presence and occasional participation during the data collection phases of these workshops may have affected the subjects' responses. Issues of anonymity and confidentiality can also present problems, complicating the task of presenting candidly.³⁶ Since the workshops were conducted in 4 different conferences, over a 6-year period, the attendees were different from workshop to workshop. Sometimes no individuals from a particular college were represented, whereas in other cases there were several individuals from a given program, which may have overrepresented their college's views. There was a distinct underrepresentation of individuals from countries outside of North America, diminishing the depth of the workshops and suggesting caution in drawing inferences applicable to colleges worldwide. Finally, it was not always clear when the workshop attendees were discussing proprietary technique systems in totality, or when they were referring to components of such systems.

Our most important goal was not to express the authors' opinions on the current and future status of chiropractic technique programs, but rather to faithfully capture the opinions of the participants. If we had devoted anything beyond a minimal amount of space in our paper to develop our own opinions, the participants would have every right to consider themselves to have been used as a foil for expressing our own views. The reader is encouraged to compare the participants' interpretation of the evidentiary basis of contemporary chiropractic technique with a rigorous review of the methods used by chiropractors to establish the site for applying manipulation.²¹

The authors themselves, all of us having taught in chiropractic colleges, and with well over a century of collective experience teaching, understand that sometimes

the teaching curriculum is unduly influenced by what can be easily and practically taught. This fact of life may come at the expense of teaching more challenging, and especially, updated knowledge. Instructors recognized to have contrary opinions are not universally appreciated.

Since the probing questions that seeded conversation among the participants were not pilot tested prior to the workshops, they may have been unclear or may have been worded to permit unintentional bias. Willis and Artino³⁷ suggest that probing questions be piloted using a process called "cognitive interviewing": interviews with individuals who are specifically recruited and presented with survey questions in much the same way as survey respondents will eventually see them in the final draft of the questionnaire. Then, cognitive interviews are conducted before data collection (pretesting), during data collection, or even after the survey has been administered, as a quality assurance procedure. This would be an important addition to the methods of future studies.

CONCLUSIONS

Participants at a series of workshops recommended that instructional programs in chiropractic technique be evidence-based. Participants strongly supported a preference for assessment methods that had been shown to be reliable and valid, as well as for treatment methods that have been demonstrated to be safe and effective. In areas where evidence was presently lacking, they insisted that the method of assessment or treatment at least possess face validity and biological plausibility, meaning that it be consistent with what is known about anatomy, physiology, and validated manual therapies. At the same time, the participants urged restraint when interpreting the components of evidence-based care too rigidly, recommending no procedure be rejected outright due to the limited strength in 1 component, especially when there is no obvious alternative procedure available.

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