LITERATURE REVIEW

Importance of Building Confidence in Patient Communication and Clinical Skills Among Chiropractic Students

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Purpose: One important objective of chiropractic education is to foster student professional confidence and competence in patient communication and clinical skills. Therefore, the aim of this article is to review the extant literature on this topic, stressing the significance of building students' confidence for effective practice and the need for more research in this area. **Methods:** The authors reviewed MEDLINE and ERIC from 1980 through 2008 using several key words pertinent to confidence and health care. Three distinct, but interrelated, bodies of literature were assessed, including professional confidence in health care research, the nature and development of confidence in educational psychology research, and fostering professional confidence in chiropractic education. **Results:** It was apparent through the review that chiropractic education has developed educational methods and opportunities that may help develop and build student confidence in patient communication and clinical skills. However, there has not been sufficient research to provide empirical evidence of the impact. **Conclusion:** Fostering chiropractic students' development of confidence in what they say and do is of paramount importance not only to them as new practitioners but more importantly to the patient. There is no doubt that a better understanding of how confidence can be developed and consolidated during tertiary study should be a major goal of chiropractic education. (J Chiropr Educ 2009;23(2):151–164)

Key Indexing Terms: chiropractic; education; self-efficacy; students; trust

INTRODUCTION

One important objective of chiropractic education is to foster student professional confidence and consequently competence in patient communication and clinical (physical) skills—two components vital to the profession. Professional competence can be conceptualized in terms of knowledge, abilities, skills, and attitudes displayed in the context of a set of realistic professional tasks,[1] whereas confidence in oneself symbolizes the belief that one has the ability to do things well or deal with situations successfully.[2] How confidence can be fostered as an integral part of chiropractic education is not well known and research is still scarce. The aim of this article is to review the extant literature on this topic, stressing the significance of building students' confidence for effective practice and the need for more research in this area.

Chiropractic practice shares a number of common characteristics with other health-related fields. Chiropractors typically view themselves as primary care providers,[3,4] who often work in private practice but can also be on staff at hospitals and multidisciplinary clinics[5] or be involved as part of sport teams at the highest level, such as the Olympics.[6] Chiropractors predominantly treat patients with musculoskeletal problems[7] and utilize spinal (or extremity) manipulation as their primary treatment tool. The use of other modalities, such as heat, cold, and electrotherapy, in addition to advice on supplement usage, lifestyle, weight loss, or rehabilitation are commonly found.[8] Although chiropractic may be a distinct profession, other professions share similar treatment protocols. For instance, manipulative procedures are also practiced in osteopathy, physical therapy, and medicine,[8,9] while the use of

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heat, cold, electrotherapy, lifestyle, and rehabilitation are common in those professions as well as in the athletic training profession.[9–11] With this in mind, it is apparent that practitioners in all of these health-related professions need to possess a high level of clinical (physical) and patient communication skills in order to be effective providers. Understanding the nature of professional confidence and how it can be fostered is therefore critical for designing effective professional education.

Chiropractic educational programs have implemented unique methods of instruction, some providing learning opportunities that may assist in the development of student confidence in patient communication and clinical (physical) skills.[12–18] Some programs have even been assessing students' levels of confidence, embedded within research.[19] Overall, however, while the development of students' confidence in patient communication and clinical (physical) skills has been studied extensively in medical education, this is not the case in chiropractic educational research. This is somewhat surprising given that the chiropractic profession utilizes a physical skill (manipulation) as its primary mode of treatment, which is recognized as requiring a high quality of communication between practitioner and patient.[20]

As noted above, research focusing on the development of student confidence in patient communication and clinical (physical) skills is extensive in general medical education but very limited in the specialized field of chiropractic education. This article addresses this issue by reviewing three distinct, but interrelated, bodies of literature: professional confidence in health care research, nature and development of confidence in educational psychology research, and fostering professional confidence in chiropractic education. The article concludes by making a case for the significance of confidence building to become a major goal in chiropractic education.

METHODS

A search was conducted to identify research material relevant to each of the three bodies of literature to be reviewed in this article. This was done using two major, complementary databases, MEDLINE and ERIC (1980 through 2008). The first search centered on professional confidence in health care research using the key terms: confidence + health care students. This yielded a large and diverse array of publications from many allied health care professions, including medicine, nursing, physical therapy, dentistry, athletic training, and chiropractic. The second step brought specificity by adding the notions of confidence in communication and clinical skills. The following terms were used: confidence + skills + health care students and confidence + communication + health care students. This search narrowed the results significantly and also highlighted how each of the aforementioned health care professions concentrated publications in the area of student confidence in communication and skills. However, only a few publications were related to chiropractic education. In order to determine the magnitude of empirical research related to confidence within the chiropractic profession, the search was further refined using key terms: confidence + chiropractic students, confidence + skills + chiropractic students, and confidence + communication + chiropractic students. Although the results still yielded a limited number of papers, the search identified some of the key researchers with a specific interest in how to foster professional confidence in chiropractic education. It must be noted that the term "self-efficacy" was also used in place of the term "confidence" in the aforementioned searches because of the overlapping nature of these terms. This issue is addressed in the second section, reviewing literature on the nature and development of confidence in educational psychology research.

The search related to the second body of literature examined in this article, namely, the nature and development of confidence in educational psychology research, was carried out using the following terms: self-confidence, self-efficacy, self-confidence + university students, self-efficacy + university students, self-confidence + description, self-efficacy + description, self-confidence + communication, self-efficacy + communication, self-confidence + communication, self-confidence + clinical skills, and self-efficacy + clinical skills. The results from these searches provided a vast amount of papers from educational psychology and professional education literature. A careful reading of this material led to the identification of prominent scholars in the field, such as Albert Bandura, Paul Sander, Lalage Sanders, and Frank Pajares—thus the inclusion of their work for this review.

Finally, the search related to the third body of literature was specific to studies of how confidence may be fostered within chiropractic students. The purpose was to identify the range of educational

methods and opportunities that may influence chiropractic student confidence in communication and clinical skills, based on studies from other similar allied health care educational research. Initial search results emerged from the first and second literature searches, which provided insight into routinely assessed educational methods or opportunities, such as preceptorships, and skill development techniques in general health care education. This led to a more focused approach using key terms such as: chiropractic students + confidence + teaching methods, chiropractic students + confidence + preceptorships, chiropractic students + confidence + manipulation, and chiropractic students + confidence + communication. Results from this search helped identify key authors in chiropractic education. Careful review of each paper was undertaken in order to bring forth those studies that dealt specifically with student confidence, communication, and skills. From this it was determined to include papers that provided an array of educational methods or learning opportunities which may influence confidence, even though the intent of the paper may not have been specifically aimed at measuring student confidence.

DISCUSSION

Professional Confidence in Health Care Research

In health care there is a complex interaction between provider and patient; this remains at the very core of the healing process and has always had a pronounced impact on patient health and recovery.[21] The complexity of this interaction has historically distinguished the chiropractic profession from the rest of the medical community.[22] Chiropractors have been noted to have "faith that heals" in which they not only believe strongly in their profession, but also believe strongly that they can help a given patient,[23,24] often expressing more confidence and being more comfortable about managing patient complaints, most notably low back pain,[25] than their medical counterparts. Because of the criticality of the doctor–patient relationship in the health professions in general, and the confidence that chiropractors claim to be critical, health care professionals interested in educational research have attempted to determine the most effective ways in which to develop student confidence in the areas of patient communication and skills. In the case of the chiropractic profession, success has often been attributed to clinicians with lots of practical experience, but there is limited empirical evidence to support this belief. Insight into the confidence levels of student-clinicians and new practitioners and how these can be fostered or impeded as they interact with teachers and clinicians remains largely speculative.

Confidence is defined as a faith or belief that one will act in a right, proper, or effective way[26] and may play an important role for the success of a health care provider and their patients. A health care provider possessing high confidence levels in the areas of communication and clinical (physical) skills is of paramount importance because of greater patient outcome expectancies seen by those who are assessed and treated by providers who possess higher levels of confidence.[27,28] Being confident is one of the most important personal factors influencing clinical decision making,[29] because if a clinician believes that he or she has the skills to assess a patient's concerns and that the outcome of this assessment will lead to an improved quality for the patient, it is more likely that the clinician will engage in a successful assessment.[30] This applies across all health care professions including chiropractic practice.

The building of confidence in patient communication and clinical skills usually begins during a health care provider's university studies. A review of socially guided educational experiences such as problem-based learning,[31] staff mentoring,[32] and student or peer mentoring[33,34] indicates that these may help develop student confidence in patient communication and clinical (physical) skills. Problem-based learning, grounded in cognitive theory and with its origins in medical education, has been increasing in popularity in the education of professionals in chiropractic,[35] medicine, pharmacy, and psychotherapy.[31] It is generally considered to be a useful approach for teaching students how to think critically and solve authentic problems and effective in building confidence in communication and general clinical aspects of care.[36] Staff mentoring, another often used educational experience, is a naturally formed, one-to-one, mutual, professional relationship between a junior and senior person[37] and is expected to help mentees become autonomous and confident professionals,[32] whereas student or peer mentoring, which takes place between an experienced student and inexperienced student, has been reported to improve

communication skills[34,38] and confidence in clinical skills and decision making.[33,39] However, it is the clinical experience or preceptorship that appears to be the most significant in the building of confidence during a student's tertiary experience. This is based on the assumption that confidence will increase due to the experience gained through clinical exposure. Support for this has been documented in the literature.[40]

Preceptorships typically take place during a student's final year or clinical year and vary in structure. They may include university-based outpatient or inpatient clinics or hospitals, private and community-based clinics and hospitals, community outreach programs, national or international internships, or even sporting events and team sport coverage. Preceptorships are common in chiropractic programs and take place at the time when students are exposed to real patients in a supervised clinic or similar environment, which provides them with the opportunity to integrate theoretical knowledge with practical skills.[41] During this experience, students record patient histories, assess and treat patients, and provide counseling on a myriad of issues, such as diet, medication, and exercise. Preceptorships purport to increase clinical competence, promote socialization, foster development of a positive self-image, help students meet expectations of the work force,[42] and allow educators and mentors to collaborate in enhancing the transition from student to professional.[43] The professionals who supervise and manage students' learning during these preceptorships are referred to as preceptors, clinical educators, clinical supervisors, clinical instructors, or clinical mentors,[44] which reflects the multiple guiding roles played by preceptors. The close professional relationship that develops between the student and clinical mentor, if successful, is expected to create an environment that encourages student confidence and participation.[45]

Chiropractic students, as previously mentioned, are routinely exposed to preceptorship environments, and understanding the relationship between confidence and this experience is therefore important, because a student may possess a high level of perceived confidence prior to commencement of their clinical rotation, only to be hit with a dose of reality and therefore a sudden reduction in confidence. Or there may be peaks and valleys during this time, based on challenges that were successfully met or led to disappointing results. Of greater concern would be students who feel confident in procedures for which they had no clinical experience,[46] which highlights the potential danger to patients from overconfident students about their abilities. Therefore, if one of the goals of the preceptorship is to provide an environment that increases confidence, then developing a better understanding of confidence and ways in which educators can measure and monitor its change over this time is imperative.

The importance of building confidence in health care providers cannot be underestimated because of its relationship to greater patient outcomes. That aspect alone warrants the need for health care providers to possess higher levels of confidence. In order to better appreciate how confidence affects people, a review of educational psychology literature on the concept of confidence and its relationship to other related constructs—in particular, self-efficacy—is presented.

Nature and Development of Confidence in Educational Psychology Research

Concept of Confidence and Its Relationship to Self-Efficacy

Self-evaluations have long been known to have a strong impact on well-being, motivation, behavior, and performance,[47] with confidence and self-efficacy being the two commonly studied self-evaluation constructs. Confidence is often associated with self-efficacy and distinguishing or separating the two may be difficult. Due to the overlying nature of both, the terms are often used interchangeably in research. The two primary constructs discussed in this section are confidence and self-efficacy, but other related constructs include self-esteem and self-concept.

An important difference between general self-efficacy and self-esteem is that general self-efficacy captures more of a motivational belief regarding task capabilities, whereas self-esteem captures more of an affective evaluation of the self.[48–51] That is, general self-efficacy and self-esteem differ with respect to their relative emphasis on motivational versus affective components[47] and general self-efficacy should be more strongly related to achievement motivational processes, whereas self-esteem should be more strongly associated with anxiety affective processes.[52] Self-concept has typically been defined in terms of the cognitive appraisal that one makes of the expectations, descriptions, and prescriptions that one holds about one's self[53] and

is described as consisting of beliefs, hypotheses, and assumptions that the individual has about himself or herself.[54] For example, self-efficacy beliefs revolve around the questions of "can" (Can I write well? Can I solve this problem?); self-concept reflects questions of "being" and "feeling" (Do I like myself? How do I feel about myself as a doctor?). Both self-esteem and self-concept are alternative conceptions of personal efficacy and are concerned with different phenomena[27]; however, they are often used interchangeably in research assessing the construct of self-efficacy.

As previously noted, confidence and self-efficacy are often associated with each other. Bandura[27] defined self-efficacy as belief in one's ability to perform a specific behavior or skill and distinguished the two by noting that confidence is a nondescript term that refers to strength of belief but does not necessarily specify what the certainty is about. Pajares[55] defined self-efficacy as the confidence that people have in their ability to do things that they try to do, while Sanders and Sanders[56] noted that self-efficacy is the parent concept of academic confidence and may stem from the same sources as self-efficacy. Overall, the term "self-efficacy" is used mostly in the educational psychology literature and occasionally in the professional education literature, while the term "confidence" is the term used mostly in the professional education literature and occasionally in the educational literature. To develop a better understanding of the significance of the overall construct and how the two concepts interrelate, both bodies of literature are reviewed. We turn first to the concept of self-efficacy and its components, and second to the concept of confidence and its role in clinical reasoning, communication, and clinical skills.

Self-Efficacy

The concept of self-efficacy has often been used interchangeably with the concept of confidence in the literature. For example, Maehr and Pintrich[57] assessed self-efficacy beliefs by asking individuals to report the level, generality, and strength of their confidence to accomplish a task or succeed in a certain situation. To fully understand the nature of development of self-efficacy, it is essential to pay attention to Bandura's[58] social cognitive theory. Bandura argued that the greater an individual's perceived self-efficacy and the more rewarding the outcome expectancy, the more likely this individual is to successfully perform a specific behavior or skill. Bandura[58] defined self-efficacy as a person's judgments of their capabilities to organize and execute the courses of action required to attain designated types of performance. He postulated that this stems from four sources: vicarious experience, verbal or social persuasion, physiological states, and enactive mastery experience. Each of these sources is expected to be relevant to the development of confidence in health care education, including chiropractic education, and therefore is reviewed below.

Vicarious Experience

Vicarious experience involves watching others (models) and noting the consequences of behavior. Seeing people similar to themselves succeed by sustained effort raises observers' beliefs that they too possess the capabilities to master comparable activities to succeed. By the same token, observing others fail despite high effort lowers observers' judgments of their own efficacy and undermines their efforts.[59] Schunk[60] demonstrated that a significant model in one's life can help instill self-beliefs that will influence the course and direction that life will take. He noted that vicarious experience also involves the social comparisons made with others (social comparison and peer modeling are powerful influences on developing self-perceptions of competence), and interaction effects can complicate evaluation of the relative power of different modes of influence (a model's failure has a more negative effect on the self-efficacy of observers when observers judge themselves as having comparable ability to the model). In chiropractic education, vicarious experience via observation is an important component of students' education; therefore, assessing how vicarious experience influences students is relevant. This is particularly so, considering that chiropractic students have as a major component of their educational experience a preceptorship or internship that relies on this heavily. Further discussion of the influence of a preceptorship or internship on the development of confidence is discussed below in the section on building professional confidence in chiropractic education research.

Verbal or Social Persuasion

Another source that aids in the development of self-efficacy is verbal or social persuasion or the effects produced by the action of others. People who have been persuaded verbally that they possess the capabilities to master given activities are expected to be more likely to mobilize greater effort and

sustain it than if they harbor self-doubts and dwell on personal deficiencies when problems arise. However, according to Bandura,[59] it must be noted that effective persuasions should not be confused with knee-jerk praise or empty inspirational homilies. This is consistent with Erikson,[61] who cautions that, "a weak ego is not strengthened by being persistently flattered and in fact, a strong ego, secured in its identity by a strong society, does not need, and in fact is immune to any attempt at artificial inflation." This concept is of paramount importance in the field of chiropractic education because there is such a high volume of skills training and verbal feedback. This is one of the primary means used by educators to help students to understand their progress. Because of this, educators must be aware of its potential impact on students and even how praise may be taken inappropriately.

Physiological State

Physiological states such as anxiety, stress, arousal, fatigue, and mood states also provide information about self-efficacy beliefs. For example, people may interpret their stress reactions and tension as signs of vulnerability to poor performance, which will affect their feeling of self-efficacy. Mood also affects people's judgment of their self-efficacy, with positive mood enhancing perceived self-efficacy and despondent mood diminishing it.[59] Therefore, it is important that educators in chiropractic realize how stress and anxiety may play an important role with their students' success and adopt ways to identify these factors and provide support that may be beneficial throughout a student's academic career.

Enactive Mastery Experience

As beneficial as they are, the three sources discussed above, however, do not influence self-efficacy as much as enactive mastery experiences. This is because it is those kinds of experiences that provide the most authentic evidence of whether one can master whatever it takes to succeed. Successes contribute to building a robust belief in one's personal efficacy. In contrast, failure undermines it, especially if failures occur before a sense of efficacy is fully established. If people only experience easy successes, they come to expect quick results and are easily discouraged by failure. A resilient sense of efficacy, therefore, requires experience in overcoming obstacles through perseverant effort. Some difficulties and setbacks in human pursuits serve a beneficial purpose in teaching that success usually requires sustained effort. Difficulties provide opportunities to learn how to turn failure into success by honing one's capabilities to exercise better control over events. After people become convinced that they have what it takes to succeed, they persevere in the face of adversity and quickly rebound from setbacks.[27] This concept is important in chiropractic education, especially during the preceptorship or internship time, because students are beginning to apply the skills that they have been taught and how to critically think about patients' presenting complaints. It is during this time that they will have both self-perceived failures and successes, sometimes back-to-back with patients, so having educators, in the form of clinicians, understanding how best to address students' failures and successes is of paramount importance.

Self-efficacy refers to beliefs in one's capabilities to organize and execute the course of action required to produce given attainments. Such beliefs influence the course of action that people choose to pursue, how much effort they put forth in given endeavors, how long they will persevere in the face of obstacles and failures, their resilience to adversity, whether their thought patterns are self-hindering or self-aiding, how much stress and depression they experience in coping with taxing environmental demands, and the level of accomplishment that they realize.[27] Self-efficacy has been assessed in various health care disciplines and their educational environments often under the guise of confidence. It has been noted that self-efficacy is a measure of an individual's confidence in his or her ability to perform a specific task or behavior to achieve a successful completion of a desired outcome[58,62,63] and is a term used mostly in educational psychology, whereas the term confidence is mainly used in professional education literature. Therefore, the concept of confidence, which is the primary focus of this literature review, needs to be fully understood as well. The following section examines the concept of confidence and its relationship with clinical reasoning and critical thinking, communication, and clinical skills.

Confidence

Confidence, defined as a belief that one will act in an effective way, is expected to play a critical role in how a clinician and/or student-clinician makes decisions, utilizes his or her skills, and communicates with patients. Furthermore, confidence is expected to influence self-efficacy expectations and behaviors

based on successes and failures, observations, and verbal feedback of comfort or discomfort in anticipation or performance of a task.[58] In health care education, confidence has been assessed often with medical and nursing leading the way; usually in relation to clinical reasoning (or critical thinking) and its effect on performance of clinical and communication skills. The following sections examine in turn how confidence influences clinical reasoning and critical thinking and clinical and communication skills, all of which are highly relevant to chiropractic education.

Confidence and Clinical Reasoning and Critical Thinking

Clinical reasoning and critical thinking are related and important skills to develop in the classroom and clinic.[64] Clinical reasoning may be defined as the process of applying knowledge and expertise to a clinical situation to order to develop a solution,[65] with confidence often playing an important role. It has been noted that clinicians who are appropriately confident—highly confident when they are correct and less confident when they are incorrect—will access outside resources only when they are needed, while clinicians who are consistently underconfident will rely on these resources when they are not needed. Additionally, those who are overconfident, who believe they are correct when in fact they are not, will be prone to medical errors[66]—an interesting finding for clinical educators because, even if confidence is high among their students, this may not guarantee successful patient outcomes. Therefore, clinical educators must realize that while assessing confidence in their students, they may want to utilize a personal approach and discuss this issue on a one-to-one basis as opposed to relying purely on a confidence scale.

In the development of clinical reasoning skills, critical thinking is thought to be an important factor.[67] It is the ability to determine problems, evaluate alternative solutions, and incorporate valid evidence to supports decisions[68,69]; the critical thinker may compare a new theory with similar theories that he or she already accepts to be true.[70] Confidence plays an important role in critical thinking, with evidence from research using one of the seven scales in the California Critical Thinking Disposition Inventory (CCTDI), a Likert-style 75-item scale aimed at assessing people's dispositions toward critical thinking.[71] Another scale, the Critical Thinking Self-Confidence Scale (part of the CCTDI), also measures the trust that one places in one's own reasoning processes. Critical thinking self-confidence is considered critical because it allows one to trust the soundness of one's own reasoned judgments and to lead others in the rational resolution of problems. Facione et al[71] noted that practicing professionals who overrate their critical thinking abilities may act with inadequate caution, while those whose critical thinking self-confidence is lower than their actual critical thinking skills level might be expected to demonstrate a lack of leadership in client (patient) contacts.

Clinical reasoning is a necessary process that chiropractors must possess; this process is often honed during the preceptorship or internship period and educators must be able to address the best methods of developing this process. However, having the ability to think critically at a high level will not always mean successful patient outcomes, because if a student's ability to communicate with patients and apply clinical skills are lacking, successful patient outcomes may be compromised. Therefore, developing way in which to influence student confidence in patient communication and clinical skills should also be a primary aim of the educational process before and during the preceptorship or internship period. The following section addresses confidence in those two highly required skills.

Confidence in Skills and Communication

Communication and physical skills are obviously important in the health care field; therefore, a review of empirical work in this area is warranted. For example, in chiropractic (as well as most health care programs), the profession emphasizes communication as being a primary tool in eliciting a thorough patient history, which is the ability to adequately inform and educate the patient,[72] while application of skills provides effective diagnostic and treatment protocols and patient outcomes.[73] Confidence plays an important role in both of these skills. Confidence in one's ability (skills) to be effective is a powerful reinforcement for any activity[74] and is closely associated with the development of skills: as skills improve, confidence increases, and both contribute to enhanced performance.[75] Confidence in patient communication has been shown to be a factor in patient outcomes. For example, Parle et al[28] showed that physicians' ability in communicating and relating with their patients facilitated the early detection of emotional problems with prevention of possible psychological complications. An

earlier systematic review by Stewart,[76] undertaken to ascertain whether the quality of physician–patient communication makes a significant difference to patient health outcomes, showed that good patient-centered communication (via the physician) has been reported as having positive outcomes on various patient health measures, such as compliance with medical treatments, symptom resolution, and pain control. Stewart's[76] study showed that in a group of 235 headache patients, those who perceived that their headache was discussed fully by the physician were three to four times more likely to report resolution of their headache than patients who did not perceive this. His study also showed that there were statistically and clinically significant associations between increased communication and symptoms resolution and blood pressure reduction in patients. He concluded that curriculum development in the area of communication at all levels of medical education is warranted on the basis of these findings.

While the significance of confidence in patient communication and clinical skills would not be contested, the most appropriate educational opportunities or techniques to support in its development have not been well established. In chiropractic education research there is still a paucity of studies examining the links between educational opportunities or techniques and student development of confidence in patient communication and clinical skills. The following section examines how such professional confidence is fostered in chiropractic education.

Fostering Professional Confidence in Chiropractic Education

It would be easy to assume that the chiropractic profession, which requires high clinical (physical) and patient communication skills, has educational curricula that would address these areas and it does. Chiropractic curricula has implemented unique ways to help assist in developing the skills required for manipulative procedures and utilizes the preceptorship or internship experience as the final hurdle before graduation. These routinely seen curriculum items are implemented in order to develop or further develop the required skills needed for a practitioner and it could be assumed that they may help influence student confidence. This section provides a brief overview of standardized chiropractic educational curriculum and two instructional approaches (technique specific and preceptorship/internship), which may contribute to influencing student professional confidence in a positive way.

Chiropractic curricula consist of 4 to 5 years of undergraduate education with a minimum pre-chiropractic university undergraduate education ranging from 2 to 3 years.[77] The typical curriculum consists of no less than 4200 instructional hours of education composed of the following courses: anatomy; biochemistry; physiology; microbiology; pathology; public health; physical, clinical, and laboratory diagnosis; gynecology; obstetrics; pediatrics; geriatrics; dermatology; otolaryngology; diagnostic imaging procedures; psychology; nutrition/dietetics; biomechanics; orthopedics; neurology; first aid and emergency procedures; spinal analysis; principles and practice of chiropractic; clinical decision making; research methods and procedures; and professional practice ethics.[78,79] Also included are courses on manipulative techniques (adjustments), which are implemented throughout the students' studies. These techniques target the development of physical skill, not unlike the skills necessary for success in the athletic arena,[80] as well as the development of qualities such as speed, strength, endurance, flexibility, coordination, and psychological factors.[81–83] Although manipulative techniques and the skill with which they are administered are likely to be important contributors to the healing process, a successful clinical consultation (history, examination, and treatment) is not solely dependent on manual dexterity.[84] The doctor–patient relationship has a pronounced impact on patient health and recovery,[21] with the healer needing qualities such as empathy and compassion.[85] Both of these qualities entail active listening, which is an acquired communication skill. Excellent communication, both verbal and nonverbal, results in higher patient satisfaction and treatment adherence[86] and is recognized by patients and student-clinicians as a fundamental consideration in achieving a satisfactory clinical outcome.[87] Of interest is one study, which found less than 50% congruence between chiropractors' and patients' health-relevant perceptions. This suggests that practitioners could improve on discussing patients' expectations and opinions before treatment.[87]

In light of the above, it is clear that professional confidence in clinical (physical) and communication skills is critical for chiropractic practice, and research on how to best foster its development on a routine basis needs to be undertaken. Curricula within chiropractic education have implemented a

variety of unique educational methods and opportunities that may enhance student confidence in clinical and communication skills. These can be divided into technique-specific methods, which may include a unique classroom protocol or the use of mechanical devices, and preceptorship/internship opportunities, which may include outreach experiences such as sporting events.

Technique-Specific Methods

A number of studies have addressed the development of psychomotor skills either with a novel way of classroom setup or protocol or through the use of mechanical devices. Although confidence was not directly addressed in these studies, each is expected to play a role in the development of student confidence in manipulative technique by its implementation into curricula. For example, one study,[14] which delved into the development of chiropractic psychomotor skills using a unique classroom setup for a 1st-year manipulative technique unit, implemented three basic components of learning how to perform the chiropractic adjustment through a daily teaching plan that divided the lab into distinct teaching stations. This format was fast paced and both physically and mentally challenging. The unit had seven overriding learning objectives, one of which stated "the student, through study and personal discipline, will develop pride, confidence, and competence in his or her abilities." The results from this study, accumulated via a 33-item, 5-point Likert scale survey, included 86% of the students self-rating themselves as technically proficient in adjusting techniques. Although not directly measuring student confidence, the findings indicated that they may have developed increased confidence levels through mastery experience.

Another educational method that may aid in the development of manipulative skills, and therefore confidence, is the use of mechanical devices. These have been implemented in chiropractic education and have been assessed on their effectiveness in developing manipulative skills. An early study[12] reviewed the use of a mechanical device—a manikin called the Thrust in Motion manikin—in a manipulative technique unit that assessed whether students could effectively acquire skills by its use as compared to using fellow students. Results from this study indicated no significant difference in student performance between those who learned from fellow students and those who used the Thrust in Motion manikin. The importance of this study was not whether or not the manikin would provide greater development of manipulative skills, but the extent to which it was just as effective as using a fellow student. The results have educational implications because they suggest that students can practice their skills effectively even if fellow students and supervisors are not available. Although this study did not address the issue of confidence, one may speculate that if students have more opportunities to work on their skills, even when fellow students and staff are not available, these skills and thus their confidence would improve further.

Another interesting study[15] using a mechanical device and the concept of "knowledge of results" (KR), long regarded as an important variable in motor skill acquisition and retention, was performed using qualitative and quantitative methods. The study assessed the effectiveness of KR in the acquisition and retention of a simulated manipulative procedure using a kinetic device which provided immediate feedback to the student. The findings appeared to be relevant to teaching and training of students in manipulative procedures and therefore assisting in the performance of complex motor skills. This was further studied by Triano et al,[18] who reviewed the use of the same method but without any form of feedback in a control group. The findings revealed that the visual feedback, based on a tangible conceptualization of the target performance, resulted in immediate and significant improvement in newly developed skills. Again, confidence was not an issue raised in this study, but it is reasonable to expect that providing feedback in a skill which ultimately improves the skill would have contributed to developing student confidence. As argued by Pommerenke and Weed,[75] it is important to remember that as skills improve, confidence increases, and both contribute to enhanced performance. All three studies reviewed above reflect the unique ways in which chiropractic educators have implemented instructional methods that help in the development of competence.

These technique-specific studies and educational experiences are unique in that they may only be found in chiropractic education or those professions that address manipulative procedures in their curriculum. However, these experiences are often implemented early in the educational process and, as noted above, do not place the student in a realistic environment with real patients with real problems. In order to do this, students must be moved from this controlled environment to one that places them in

a situation in which critical thinking and the use of communication and application of clinical skills are employed. This of course is accomplished with the preceptorship or internship either in an on-campus or outreach environment. The following section examines the nature of these experiences in chiropractic education and how these may relate to the development of confidence.

Preceptorships/Internships/Outreach

As previously noted, preceptorships are common in chiropractic education and have been found to influence student confidence. Chiropractic research addressing the effectiveness of preceptorships is still limited, but one study[13] assessed 3rd-year students who, after completing a three-module training program, participated in an outreach athletic event experience. A component of this experience was a postevent survey given to the students to evaluate various aspects of the event as well as to provide written comments expressing personal reactions. The survey, a 5-point Likert scale questionnaire, contained in the first four questions their responses with the promotion of individual confidence and whether this experience complemented that of a clinical experience. Results indicated that a vast majority of students strongly agreed that the opportunity was a positive experience because it allowed them the full use of their knowledge and diagnostic skills and also enhanced their feelings of competence. Additionally, there was strong agreement that this experience complemented the more formal clinical experience. The authors concluded that the event allowed for a significant number of interns to participate in a peak learning experience early in their careers. Although this study did not address the impact of this experience on students' development of confidence in skills and patient communication, benefits in these two areas may be expected because of the similarity of experience reported in another study.[88] In that other study, it was found that family practice residents, who had rotated on an orthopedic service which included working at sporting events during their training, reported significantly higher student confidence for physical examination skills, radiographic evaluation, diagnosis, and treatment. Therefore, it may be argued that an outreach sporting event program may assist in the developing chiropractic students' confidence in clinical skills. Empirical evidence will need to be gathered to support this claim.

Another internship experience that took place outside a university setting was a first-of-its-kind internship between chiropractic schools and the United States government. As part of a proposal for chiropractic integration within the United States Department of Defense, it was suggested that every reasonable effort should be made to ensure that chiropractic students have the same opportunities as students of other health care disciplines with the established health care system.[89] By 2001, the Department of Defense chiropractic internships, an opportunity for final-year chiropractic students to train under the supervision of chiropractors with experience working within a military hospital setting, began. This opportunity, reviewed and reported by Dunn,[16] provided student interns rotations through various hospital departments with learning objectives of demonstrating increased proficiency and competency progressing to mastery of various aspects of clinical chiropractic practice in an integrated setting. Additionally, participating students were required to complete a project involving activities and assignments designed to develop intern skills and awareness, including collecting and critically analyzing clinical data and performing a review of scientific literature, and to encourage students to develop professional relationships outside their scope of practice. No research was carried out concerning this opportunity until Dunn[17] compared the careers of the Department of Defense interns who had experienced this opportunity with a similar cohort who had not. Surveyed were demographics, professional activities, income, and career satisfaction. Results indicated that there were no statistically significant results between the Department of Defense interns and nonparticipants in demographics, professional activities, income, and career satisfaction. Confidence was unfortunately not explored, but if the aforementioned learning objectives had been evaluated and found to be achieved, this opportunity may have revealed an increase in both competence and confidence in communication and clinical skills.

One more internship study,[19] using mixed methods, explored interns' perceptions around stress and confidence during the midpoint, which included their internship period, of their professional training. This study showed that the interns considered stress and confidence important issues, with the findings revealing inverse relationships between stress and confidence with higher stress being inversely related to lower confidence. Emerging

out of the qualitative data were four themes related to developing confidence as a health care provider: experience, ability, feedback, and despair. Remarkably, these themes reflect what Bandura[62] described as sources influencing self-efficacy. For example, in regards to "experience," confidence was correlated to accumulated experiences and exposure to a variety of clinical conditions over time during the internship. With "ability" and psychomotor skills, confidence was a main factor in students' perceptions of their manipulative skills, while a major "feedback" theme emerging out of this study was student confidence.

The data further revealed that confidence could be instilled or diminished by the reaction of others, including explicit comments as well as subtle acknowledgments or criticisms from staff, clinicians, peers, and patients. The Spegman and Herrin[19] study adds to a growing body of literature highlighting the significance of anxiety and stress experienced by students, especially during their internship period.

Students' experience of anxiety and stress is not unique to chiropractic education. It has also been identified as an issue in the training of medical students, where anxieties are specific to the change from didactic basic science studies to full-time clinical studies, commonly referred to as transitional periods. Interviews conducted with final-year medical students[90] showed that transition periods, from student to student-clinician, were prime causes of stress with the most frequently mentioned being the stressful transition from preclinical science student to apprentice doctor on a ward. In this study, students described "feeling useless, unable to contribute to patient care because they had insufficient knowledge or skills."

Still another study focusing on the transition period from student-clinician to eventual practitioner is Alexander and Haldane's,[91] which assessed stress among 5th-year medical students in the United Kingdom. They found impending graduation and the transition to increased levels of responsibility experienced as particularly stressful among students. Additionally, they found that staff were perceived as insensitive to students' needs. It was shown that they did not detect stressed students even though over half the students reported having had emotional or psychological problems that interfered with their academic work. These two medical studies, alongside the research by Spegman and Herrin,[19] highlight the importance of the transitional periods from preclinical to student-clinician to eventual practitioner as being particularly stressful periods in medical and chiropractic education with the internships or preceptorships representing major components of students' daily educational experience.

Overall, preceptorship or internship periods represent an exciting time for students, but it is clear that these also present major challenges for students on many levels. These include the need to acquire and regularly demonstrate communication and clinical skills, including history taking, examinations, providing patient information, and performing practical procedures.[92] Therefore, developing a better understanding of how confidence may affect students during this time cannot be underestimated.

It was apparent through this review of literature that chiropractic education has developed educational methods and opportunities that may help develop and build student confidence in patient communication and clinical (physical) skills. However, there has not been sufficient research to provide empirical evidence of their impact. It could be said that if physical therapy and medical students' confidence levels are influenced by similar methods and opportunities, then chiropractic students should be no different. Yet, this would need to be established empirically. There may be truth to the assumption that if all programs, whether medical and physical therapy (which may be similar to chiropractic), were identical and adhered to the same objectives, then educators and researchers in chiropractic need not worry about addressing confidence due to other professions having established a fair body of empirical work, but they have not done so. Medical education does not instruct how to perform manipulative procedures, at least not during undergraduate study, and physical therapy spends less time on these procedures, which tend to be developed as part of postgraduate study. So the uniqueness of the field of chiropractic is that it utilizes the skill of patient communication and manipulative procedures, far more than any other health care fields. Our view warrants the need for more chiropractic-specific research into the critical role of confidence in effective patient communication and delivery of clinical skills, and how such professional confidence could be best fostered in chiropractic education.

CONCLUSION

Practitioners across areas of health care require confidence in all aspects of their respected trade. The ability to feel confident in what you say and do plays an important role in the well-being of patients. Fostering students' confidence in patient communication and clinical skills cannot be underestimated, as this should be achieved prior to the commencement of professional practice. The criticality of possessing high levels of professional confidence may be true of all health care professions, but it is even more imperative in chiropractic education. This is because the chiropractic profession relies heavily on clinical skills and patient communication in all patient encounters. Fostering chiropractic students' development of confidence in what they say and do is of paramount importance not only to them as new practitioners but more importantly to the patient. There is no doubt that a better understanding of how confidence can be developed and consolidated during tertiary study should be a major goal of chiropractic education.

CONFLICT OF INTEREST

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