
ORIGINAL ARTICLE

A focus group study of chiropractic students following international service learning experiences

James C. Boysen, DC, MS, Stacie A. Salsbury, PhD, RN, Dustin Derby, MEd, MS, EdD, and Dana J. Lawrence, DC, MMedEd, MA

Objective: One objective of chiropractic education is to cultivate clinical confidence in novice practitioners. The purpose of this qualitative study was to describe how participation in a short-term international service learning experience changed perceptions of clinical confidence in senior chiropractic students.

Methods: Seventeen senior chiropractic students participated in 4 moderated focus group sessions within 4 months after a clinical educational opportunity held in international settings. Participants answered standard questions on how this educational experience may have changed their clinical confidence. Two investigators performed qualitative thematic analysis of the verbatim transcripts to identify core concepts and supporting themes.

Results: The core concept was transformation from an unsure student to a confident doctor. The service learning experience allowed students to deliver chiropractic treatment to patients in a real-world setting, engage in frequent repetitions of technical skills, perform clinical decision-making and care coordination, and communicate with patients and other health professionals. Students described increased clinical confidence in 9 competency areas organized within 3 domains: (1) chiropractic competencies including observation, palpation, and manipulation; (2) clinical competencies including problem solving, clinic flow, and decision-making; and (3) communication competencies, including patient communication, interprofessional communication, and doctor–patient relationship. Students recommended that future service learning programs include debriefing sessions similar to the experience offered by these focus groups to enhance student learning.

Conclusion: Senior chiropractic students who participated in an international service learning program gained confidence and valuable practical experience in integrating their chiropractic, clinical, and communication skills for their future practices.

Key Indexing Terms: Chiropractic; Spinal Manipulation; Clinical Competence; Health Communication; Decision-making; Professional Education

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INTRODUCTION

Hecimovich and Volet stated that one important objective of chiropractic education is “to foster student professional confidence.”¹ These authors found chiropractic students’ confidence in their clinical skills and patient communication were related to prior experience, qualifications, gender, and age.^{1,2} The terms *confidence* and *competence* are closely related and are often used interchangeably in the education literature. At a minimum, confidence means that the student is willing to try, but it does not necessarily imply that the student is competent at a given task.³ While efforts to improve competence and confidence in chiropractic manipulation are under development,^{4–8} little has been published on how chiropractic students gain confidence in their overall clinical skills.

Service learning (SL) courses, defined as combining student educational goals with community needs,^{9–13} are thought to provide students with the opportunity to gain clinical confidence in their respective fields. There is a paucity of evidence pertaining to SL in the chiropractic literature. A recent survey of chiropractic students revealed a difference in confidence levels for specific spinal manipulation techniques (e.g., drop table thoracic and lumbar, prone thoracic, and instrument-aided adjustments) between students who participated in a short-term SL experience and those who did not.¹⁴ Exploring how students gain confidence within these programs may provide chiropractic educators with clues to guide education. The purpose of this study was to explore chiropractic students’ perceptions of how participation in an international SL experience changed their clinical confidence.

METHODS

This study received ethics approval from the Palmer College of Chiropractic institutional review board. We conducted a focus group study¹⁵ at our chiropractic college, which offers senior-level students an SL program during academic recesses. In past SL trips, senior students provided chiropractic care (under the mentorship of both clinical faculty and chiropractors who had volunteered for the program) over a period of 12 to 20 days to people living in underserved regions of both developed and low to middle-income countries. Locations are determined by the interest of alumni, faculty, students, and other key stakeholders, communication with local personnel, and the chiropractic or medical guidelines of the country of interest. Follow-up care may be provided by local chiropractors, other local health care providers, or on return trips.

All students who participated in the June 2011 or 2012 SL experience were eligible to participate in this study. Upper-level students who had clinic privileges (9th through 10th trimester) and who had participated in an SL trip during the previous class recess were recruited post trip from 2 different class times and from 2 different instructors.

Moderated focus groups were held within 4 months of the SL experience, and we used standard focus group methods.¹⁵ The sessions were held in a formal conference room at the chiropractic college during the morning break period between classes. The conference room doors were closed during the group session to minimize distractions, and students were asked to silence their cell phones. The conference room was arranged to make a single table to allow each participant to face all the others, while giving each person enough physical space to feel comfortable. Light snacks and beverages were offered to enhance student comfort as the session was held during a typical rest break.

The moderators provided a verbal and written description of the study purpose at the start of each session. The students were assured that only research team members would know who had participated in the study, but that the confidentiality of the individuals and collective group was dependent upon the discretion of each group member. The students also were assured that field notes taken during the session would indicate only the participant's table position, gender, and geographic location of SL experience, with no other identifying details.

The participants completed a written informed consent document and demographic form before the session. The moderator encouraged the participants to engage in the focus group session as if it were a conversation among colleagues; it was desired that they respond to each other rather than enact a question and answer session directed to the researchers. Participants also were encouraged to ask for clarification on any questions they did not understand. Interview questions were pretested with participants from previous trips and elicited students' perceptions of how their clinical confidence changed through their participation in the program (Fig. 1). Our aim through these interviews was to better understand the meaning of clinical confidence gained during SL from the perspective of the students, rather than to objectively measure such a change in confidence. The interview schedule asked students to reflect on experiences

Figure 1 - Focus group interview questions on clinical confidence.

1. Please tell us who you are, where you went and how you decided to go on the service learning trip.
2. Thinking back to the experience, what are some examples of how you increased your confidence in clinical skills?
3. Please tell us about a time when you felt MORE/LESS CONFIDENT in your clinical skills during this trip.
4. What did you learn about chiropractic care from interacting with your staff and field doctors?
5. Were the techniques you used the ones you felt comfortable with or did you try the ones you wanted more practice on?
6. Did you get the clinical experience you wanted? Why or why not?
7. How would you change this service learning experience to increase clinical confidence?

that both bolstered their confidence, as well as those that challenged their clinical self-assurance. Recommendations to improve the SL experience were also elicited.

The moderators included a doctor of chiropractic who was a fellow in a master's degree program in clinical research and a doctorally prepared qualitative researcher with experience in focus group methodology, with the fellow serving as lead moderator and the second researcher completing field notes, managing the audio recordings, asking follow-up questions, and mentoring the research fellow, as indicated. The lead moderator was familiar with the SL program from previous research on the topic. Neither moderator had attended any of the SL experiences discussed in the sessions. Practice sessions with the interview schedule were trialed during a master's level course on focus groups in health care research, with feedback on moderator skills and approach discussed after each practice.

Focus groups were scheduled for about 90 minutes, which included time for informed consent, based upon the time that students have available to participate during the school day. The moderators followed the interview schedule closely to minimize bias or inconsistencies between groups. At the same time, the moderators remained open to new information offered by participants. Some questions might have been asked out of order, if the focus group participants moved toward those items, in which case, the previous questions were asked during the next natural break in the conversation. If new domains related to clinical confidence were identified by participants, a probe was added to the interview schedule to address the topic in future sessions. The moderators encouraged each participant to engage in each question to ensure that all had the opportunity to offer their opinions on the topic. Interruptions or conversational dominance by individual group members was not encountered in these sessions. The moderator team assessed their understanding of the meaning of the participants' conversation during reflective dialogue held at the end of each session, with students providing clarification or amplification of key themes. The moderator team also debriefed with one another about the most salient topics and emergent themes after each focus group immediately following the session.



Figure 2 - Model of the transformational service learning experience of chiropractic students.

Focus group sessions lasted about 60 minutes, were digitally recorded, and transcribed verbatim. Data analysis used a variation of the classic approach.¹⁶ The moderator and assistant moderator read the transcripts, coded key themes, and discussed the findings to achieve consensus. Coding continued until no new themes emerged.

RESULTS

Seventeen students participated in 4 focus groups composed of 3 to 5 students. Focus group participants travelled to Honduras ($n = 4$), India ($n = 7$), Vietnam ($n = 1$), or Fiji ($n = 5$) in 2011–2012 to participate in institutionally sanctioned SL experiences. The mean age of participants was 29 years; 59% were male and 82%, white. Participants reported the number of patient encounters during the SL experience as mean \pm SD (113 ± 27).

Transformation

“You just kind of became the doctor” (female, Fiji). *Transformation* was the core concept in participants’ stories describing their transition from an unsure student to a confident doctor during the SL experience. While these students had learned basic science, chiropractic theory, and manipulation techniques, they had yet to use their clinical skills in what they viewed as a “real-world” environment (i.e., a nonacademic teaching clinic environment). Most participants who enrolled in the SL program did so to “know what it felt like” to practice as a chiropractor. “You get to be more of the doctor that you’re going to be in the future and see things that . . . you probably will never see here” (male, India).

Participants also used the experience to make decisions about future practice settings (high-volume practices, hospital or interdisciplinary clinics) and possible areas of clinical expertise, such as pediatrics. “I feel like a lot of mothers will expect me to feel comfortable adjusting their children . . . I couldn’t put a price tag on how much that experience helped” (female, Fiji).

Transformation in clinical confidence was gained in 9 competencies, organized in 3 domains (Fig. 2): (1)

Chiropractic Competencies (observation, palpation, manipulation); (2) Clinical Competencies (problem solving, clinic flow, decision-making); and (3) Communication Competencies (patient communication, interprofessional communication, doctor–patient relationship).

Chiropractic Competencies

Chiropractic competencies are the technical skills of chiropractors that students developed during preclinical coursework and clinical practicums but refined during the SL experience. Three themes included observation, palpation, and manipulation.

Observation

The international setting forced students to gather useful information by means other than history-taking. Observation became a larger part of their exam process, especially with language barriers or when working with children. Students noted that observing posture or watching a patient walk provided subtle clues to the clinical diagnosis. “I realized you need to pay attention, because when you can’t ask them a lot of stuff . . . you need to be a lot more observant” (female, Vietnam).

Observation became part of an efficient examination.

You just learn the system like its quick. . . I can still do it now, like if you bring me a patient and sat them down. I do observation when they walk in. I see how they sit down. I see how they stand up. . . It takes absolutely no time to do a very general like evaluation (male, India).

Palpation

Palpation confidence grew through repetition during the busy clinics, which offered less time to second-guess palpatory exam findings. Students became more trusting of their initial findings when spinal manipulation occurred immediately after palpation. Successful manipulation positively reinforced their palpation findings, which led to increased confidence in determining areas requiring manipulation, as well as in eliciting reflexes. “After palpating so many people in a row, it was like night and day” (male, India). “In terms of palpation, I made leaps and bounds” (male, Honduras).

Manipulation

Students reported close repetition as a primary factor in developing confidence in their manipulation skills. Manipulating the spine and extremities of one patient after another for several hours a day over several days seemed to improve this psychomotor skill. “And then just the muscle memory of performing an adjustment, not twice a week, but one after another . . . was pretty invaluable” (male, India).

After a couple of days, most students expanded their knowledge base to practice less familiar manipulation techniques. Without access to the elaborate equipment in their college clinics and with the greatly increased volume of patients, these students adapted their techniques and the

patient encounter to the equipment available and their surroundings. For example, many students remarked that they got better at a cervical chair manipulation because of the limited number of treatment tables at their clinical site. “I did a lot more cervical chair than I usually do, (because) sometimes the tables were taken” (male, Fiji).

Toward the end of the SL experience, some students used manipulative techniques they felt best suited the patient, while others continued to offer patients the procedures they knew they could be successful with.

Clinical Competencies

Problem solving

Students learned basic problem solving lessons when dealing with equipment (or the lack thereof), providing care in constantly shifting settings, or addressing patient compliance concerns. “A couple of our tables didn’t make it to Fiji on time, so . . . we took school desks like this and put them together and brought a pad . . . or brought [a] mattress from the hotel room” (male, Fiji).

Students also reported picking up nuances of various chiropractic techniques by observing different staff doctors delivering treatments, which students then incorporated into complex patient encounters or to problem-solve difficult manipulations. “I was with a person from Florida, and they learned the same thing, because it’s, of course, Palmer, but a slightly different technique. So it’s cool to see how we would approach the same things just a little bit differently” (female, Vietnam).

Real Clinic Flow

Students reported increased confidence from experiencing “real clinic flow” in patient encounters. The college clinic experience of patient care is often protracted within the typical clinical education setting, with the student examining a patient, waiting for a staff doctor, discussing the case, and then performing the manipulation. “You can actually find it and feel it and go after it” (male, Fiji).

However, within the SL environment, prioritizing care and the quick pace of seeing multiple patients in a limited time period were considered more realistic of their future clinical practices.

Clinical Decision-making

Students found they were immersed in clinical decision-making throughout the SL experience, which became more comfortable over time.

What physical are you going to do? Are you going to do an abdominal exam? Are you going to do cranial nerves? Are you going to do cardiovascular? Are you going to do everything? . . . But most of the time it was just you making your decisions the way you are going to be making for the rest of your life (male, India).

The process challenged them to “think on their feet,” make decisions about the type of exam to perform, the order in which to perform exams, and how to address

other patient-care concerns, including when to refer patients to other health care providers. “It’s like a mini detective novel for each person and [to] be able to solve is very rewarding to me and that gave me not only the confidence but the absolute certainty that this is what I’m supposed to be doing” (male, India).

Communication Competencies

Patient Communication

Students reported gaining confidence in 2 areas of patient communication, the first being communication from *patient* to *doctor*. Some students had difficulty understanding patients’ descriptions of their previous diagnoses and the quality or location of their pain, especially when working with an interpreter. For others, communication difficulties were from *doctor* to *patient*. Many students found encouraging the patient to “relax” before an adjustment was a particular problem. Some students resorted to using nonverbal gestures and unspoken vocal utterances to communicate with their patients about aspects of the chiropractic adjustment.

But a girl in our trip brought up a good little scenario, . . . She did kind of like the follow-me thing. And so she’d show a kid that she wants them to laterally bend and then rotate, and so she’d have them do that. And then she said, “Okay. Now me.” And then she would do it. And that helped with helping the kids relax, because they felt like more in control, because they knew where they were going with their head, or they were more comfortable with it (female, Fiji).

Others saw value in simplifying their communications in interactions with patients for their future practice. “Having to break it down in the simplest of forms because they don’t really understand the language . . . that’s going to be big, being able to explain it to patients” (male, India).

Interprofessional Communication

Interactions with students and doctors in close physical proximity created a free-flowing conversation and synergistic exchange of ideas to clinical questions. “A hundred doctors’ opinions can be . . . bouncing off each person . . . you have more input from different backgrounds and different philosophies and ideas” (female, Fiji).

Some students also interacted with specialty doctors who gave useful advice on diverse treatments or varying patient populations. Reviewing the clinical events of the day with each other boosted students’ passion for their profession while creating a support group for negative experiences.

Doctor–Patient Relationship

Students reported that growing confidence in their clinical skills allowed them to develop a doctor–patient relationship and practice what they perceived as an ideal interaction with their patient. “I started slowing my—not my clinic skills, but my pace that I was going. . . . I liked connecting with them” (male, Fiji).

Students were challenged to build this relationship by the cultural differences and linguistic gaps between them and their patients, but difficulties were lessened in settings where they treated patients for more than 1 day.

Recommendations for Future SL Experiences

Overall, students offered positive evaluations of their SL experience and its contributions to transformations in their clinical confidence. However, students noted several areas for programmatic improvement, including expense, patient flow inefficiencies, inadequate time for mental recuperation, abundance of paperwork, unhelpful staff doctors, too much historical with not enough cultural information about their patient populations, and insufficient opportunities for more follow-up with the patients. Not all trips had formal postclinic discussions; students who did not have this structure in place expressed a desire for this dialogue. Sharing trip experience post trip was also evident, as several students expressed this desire at the conclusion of the focus groups.

DISCUSSION

Service learning is becoming an increasingly integral element in health care education to pharmacy, dental, nursing, physical therapy, and medical student/resident training.^{9,11-13,17} The benefits of SL have included but are not limited to professional and doctor-patient communication, cultural competence/awareness, connectedness, normative helping behavior, career benefits, changes in knowledge and attitudes about older adults, awareness of service-providing agencies and community needs, increased awareness of the importance of public health, clinical confidence, utility of history and examination, transformational change, and a reported increase in positive influence on clinical skills 2 years post trip.^{9,11,12,17-19}

Educational outcomes for SL have been suggested such as personal and interpersonal development, understanding and applying knowledge, engagement curiosity and reflective practice, critical thinking, perspective transformation, and citizenship.²⁰ Reflection of the experience is a key learning objective to achieve maximal educational benefits.²¹ Concerns over SL have also been initially explored and include the concern over the unethical exploitation of vulnerable populations, inability/uncertainty of meeting needs of the patient population, perception of Western medical students as different, navigating different cultures of medicine in regards to privacy, unilateral capacity building in favor of the students, and providing care outside the scope of practice of the students.^{11,21,22}

Service learning is an area with little published information within chiropractic education. While SL benefits encompass a wide range of educational benefits, this study sought to explore in depth the perceptions of chiropractic students on the development of clinical confidence through a short-term, international SL experience. These students had learned the basic individual skills of exam, diagnosis, and manipulation but had yet to

integrate these skills in a pragmatic environment. The SL experience offered a practical setting in which students incorporated the “pieces” of the skills “puzzle” necessary to feel confident to practice as a future doctor of chiropractic. This allowed the concept of “deliberate practice” to take place; a form of training directed at improving performance by using repetitive performance of psychomotor skills, assessment of skills, feedback, and improved performance.²³

Many of the students interviewed described their SL program as a transformative learning experience. Mezirow defined transformative learning as “the process of effecting change in a *frame of reference*.”²⁴ The process involves critical reflection of one’s associations, concepts, values, feelings, and conditioned responses. This critical self-reflection may lead to personal transformation. The goal of transformative learning is to create “autonomous, responsible thinkers.”²⁴ These students were involved in a constant self-reflective process involving feedback from success or lack of success with history, exam, diagnosis, adjusting skills, and patient management to transform their perspective from student to doctor. Feedback for self-reflection came from self-experience to communication with faculty, students, and patients. The environment of the trip resulted in a busy schedule that facilitated think-on-your-feet learning but also included off-clinic social time to increase the possibilities for self-reflective learning.

In transformative learning, Taylor stated the importance of creating opportunities for students to test and explore new perspectives.²⁵ He listed 3 teaching approaches to foster transformative learning: critical reflection, problem posing to entice acts of cognition, and a student-teacher relationship where the teacher is on equal footing with the students. This program provided an enriched environment for all 3 to take place, especially for the themes of clinical decision-making, problem solving, and interprofessional communication.

Johnson stated that residency training must be a transformative experience: “... that it transforms novice practitioners into physicians able to think, act, and keep their focus on the ultimate goal of providing the best and most appropriate care for patients no matter what the setting or circumstances.”²⁶ This SL experience bridged the anxiety of these senior chiropractic students with clinical privileges into doctors who had tested and incorporated their skills providing reassurance for future clinical performance. Understanding how students gain clinical confidence may reveal valuable insight in designing programs to enhance the chiropractic student clinical experience.

Limitations

This study represents a small sample of those who actually participated in the SL program. Caution must be taken when addressing the generalizability of this study to other chiropractic student populations. While we asked students about their clinical confidence, we did not assess their competence, beliefs, or actual clinical skills. This creates a limitation to this study, as students who believe they are confident in a procedure may not be competent.

CONCLUSION

We believe that this is the first exploratory study to provide insight on how senior-level chiropractic students with clinic privileges gain confidence. Students who participated in a short-term SL program gained valuable practical experience in integrating their clinical skills for their future practices.

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About the Authors

James Boysen is a research clinician at the Palmer Center for Chiropractic Research (741 Brady Street, Davenport, IA 52803; james.boysen@palmer.edu). Stacie Salisbury is an assistant professor at the Palmer Center for Chiropractic Research (741 Brady Street, Davenport, IA 52803; stacie.salsbury@palmer.edu). Dustin Derby is the senior director for institutional planning and research at Palmer College of Chiropractic (1000 Brady Street, Davenport, IA 52803; dustin.derby@palmer.edu). Dana Lawrence is the senior director for the Center for Teaching and Learning at Palmer College of Chiropractic (1000 Brady Street, Davenport, IA 52803; dana.lawrence@palmer.edu). Address correspondence to James Boysen, 741 Brady Street, Davenport, IA 52803; james.boysen@palmer.edu. This article was received November 30, 2015; revised February 22, 2016; and accepted February 26, 2016.

Author Contributions

Concept development: JCB, DJL. Design: JCB, SAS, DD. Supervision: SAS, DD, DJL. Data collection/processing: JCB, SAS. Analysis/interpretation: JCB, SAS. Literature search: JCB, SAS. Writing: JCB, SAS. Critical review: JCB, SAS, DD, DJL.

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