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ORIGINAL ARTICLE

Training chiropractic students in weight management counseling using standardized patients

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Objective: The aim of this study was to describe and assess an activity that trained chiropractic students to counsel patients on weight management through the use of standardized patients.
Methods: This was a descriptive study using mixed methods. Students were trained to apply health behavior theory and the transtheoretical model. Standardized patients were given a case to portray with the students. Students had 15 minutes for the encounter. The encounters were assessed in 2 ways: (1) standardized patients answered a brief questionnaire about the students' performance, and (2) students answered a questionnaire about the utility of the intervention. Numerical data were extracted from the audiovisual management platform, and statistics were computed for each question. Comments made by students and patients were transferred verbatim for content analysis.
Results: A total of 102 students took part in the activity. Students' performance in the encounter was uniformly high, with over 90% "yes" responses to all questions except "gave me printed information material" and "discussed the printed material with me." The key issue identified in the comments by standardized patients was that students tended not to connect weight management with their chief complaint (low back pain). Nearly all students (97%) thought the activity would be useful to their future practice, and 97% felt it had increased their confidence in providing weight management counseling.
Conclusion: This experiential activity was assessed to be useful to students' future practice and appeared to provide them with skills to successfully communicate with patients on weight management.

Key Indexing Terms: Chiropractic; Educational Assessment; Evidence-Based Practice; Health Promotion

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INTRODUCTION

The World Health Organization states that obesity is 1 of the 5 leading global risks for mortality. It is the third-leading risk in higher-income countries like the United States, behind only tobacco use and hypertension.[1] As of 2014, approximately 37% of US adults were obese.[2] In fact, as tobacco use has been decreasing and is now at an all-time low, obesity has risen to its current all-time high, and it has not decreased despite national attention to the issue.[2] The US Preventive Services Task Force (USPSTF) currently recommends screening all adults for obesity. The USPSTF also recommends that clinicians offer obese patients intensive, multicomponent behavioral interventions or refer them for such programs.[3]

In keeping with this USPSTF recommendation, like other first-contact health professions, doctors of chiropractic (DCs) contribute to the health of the public not only by treating conditions but also by assisting patients in disease prevention and health promotion.[4,5] In fact, this is incorporated into national accreditation standards for DCs by the Council on Chiropractic Education (CCE).[4] Appropriate screening and interventions for all major health behavior risks have also been recommended as "best practices" for chiropractic care in general populations[6] and special populations like children[7] and older adults.[8]

The CCE standards for health promotion and wellness have been incorporated into all accredited chiropractic colleges, and a body of research is beginning to accumulate both on the content of specific wellness-related course work and on evaluations of such courses.[5,9–17] Furthermore, the National Board of Chiropractic Examiners, which designs and administers the licensure examinations that are a prerequisite to practice chiropractic in the United States, has included specific health promotion topics in its Part II examination (available at http://mynbce.org/prepare/part-ii/part-ii-test-plan). These include "exercise and healthy diet for obesity," "behavior theories and lifestyle change," and "wellness counseling." However, despite this and expert recommendations on

including weight management counseling in chiropractic practice, there appears to be a gap between training and practice.[6,16] This is particularly important to address because obesity has been found to be a factor in poorer outcomes of low back pain and other musculoskeletal conditions, which DCs very commonly treat.[18,19]

A qualitative study of chiropractic clinicians identified 2 barriers to discussing weight management with patients: weight management was viewed as a sensitive topic that might offend patients, and DCs perceived weight management as a low priority since they did not associate it with patients' musculoskeletal complaints—apparently not being aware of the connection between obesity and such complaints.[18–20] At this time, there is a gap in the evidence on the status of training DCs in weight management counseling, with no articles found describing any systematic approach to such training. This may be because the CCE standards do not specifically require it, although it has been recommended to be added.[4,5] It is likely that such training is not being provided, judging by the fact that, in 1 study of 2 chiropractic teaching clinics, chiropractic students provided advice on weight management to only 7% of overweight or obese patients.[16]

Standardized Patients

In the early 1960s, standardized patients (SPs) were created by Dr. Howard Borrows.[21] An SP is an individual trained to portray the role of patient, family member, or others to allow students to practice history-taking skills, communication skills, physical exam skills, and other exercises.[22] During the encounter with a student, the SP responds to specific questions by the student and in some cases undergoes specific examination procedures. Each encounter is designed to teach or assess skills appropriate to the student's level of learning. An SP is trained to provide constructive written and verbal feedback from the patient perspective to enrich the learning experience of health professions students. SP encounters have been found to be effective in increasing students' clinical skills.[23]

The purpose of this study was to contribute to the growing body of evidence on this topic by describing and assessing a classroom and experiential activity that trained chiropractic students to counsel patients on weight management using SPs.

Methods

This was a descriptive study using mixed methods to assess behavioral theory application and acceptability of a simulated patient encounter on weight management for chiropractic students. The Texas Chiropractic College institutional review board determined that the study is exempt. All records were deidentified before the analysis so that no names or other identifiers were associated with the data.

Counseling Intervention

The counseling intervention was the culmination of several lecture-discussion classroom sessions that were sequenced into the course. (1) The first session introduced students to health behavior theory, with an emphasis on the transtheoretical model of Prochaska and DiClemente, also known as the "stages of change."[24] (2) Next in the sequence was a session on health promotion counseling, emphasizing use of motivational interviewing applied to patients in different stages of change. This was reinforced by an assignment in which students watched public domain videos illustrating doctors and counselors using these techniques with patients with various health behavior issues. (3) Next was a lecture-discussion on the epidemiology of obesity in the United States and a presentation of a broad overview of counseling patients on weight management, using the 5 A's combined with the transtheoretical model and motivational interviewing. The 5 A's are a widely used method for organizing a health promotion counseling intervention:[25]

1. **A**sk about weight concerns, diet, and physical activity.
2. **A**ssess risk factors and readiness to change.
3. **A**dvise on necessary behavior change.
4. **A**ssist patient to develop an action plan.
5. **A**rrange follow-up.

This lecture also provided background on reasonable goals for diet, physical activity, and weight loss. (4) Finally, at the class meeting immediately prior to the SP encounter, students were provided with a protocol to follow during the counseling session. This protocol was a streamlined and simplified version of the more general discussion of weight management counseling previously given. It also introduced students to the patient information handouts to be used in the encounter. These were obtained from Move, an open-access Veterans Administration program for helping people manage their weight, diet, physical activity, and stress (https://www.move.va.gov). Students could use any of the handouts they considered most appropriate for the patient but were instructed that they must use at least 1. The handouts were as follows:

1. For dealing with pain that might prevent physical activity: "Coping with Pain"
2. For getting ready to start a weight management program: "Getting Ready to Lose Some Weight?"
3. Getting started on improving their diet: "How Do I Get Started With Changing My Eating Habits?"
4. Getting started with increasing their physical activity: "Walk"

Although students were not given a script to follow, the training session suggested ways to elicit and convey the necessary information from patients in an empathic and positive manner. The instructor reviewed counseling techniques they had already learned, particularly open-ended questioning, reflective listening, positive reframing, summarization, and formation of SMART goals (Specific, Measurable, Action oriented, Realistic and Time lined). They were cautioned that obesity and weight management are sensitive topics with many patients and that most if not all obese patients are aware that their weight is a health

Table 1 - Time in Minutes Spent With Standardized Patients, by Year of Class

	2016 ($n = 63$)	2017 $n = 39$)	All ($n = 102$)
Mean[a]	11.05	10.60	10.88
Median	11.00	10.75	11.00
Minimum	5.00	7.25	5.00
Maximum	15.00	15.00	15.00

[a] The mean difference between classes: 0.45 min ($p = .200$; confidence interval = −.238 to 1.123).

risk but that changing one's diet and lifestyle is very difficult. Therefore, they were reminded that it is important to help patients identify small, doable goals to increase their self-efficacy and success. They were instructed to make a connection between the patient's weight and her back and joint pain, providing a patient-centered entrée into the discussion.

The students were given a brief case history of the patient prior to the encounter, and it was also available to them when they met with the patient. The patient was a 45-year-old woman with a body mass index of 32, waist circumference 40 inches, and blood pressure 135/90 and who was nondiabetic. She was not taking any medications. She was an established patient with a chief complaint of chronic mechanical low back pain with no radiation. She had very recently had an exacerbation that was not responding as well as usual to chiropractic care, which had consisted of high-velocity, low-amplitude spinal manipulation and soft tissue work. The doctor had not yet discussed weight management, so this encounter represented the first time that he or she introduced the topic.

The SPs were given additional history to provide if the students asked them but not to volunteer it. They were told that they worked as a greeter at Walmart so were on their feet all day, that they ate a lot of fast food because they did not have time to cook, that they craved sweets and drank a lot of soda for the caffeine, and that they did not do any type of regular exercise. They were aware that they were carrying too much weight but were not aware that it might be affecting their back pain.

Students had 15 minutes for the encounter. In the 2016 class, they had a follow-up session allowing 10 minutes with the patient. Feedback from the students and SPs indicated that they did not find this session to be productive. Furthermore, students spent an average of only 7 minutes with the SP in the follow-up session. In order to conserve time and resources, the follow-up session was eliminated from the program in 2017, so only the initial encounter is analyzed in this study.

Assessment of Outcomes

The encounters were assessed in 2 ways: (1) The SPs answered a brief questionnaire about the students' performance. It was a modified version of 1 used in a previous study.[17] The questions were dichotomous (yes or no) and covered the key components of the counseling intervention. SPs could also write comments along with their "yes" or "no" responses, although it was not required. They also gave feedback in person to each student immediately after the session. (2) The students answered a questionnaire about the intervention, also based on 1 used in the previous study cited above.[17] This questionnaire allowed students to express their opinion on how helpful the activity was for their learning process and future practice. Students responded to each statement on the questionnaire using a 5-point Likert scale of "strongly agree," "agree," "no opinion," "disagree," and "strongly disagree."

Data Management and Analysis

Data were extracted from LearningSpace (CAE Healthcare, Montreal), an audiovisual and center management platform designed to capture clinical and learning events for review, debrief, and assessment. No names were associated with the data at any time; students and SPs were identified in the databases only by code numbers. Numerical data were downloaded from the Learning Space site and double key entered (for verification) into an SPSS (version 24) database. Time spent in the encounter was automatically recorded in Learning Space and was also entered into the SPSS database. It was then assessed by trimester and year in order to determine whether we could combine the groups, using an independent samples t test for normally distributed data or the Mann-Whitney U test for data that were not normally distributed. If they did not differ significantly ($p > .05$), then the groups could be combined. Descriptive statistics were computed for each question. Comments made by students and SPs were copied and pasted verbatim from Learning Space into a Word table for content analysis. The principal investigator (CH) organized them into themes, which were then viewed by the other investigators and revised until agreement on the themes was reached.

RESULTS

A total of 102 students took part in the activity. For the fall term in 2016, there were 63 students (trimester 5 = 33, trimester 7 = 30). In the spring term of 2017, there were 39 students (trimester 5 = 15, trimester 7 = 24). As shown in Table 1, for the 2016 class, the average time spent in the encounter was 11.05 minutes, and for 2017 it was 10.6 minutes, a difference of .45 minutes, which was not statistically significantly different (since the data were normally distributed, $p = .200$ using a t test). Thus, we combined the 2 classes in the analysis. As shown in Table 2, the difference between trimesters 5 and 7 was .94 minutes, which was statistically significantly different ($p = .011$). Thus, we did not combine trimesters in the results but display them separately along with the total.

Student Performance on Weight Management Encounter

Table 3 summarizes the SPs' assessment of the students' performance in the encounter by trimester and totaled. Students' performance was uniformly high, with over 90%

Table 2 - Time in Minutes Spent With Standardized Patients, by Trimester of Students

	Trimester 5 ($n = 48$)	Trimester 7 ($n = 54$)	All ($n = 102$)
Mean[a]	11.38	10.44	10.88
Median	11.25	10.75	11.00
Minimum	6.75	5.00	5.00
Maximum	15.00	15.00	15.00

[a] The mean difference between trimesters: 0.94 min ($p = .011$; confidence interval = 0.224–1.657).

"yes" responses to all questions except "Gave me printed information material" (79% for trimester 5) and "Discussed the printed material with me" (75% for trimester 5). Table 4 displays representative comments from the SPs on the students' performance on several key issues. Most of the comments were positive. The only key issue that had more criticisms than positive comments was the issue of connecting weight management with the patient's chief complaint.

Student Assessment of the Activity

As shown in Table 5, a large majority of the students found the activity useful. In particular, 97% thought the activity would be useful to their future practice, and 97% felt it had increased their confidence in providing weight management counseling. Only a minority (24%) thought that they should have had more time with the patient. Almost all the students (98 of 102) made a comment on the activity. There were 4 themes identified: (1) the activity was fine as it was and needed no improvement ($n = 49$, 50.0%), (2) more practice or demonstrations prior to the activity would have been helpful ($n = 20$, 20.2%), (3) more in-depth encounter or complex case would be preferable ($n = 18$, 18.4%; 16 of the 18 were in trimester 7), and (4) more time was needed ($n = 11$; 11.2%). Table 6 gives representative examples of comments under each theme.

DISCUSSION

This study demonstrated several teachable moments for chiropractic students on communication and consultation skills when addressing a comorbidity. Traditionally in chiropractic education, students are not exposed to SPs or clinical encounters that involve communication skills to assess health behavioral change. The advantage of exposing our students early in preclinical education allows them to engage in self-reflection and correct any communication deficiencies prior to clinical education. We suggest that clinical faculty also be educated on theories and applications of behavioral change to assess and provide feedback on health communication skills with chiropractic interns. Clinical faculty also need to model health communication skills to the chiropractic interns with patients with a variety of comorbidities. We also suggest that when assessing communication skills, a formative assessment can reduce student examination anxiety and allow the students to focus on the encounter knowing that a summative grade is not tied to encounter performance. The formative assessment of this study could account for the positive responses from the students on the experience. Learning to apply theories in clinical practice to improve health outcomes is a skill that can be enhanced using SPs for immediate feedback to the learner. Future training of chiropractic students would benefit by the application and assessment of health behavioral communication.

Table 3 - Standardized Patient Assessment of Students' Performance in the Clinical Encounter for Weight Management

Question[a] In this clinical encounter, the student doctor:	Trimester 5, % Yes ($n = 48$)	Trimester 7, % Yes ($n = 54$)	Total, % Yes ($n = 102$)
Was nonjudgmental.	100	100	100
Helped me set a goal for the next week.	100	100	100
Offered to assist me in starting a weight management program.	100	98	99
Explained why he or she thought it was important for me to consider a weight management program.	100	96	98
Seemed fully engaged with me (good eye contact etc.).	96	100	98
Asked me how ready I felt to start a weight management program, on a scale of 0 to 10.	92	100	96
Listened carefully.	94	98	96
Addressed my concerns and/or questions.	96	96	96
Demonstrated empathy/compassion.	92	98	95
Arranged a follow-up visit.	92	98	95
Was clear and direct in his or her advice.	92	96	94
Gave me printed informational material.	79	96	88
Discussed the printed material with me.	75	93	84

[a] Items in italics are general patient engagement skills used for all types of patient encounters. Those not in italics are specific to the weight management intervention.

Table 4 - Standardized Patients' Comments on Student Performance

Key point	Positive comments	Criticism
Making connection between weight and chief complaint	• You made a point of my weight and back pain being the problem in a nice way. I understood early in the session that you thought my weight was my biggest back problem, which got my attention.	• You did not specify that my weight might be causing my back problem. It confused me when you started talking about a diet. I would have liked for you to explain how the body is not built to carry extra weight. • When you started talking about my weight, it confused me because I came in for my back. I would have liked you to explain how my weight might be my problem and how the body is not made to carry extra weight. You did explain some after I told you I was confused. • You did not really explain why it was important; you just said you wanted to talk to me about my weight. • Yes, but, as we discussed, don't come in with "*Bang*! Weight management." • Do not think that you made it clear that there was a link to my weight and back pain until I asked you and you went over it better. • When you started talking about a diet and healthy lifestyle, I did not understand that you thought that may be my back problem. I had to ask you what diet had to do with my back.
SMART goals with small doable steps	• I loved how you presented the weight management program and the alternatives you gave! How you said start small and build confidence! • You provided good advice regarding walking, substituting water for a Coke, and cutting back on the fast-food visits. I loved that you thought about including my pet in the process of helping me get better. • Great advice! I especially liked the fact that you suggested documenting food intake and exercise. Seems like a great way for a patient to be held accountable. • I loved that you helped me set a very attainable goal and thought outside of the box as far as meals, still fast food, but healthier eating. You listened to my "business of life" and had an answer to help with that other than meal prepping. • Told me to cut back a little and change a few things and add water before I eat and after. • The only goal was that I cut back on soda pop. • I thought this was an unique approach. You really didn't focus on the food management; you focused on getting me to move about and then said you'd work on the food, that to keep in the back of my mind it's not healthy, and I felt that, "Hey I can *do this*." I can walk, and I don't have to change my eating right away. I just felt this was very attainable and kind of made me want to change my eating too. • Gave a calorie goal and a food diary. • Great idea about the yoga app!	• If you would have asked me about my current diet, we could have set eating habit goals. We only set walking goals. You also told me to stay away from alcohol and smoking, but you never took the time to ask if I indulged in either 1 of them.

Table 4 - Continued.

Key point	Positive comments	Criticism
Weight is a sensitive issue	• I appreciated that you eased into the subject of considering weight loss. It is a very touchy subject for many, and I believe you brought it into the conversation at a good time. • Even talked about your own issues. • You were very tactful when bringing up and discussing my weight. • You were very kind and easy to listen to. You made me feel comfortable. • You really made me feel comfortable and excited about starting a weight management program. • Led with a compliment before discussing weight loss. • You made me feel at ease during the encounter. I appreciated that you didn't jump directly to my weight issue. You transitioned into that very nicely and diplomatically. • You approached the weight issue with an understanding attitude. You used your own self as an example on several occasions showing that you understand that it can be a difficult thing to get started on and stick with.	• I feel that you rushed through this session and did not take any time for empathy/compassion.
Important to discuss the printed material	• You were very good about offering assistance with meal prep and good at explaining the exercise that I would be doing. • I appreciated that you covered all 4 brochures with me, showing me different ways to approach weight management. • Gave me the brochure on walking and went over it in detail with me. • Besides using the handouts, you offered me great advice as to how to go about getting started and gave me some helpful hints.	• You handed me 2 pages and told me that I could read them on my own for some help. When I leave your office, the papers may never make it in my house for reading. Maybe a brief review would get me interested in them.

Table 5 - Students' Assessment of the Intervention ($n = 101$)[a]

Statement		Strongly agree	Agree	No opinion	Disagree	Strongly disagree	Total
Overall, I feel that this activity will be valuable to my future practice.	*n*	67	31	2	1	0	101
	%	66.3%	30.7%	2.0%	1.0%		100.0%
This activity increased my confidence in being able to give advice to patients on a weight loss program.	*n*	61	37	1	2	0	101
	%	60.4%	36.6%	1.0%	2.0%		100.0%
Participating in a simulated clinical encounter after the lecture on this topic is more valuable than having only a lecture.	*n*	51	39	6	2	0	98
	%	52.0%	39.8%	6.1%	2.0%		100.0%
I would like to have more activities like this to supplement lectures.	*n*	36	46	13	2	0	97
	%	37.1%	47.4%	13.4%	2.1%		100.0%
I would participate in activities like this even if it were not required.	*n*	30	35	27	7	0	99
	%	30.3%	35.4%	27.3%	7.1%		100.0%
We should have had more time to do this activity.	*n*	7	16	22	46	6	97
	%	7.2%	16.5%	22.7%	47.4%	6.2%	100.0%

[a] Students' responses did not differ significantly by trimester (data not shown) and so were combined.

Table 6 - Representative Suggestions From Students for How the Activity Could Be Improved ($n = 98$)

Theme	Selected comments	Trimester
No improvement needed ($n = 49$)	• I liked how real it felt. Instead of reading notes, we got to apply them and present them in a way that is professional and much more patient oriented.	5
	• I felt like this activity was very helpful. I was a little nervous going in, but now I feel like if I have a patient with weight issues, I would feel more comfortable talking and discussing options.	7
	• This encounter was a good experience in being able to talk to a patient about weight management toward a healthier lifestyle, which I believe is something important and that we will encounter in our careers. I have no major critiques.	7
	• It was very nice to be able to figure out exactly how I should word my counseling, and it was also nice to be able to find out what the patient was feeling about my approach	7
	• I had an amazing experience speaking to my SP on the topic of weight management. By giving words of encouragement and support, you can see that there is a new insight that the patient experiences. It also gave me a chance to experience how to bring this topic out for discussion.	7
	• I think this is a great activity for us to participate in. Conversations about a patient's weight may not always be easy, so having had practice is very beneficial.	7
	• This was a great experience since we never had this type of encounter before.	7
	• It was a straightforward assignment that allowed students to gain experience and confidence without added stress and heavy study load.	7
	• I really liked the low stress level of the encounter. I was able to relax and really engage with the patient. I felt that she was a real patient.	7
	• I loved it! I feel more prepared now that we have actually had the chance to come in and talk face-to-face to a real person about helping them. I would love to have more of these on different topics. It makes it stick better in our brains when we do encounters. We also learn from our mistakes in school instead of making them all in our practice. Thank you so much for this opportunity.	5
	• The activity was one that was extremely helpful in bring the lecture portion of the class into clinical perspective.	5
More practice or demonstrations prior to activity ($n = 20$)	• Not totally sure what to expect coming in. I know that we went over everything in lecture, but I did not know exactly how I should bring up the topic coming in. However, I feel much more confident now after doing it, so maybe we could practice a little more in class with our peers to prepare.	5
	• Maybe give us a demonstration or video of an encounter.	5
	• Having more preparation during class, possibly a practice day.	5
	• Have a more clear layout for what to say. Possibly role-playing in class or handing out mock scripts.	5
	• Having a little more direction. There seem to be a lot of confusion in the class. Taking a class period to practice with each other and have the opportunity to ask any questions in class. It also gives us the opportunity to bounce ideas off of each other as well as the teacher on how to handle the counseling.	5
More complex encounter/case ($n = 18$)	• This was an okay activity for an introduction. However, I think that for true weight loss to happen, more is needed.	5
	• Maybe we can actually develop a nutrition plan for the SP and try to help them in choosing the right kind of food that they should eat and the kinds of exercises that they can do.	5
More time ($n = 11$)	• The only thing I feel would be beneficial would be to have a little more time. I say this because I felt like I had to jump into the weight issue a little fast, and my SP noted that as well. Other than that, it was a good exercise.	7
	• I think the activity was helpful in getting me to prepare myself for this type of conversation with future patients. I could have used a little more time (which I was surprised by!) just to make concrete plans with my SP and make sure she did not have any questions for me.	7

Limitations

The SP assessments may have been biased since students were assessed by only 1 SP. However, SPs did have extensive training in assessing health professions students, so we believe that overall their assessments were useful and reflected the students' performance adequately. Another limitation was the relatively small sample size and the inclusion of only 1 college, which precludes generalization. However, our results were quite similar to the study done on tobacco cessation counseling at another

chiropractic college,[17] which supports our finding that this type of activity is a positive learning experience valued by the students.

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REFERENCES

1. World Health Organization. *Global Health Risks: Mortality and Burden of Disease Attributable to Selected Major Risks*. Geneva, Switzerland: World Health Organization; 2009.
2. Ogden CL, Carroll MD, Fryar CD, Flegal KM. Prevalence of obesity among adults and youth: United States, 2011–2014. *NCHS Data Brief*. 2015(219):1–8.
3. US Preventive Services Task Force. *Guide to Clinical Preventive Services*. Rockville, MD: Agency for Healthcare Research and Quality; 2012.http://www.ahrq.gov/professionals/clinicians-providers/guidelines-recommendations/guide/section2.html.
4. Council on Chiropractic Education. *Accreditation Standards, Principles, Processes & Requirements for Accreditation*. Scottsdale, AZ: Council on Chiropractic Education; 2013.
5. Hawk C, Evans MW Jr. A framework for chiropractic training in clinical preventive services. *Chiropr Man Therap*. 2013;21(1):28.
6. Hawk C, Schneider M, Evans MW Jr, Redwood D. Consensus process to develop a best-practice document on the role of chiropractic care in health promotion, disease prevention, and wellness. *J Manipulative Physiol Ther*. 2012;35(7):556–567.
7. Hawk C, Schneider MJ, Vallone S, Hewitt EG. Best practices for chiropractic care of children: a consensus update. *J Manipulative Physiol Ther*. 2016;39(3):158–168.
8. Hawk C, Schneider M, Dougherty P, Gleberzon BJ, Killinger LZ. Best practices recommendations for chiropractic care for older adults: results of a consensus process. *J Manipulative Physiol Ther*. 2010;33(6):464–473.
9. Hawk C, Rupert RL, Hyland JK, Odhwani A. Implementation of a course on wellness concepts into a chiropractic college curriculum. *J Manipulative Physiol Ther*. 2005;28(6):423–428.
10. Evans M, Hawk C, Boyd J. Smoking cessation education for chiropractic interns: a theory-driven intervention. *J Am Chiropr Assoc*. 2006;43(5):13–19.
11. Evans M, Breshears, J. Attitudes and behaviors of chiropractic college students on hand sanitizing and treatment table disinfection: results of initial survey and focus group. *J Am Chiropr Assoc*. 2007:13–23.
12. Evans MW Jr, Hawk C, Strasser SM. An educational campaign to increase chiropractic intern advising roles on patient smoking cessation. *Chiropr Osteopat*. 2006; 14:24.
13. Evans MW, Ndetan H, Williams RD. Intentions of chiropractic interns regarding use of health promotion in practice: applying theory of reasoned action to identify attitudes, beliefs, and influencing factors. *J Chiropr Educ*. 2009;23(1):17–27.
14. Evans MW Jr, Ramcharan M, Ndetan H, et al. Hand hygiene and treatment table sanitizing in chiropractic teaching institutions: results of an education intervention to increase compliance. *J Manipulative Physiol Ther*. 2009;32(6):469–476.
15. Hawk C, Evans MW. Does chiropractic clinical training address tobacco use? *J Am Chiropr Assoc*. 2005;42(April):6–13.
16. Ndetan H, Evans MW, Lo K, et al. Health promotion practices in two chiropractic teaching clinics: does a review of patient files reflect advice on health promotion? *J Chiropr Educ*. 2010;24(2):159–164.
17. Hawk C, Kaeser MA, Beavers DV. Feasibility of using a standardized patient encounter for training chiropractic students in tobacco cessation counseling. *J Chiropr Educ*. 2013;27(2):135–140.
18. Wai EK, Rodriguez S, Dagenais S, Hall H. Evidence-informed management of chronic low back pain with physical activity, smoking cessation, and weight loss. *Spine J*. 2008;8(1):195–202.

19. Stainsby BE, Porr JT, Kim P, Collinge AM, Hunter JC. A survey of wellness management strategies used by Canadian doctors of chiropractic. *J Manipulative Physiol Ther*. 2011;34(6):388–393.
20. Walden A, Salsbury SA, Lawrence DJ. Chiropractic approaches to discussing weight management with overweight and obese patients: a focus group study. *Top Integrative Health Care*. 2014;5(3).
21. Barrows HS. *Simulated Patients: The Development and Use of a New Technique in Medical Education*. Springfield, IL: Charles C. Thomas; 1971.
22. Ryan CA, Walshe N, Gaffney R, Shanks A, Burgoyne L, Wiskin CM. Using standardized patients to assess communication skills in medical and nursing students. *BMC Med Educ*. 2010;10:24.
23. Williams B, Song JJY. Are simulated patients effective in facilitating development of clinical competence for healthcare students? A scoping review. *Adv Simulation*. 2016;1(1):6.
24. Prochaska JO. Decision making in the transtheoretical model of behavior change. *Med Decis Mak*. 2008;28(6):845–849.
25. Vallis M, Piccinini-Vallis H, Sharma AM, Freedhoff Y. Clinical review: modified 5 As: minimal intervention for obesity counseling in primary care. *Can Fam Physician*. 2013;59(1):27–31.