

Teaching Preclinical Medical Students Lifestyle Counseling Skills for Patients' Health Behavior Change

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Abstract

Introduction: Physicians face barriers to counseling patients regarding lifestyle, specifically, low perceived importance of and confidence in counseling, leading to underuse. There is a dearth in the literature evaluating educational interventions for counseling skills among preclinical medical students. Closing this gap is crucial to taking advantage of critical opportunities early in training. **Methods:** We taught a session on evidence-based counseling for lifestyle changes to 124 preclinical medical students using case scenarios and role-plays. Our evaluation included (1) measures of perceived importance of and confidence in counseling and (2) measures of perceived gains related to learning objectives. We also undertook qualitative analysis of the session evaluation and thematic analysis of written assignments. **Results:** There were statistically significant increases in perceived importance of and confidence in lifestyle counseling. Postintervention student responses demonstrated the highest gain for listing and addressing obstacles to physician counseling, followed by applying physician counseling interventions. Students applied models correctly; however, our thematic analysis of written assignments demonstrated room for continued improvement in application of motivational interviewing techniques. **Discussion:** It is significant that our session impacted students' attitudes on the importance of lifestyle counseling. Based on the session evaluation, we are refining assignment instructions for clarity, providing more time for each role-play, and starting with a faculty role-play demonstration. Aggregate data over time will be more robust than our single cohort. Our evaluation was limited to self-reported attitudes and role-play transcript review, but future interventions could use thematic analysis of recorded role-plays or direct observation of patient simulations.

Keywords

Attitudes, 5As, FRAMES, Lifestyle Counseling, Motivational Interviewing, Preclinical, Stages of Change, Flipped Classroom, Lifestyle Medicine

Educational Objectives

By the end of this session, learners will be able to:

1. Recognize the importance of lifestyle counseling in patient care.
2. Develop confidence in applying evidence-based brief counseling interventions to assist patients with health behavior change in a clinical setting.
3. Apply evidence-based brief physician counseling interventions.
4. List and address obstacles to health promotion in a clinical setting.

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Introduction

Physician counseling impacts patient health behaviors^{1,2} and outcomes related to common chronic disease. Yet physicians report significant barriers to lifestyle counseling.³ There is a gap in the literature evaluating educational interventions for evidence-based lifestyle counseling among preclinical medical students. This gap is important because it indicates a missed opportunity; early points in a physician's training represent a critical time to address barriers to physician counseling.^{4,5}

Chronic diseases are significantly associated with mortality,⁶ and unhealthy behaviors such as smoking, excessive drinking, physical inactivity, and excess weight gain increase risk for disease⁷ and early deaths.^{8,9} Still, most Americans do not follow guidelines for a healthy lifestyle.⁷ Healthy People 2030 includes an objective to "increase the proportion of health care visits by adults with obesity that include counseling on weight loss, nutrition, or physical activity."¹⁰ Physician counseling effects

change.^{1,2} Specifically, physician encouragement for colorectal cancer screening led to six times higher odds of Latino patients over 50 obtaining screening.¹ Similarly, a large retrospective study reported that among overweight, prediabetic patients who were counseled by a physician to make a lifestyle change, 90% changed their health behavior.² Yet physician counseling remains underused.¹¹ One study of physicians in the Netherlands described internists' ambivalent attitudes about lifestyle counseling.¹² A lack of formal training in physician counseling has been most cited as a barrier for promoting physical activity.³

Recommendations include teaching evidence-based counseling skills early in the undergraduate medical education curriculum and stressing them throughout graduate medical education.⁴ Previous *MedEdPORTAL* publications targeting preclinical medical students have focused on nutrition counseling,¹³ intimate partner violence screening and counseling,¹⁴ and health coaching using motivational interviewing for weight loss.¹⁵ Other publications have evaluated education in obesity counseling¹⁶ and nutrition counseling¹⁷ for clinical medical students and residents. Innovative approaches studied include experience-based lifestyle medicine counseling,¹⁸ use of an objective structured clinical examination for skills evaluation,¹⁹ brief motivational interviewing didactic and role-play experiences,²⁰ standardized patient instruction,²¹ and reflective writing.²²

Studies have measured medical students' perceived counseling skills, demonstrating predisposing, reinforcing, and enabling factors, including gender and personal health behaviors²³ and health behavior counseling knowledge and attitudes. Students who exercised regularly were more confident in their weight management counseling skills.²³ A pilot study measured residents' attitudes towards the role of physicians in screening and counseling patients about health behaviors, noting differences based on specialty and training level.⁴

Due to the need for brief evidence-based physician counseling strategies that can be implemented during an office visit with a physician, we integrated the following strategies: motivational interviewing, the stages of change model, the 5 As (ask, advise, assess, assist, and arrange), and FRAMES (feedback about personal risk, responsibility of patient, advice to change, menu of options, and empathy and self-efficacy enhancement).²⁴

Motivational interviewing is a patient-centered, evidence-based technique that uses conversations with patients to increase the likelihood of health behavior change by applying principles of "evocation, acceptance, partnership and compassion."²⁵ The stages of change model describes the five stages of readiness

individuals pass through while trying to change health behaviors (precontemplation, contemplation, preparation, action, and maintenance); it posits that behavior change interventions are more likely to be successful if they address and match the stage of change the individual is currently in.^{24,26} The transtheoretical model and stages of change²⁶ guided our physician counseling strategies. Motivational interviewing integrated with stages of change was suggested for the patient who was less ready for change, and the 5 As and FRAMES were recommended for the patient ready to change.²⁴

To our knowledge, previous studies have not focused on these brief evidence-based physician counseling approaches in this integrated manner for general health behavior change. They have also not attempted to measure (1) changes in both perceived importance and confidence regarding these topics in preclinical medical students, which can function as barriers to counseling, or (2) a general evaluation of lifestyle counseling skills as a result of an educational intervention within an active learning environment.

Methods

This class session focused on physician counseling strategies for lifestyle change. We taught the identical class session twice to two halves of our first-year medical student class at the Wright State University Boonshoft School of Medicine. This institution used a flipped classroom approach. There were 61 students in the first 90-minute session and 63 students in the second session. One of the instructors was a family medicine physician with a master's in public health (MPH), and the other had previous health coaching experience and an MPH in community health education.

We assigned the students' preparation material²⁴ (Appendix A) to be reviewed prior to class. The reading expanded on evidence-based counseling strategies such as motivational interviewing, the stages of change model, the 5 As, and FRAMES.

In class, we presented approximately 20 minutes of framing material (Appendix B, PowerPoint slides, and Appendix C, the facilitator guide) on the importance and efficacy of physician counseling and encouraged students to consider barriers to lifestyle counseling by physicians. The rest of the session focused on cases that we provided in class (Appendix D for cases and Appendix E for potential faculty responses). We asked students to role-play counseling strategies in small groups of approximately five to six students and to transcribe the role-play as part of a group assignment. There were 11 small groups in each of the two class sessions, and groups were given 5-10 minutes for

role-play. Randomly selected groups acted out their scenarios in front of the class, and we collectively critiqued ourselves for strengths and areas of improvement. The Wright State University Institutional Review Board granted this project exempt status as it collected data as part of normal educational processes.

Evaluation

The students completed a two-item survey immediately before and after class via an electronic clicker poll (Appendix F). These questions asked them about the importance of physician counseling and their level of confidence related to lifestyle counseling skills (Educational Objectives 1 and 2). Students responded on 5-point Likert scales (1 = *strongly disagree*, 2 = *disagree*, 3 = *undecided*, 4 = *somewhat agree*, 5 = *strongly agree*). After the class session, the students also completed an evaluation questionnaire that focused on the strengths and areas of improvement for the class (Appendix F) via their learning management system. This evaluation instrument also used the 5-point Likert scale to assess perceived gains related to learning objectives and in developing their ability to apply theory to practice (Educational Objectives 3 and 4). Due to the dearth of similar interventions with validated questions, we and our school's evaluation team respectively developed these two instruments. Students also submitted transcripts of their role-plays, and an author thematically analyzed these to determine whether students had correctly applied counseling interventions (Appendices C, the facilitator guide, and E, case scenario example responses).

Data Analysis

We summarized Likert-scale responses with the number and proportion of students choosing each option, as well as the mean and standard deviation, combining data from the two sessions for analyses. We used Wilcoxon signed rank tests to compare the Likert-scale responses for perceived importance and confidence in counseling skills pre- versus postclass. We used Friedman's analysis of variance and Bonferroni adjustments for multiple comparisons to compare the responses across the three evaluation questions: Q1: "This class developed my ability to apply theory to practice," Q2: "I made gains in the following objective: Apply evidence-based brief physician counseling interventions to assist patients with health behavior change in a clinical setting," and Q3: "I made gains in the following objective: List and address obstacles to health promotion/physician counseling in a clinical setting." We used SPSS for quantitative data analysis. Responses with missing data were excluded from analyses. We conducted a thematic analysis of feedback on the evaluation using an inductive approach, with constant

comparative analysis, with an intercoder reliability score of 85% between two authors.

Results

Quantitative Data

One hundred and twenty-four students participated in the sessions. Pre- and postsession response rates were 121 for importance and 118 for confidence. For the three postsession evaluation questions, the response rate was 122. From pre- to postclass session, there was a significant increase in ratings of the perceived importance of health behavior counseling (from 4.40 [$SD = 0.78$] to 4.60 [$SD = 0.81$], $Z = -2.870$, $p = .004$) and in ratings of confidence in performing health behavior counseling (from 3.23 [$SD = 1.08$] to 4.03 [$SD = 0.80$], $Z = -6.756$, $p < .001$). Table 1 shows the frequencies and descriptive statistics for these ratings.

We compared the scores for the three postsession questions using Friedman's analysis of variance, which was statistically significant, $\chi^2(2) = 25.974$ ($p < .001$; Table 2). The mean scores were 3.48 ($SD = 0.95$) for evaluation Q1, 3.61 ($SD = 0.89$) for evaluation Q2, and 3.76 ($SD = 0.83$) for evaluation Q3. Pairwise comparisons showed that evaluation Q3 was significantly higher than evaluation Q1 ($Z = 2.849$, $p = .01$), but there was no difference between evaluation Q1 and Q2 ($Z = 1.568$, $p = .35$) or between evaluation Q2 and Q3 ($Z = -1.280$, $p = .60$).

Thematic Analysis of Assignment Submissions

All groups submitted the case-based group assignment ($n = 22$). Five groups did not record the role-play as a script and included only a summary.

Using the preclass reading and the grading rubric, most groups correctly applied the stages of change model: "What are your pros and cons to your smoking habits?" Many groups ($n = 14$) correctly applied the 5 As model. Given the equally correct option between using 5As or FRAMES, five groups did not fully adhere to the FRAMES model—for example, responsibility of the patient was missing, self-efficacy statement was missing—or did not provide factually based information in the advice portion, while two groups correctly applied FRAMES.

Most of the groups ($n = 16$) did not identify motivational interviewing as the best strategy for the resistant patient. Most groups ($n = 13$) asked the patient for permission to address their risky health behavior at the beginning of the conversation. Four groups tried to apply OARS (open-ended questions, affirmations, reflection, and summaries), and one group developed discrepancy, questioning the patient, "How

Table 1. Frequencies and Descriptive Statistics for Pre- and Postsession Data on Perceived Importance of and Confidence in Health Behavior Counseling

Survey Item and Responses	Presession		Postsession		p
	M (SD)	No. (%)	M (SD)	No. (%)	
Health behavior counseling is important to me	4.40 (0.78)		4.60 (0.81)		.004
Strongly disagree		1 (1)		2 (2)	
Disagree		3 (2)		3 (2)	
Undecided		7 (6)		4 (3)	
Somewhat agree		45 (37)		24 (21)	
Strongly agree		65 (54)		88 (73)	
Total		121 (100)		121 (100)	
I am confident about counseling patients regarding health behaviors	3.23 (1.08)		4.03 (0.80)		<.001
Strongly disagree		4 (3)		1 (1)	
Disagree		32 (27)		5 (4)	
Undecided		29 (25)		15 (13)	
Somewhat agree		39 (33)		66 (56)	
Strongly agree		14 (12)		31 (26)	
Total		118 (100)		118 (100)	

does the risks of the keto diet—particularly the increased risk of heart attack—fit in with your desire to be there for your family?” Half the groups ($n = 11$) had reflection statements that were either missing or could be improved. Three groups could have strengthened their motivational interviewing by reflecting back change talk or patients’ words supporting the behavior change.

Thematic Analysis of Evaluation Feedback

We analyzed class evaluation feedback (Table 3), and the following two strengths were identified: Students ($n = 59$)

enjoyed the interactive component of the role-plays and practicing the counseling skills: “I liked how we did scenarios and students acted it. I think this helped us make it more close to reality and made us get creative.” Many ($n = 31$) expressed strong impressions on the importance of the topic:

I liked the evidence-based approach to patient interview that would improve patient cooperation and adherence. There is a lot of nuance to motivating people and actually getting them to do what we want

Table 2. Frequencies and Descriptive Statistics for Evaluation Questions After Class Session

Question and Responses	M (SD)	No. (%)	p
Q1. This class developed my ability to apply theory to practice.	3.48 (0.95)		
Strongly Disagree		5 (4)	
Disagree		14 (12)	
Undecided		30 (25)	
Somewhat Agree		63 (52)	
Strongly Agree		10 (8)	
Total		122 (100)	
Q2. I made gains in the following objective: Apply evidence-based brief physician counseling interventions to assist patients with health behavior change in a clinical setting.	3.61 (0.89)		
Strongly Disagree		3 (2)	
Disagree		12 (10)	
Undecided		27 (22)	
Somewhat Agree		68 (56)	
Strongly Agree		12 (10)	
Total		122 (100)	
Q3. I made gains in the following objective: List and address obstacles to health promotion/physician counseling in a clinical setting. ^a	3.76 (0.83)		
Strongly Disagree		4 (3)	
Disagree		6 (4)	
Undecided		18 (15)	
Somewhat Agree		81 (66)	
Strongly Agree		13 (11)	
Total		122 (100)	
Comparison of Q1, Q2, and Q3 scores			<.001

^a $p < .05$ compared to Q1 after Bonferroni correction for multiple comparisons.

Table 3. Emergent Themes From Analysis of Session Evaluation Comments

Question	Theme (n)	Example Comment
What did you like best about this class?	Role-plays (59)	"I liked how we did scenarios and students acted it. I think this helped us make it more close to reality and made us get creative."
	Important topic (31)	"I liked the evidence-based approach to patient interview that would improve patient cooperation and adherence. There is a lot of nuance to motivating people and actually getting them to do what we want them to do. Sometimes we can identify the problem and prescribe the right treatment, but if we cannot get the patient to follow through, it ultimately makes very little difference in outcome."
How can we improve this class?	No changes needed (21)	"Thought the class was very good. Do not need to make any changes in my opinion."
	Unclear instructions (20)	"Have more clear directions.... My group did not know we... were supposed to role play. The questions were... unclear on what we actually needed to... submit."
	Instructor needs to present demo (19)	"Have an experienced person give the demos of [motivational] interviewing techniques so we can see... a good example."
	Did not like role-plays (19)	"The set up was weird with having to act out the scenarios with... different strategies.... It is unrealistic to have strategies like that when... having a conversation, it will end up making it too robotic and not personable."
	Physician needs to share practical examples (14)	"Having more physician input on how they implement these techniques with their patients would help make the class better."
	Busywork (12)	"Give more time for discussion instead of having the class focus on trying to write stuff down for the assignment reflection." ^a
	Felt rushed (12)	"We were spread thin trying to complete all 3 case studies while using 3 different methods while also writing a script.... I think it would have been more effective to do one case study.... It just seemed rush[ed] and ineffective." ^b

^aWe note this feedback, but due to large class size, written submissions gave the instructor a sense of students' learning.

^bFor subsequent sessions, fewer scenarios were used.

them to do. Sometimes we can identify the problem and prescribe the right treatment, but if we cannot get the patient to follow through, it ultimately makes very little difference in outcome.

Several themes emerged from our qualitative analysis of the students' feedback on how to improve the class. "No changes needed" ($n = 21$) illustrates that the majority were satisfied with the session and felt no changes were necessary. Lack of clarity of the assigned task was noted by citing unclear instructions ($n = 20$), requesting that a physician present a demonstration ($n = 19$) or share practical examples ($n = 14$), and feeling rushed ($n = 12$). Although the majority enjoyed the role-plays, a minority did not ($n = 19$), with several attributing the scripts to busywork ($n = 12$; Table 3).

Discussion

Overall, this class session increased skills and significantly impacted attitudes related to lifestyle counseling (learning at level 2 in the Kirkpatrick model¹²⁷). Students' perceived importance and confidence related to lifestyle counseling skills significantly increased, and they reported gains related to the Educational Objectives on applying evidence-based health behavior change counseling strategies. Thematic analyses of students' written assignments demonstrated some improvement in knowledge and in applying the stages of change model and other strategies, with room for growth related to motivational interviewing skills.

Given ambivalent practicing physician attitudes towards lifestyle counseling, affecting student attitudes on the importance of this work is a significant achievement. As in our study, Lee and colleagues observed positive attitudes towards lifestyle counseling among family medicine and internal medicine residents.⁴ However, practicing physicians have ambivalent attitudes and beliefs related to their role in lifestyle counseling and motivating patients' behavior change.¹² Considering these differences, it is significant that this class session was able to impact first-year medical students' attitudes about the importance of lifestyle counseling. Rather than allowing negative attitudes towards physician counseling to solidify, it is crucial to act at points early in training, when attitudes are malleable.⁵

In the absence of formal training, physicians may resort to an authoritarian style of directing the patient, which can result in poor outcomes,²⁸ contributing to the belief that physician counseling is futile. Physicians have expressed doubt about the efficacy of lifestyle counseling, since change is challenging.¹² Thus, it is important to stress the efficacy of evidence-based physician counseling techniques and patient-centered approaches, as was done in this class session.²⁴ Physicians' negative perceptions of patients' motivation to change behavior can be a common barrier.^{3,29} Such attitudes can diminish the perceived importance of and confidence in counseling patients. However, these negative attitudes can be impacted by training in behavior change models, such as Prochaska and colleagues'

stages of change model, which describes behavior change as a step-by-step process that unfolds with time, facilitating more realistic expectations.²⁶ Reinforcing the use of evidence-based techniques and the unfolding, step-by-step nature of behavior change was a key component of this session. Our class sessions also successfully raised confidence levels for related skills among medical students, which is significant in light of prior research demonstrating low levels of confidence among physicians^{4,29} and its function as a barrier to counseling behavior.

The student assignments reflected difficulty in applying motivational interviewing skills despite the training, underscoring the role of this session as a primer to longitudinal skill development. Our review of the students' assignments indicated that although students correctly applied stages of change and the 5 As model, motivational interviewing skills needed more development. We suggest thoughtfully identifying the place that this session can take in a strategic longitudinal curriculum on this skill set.

Based on feedback, we are refining assignment instructions for clarity, providing more time for each role-play, and starting with a faculty role-play demonstration. Considering the thematic analyses, we learned that clearer assignment instructions were needed. In the future, students can be specifically asked to identify the most appropriate brief evidence-based approach for each case. Students also requested a faculty-led demonstration of a role-play using motivational interviewing and stages of change, as well as more time to role-play. In the most recent iteration of the class, we cut the classwork to two cases (10-15 minutes each rather than 5), and students further recommended using only one case to increase time for that role-play.

While most students enjoyed the interactive nature of the role-plays, some found them unrealistic or felt robotic or "weird" acting out the scenarios. Establishment of a safe space at the start of the session is critical for encouraging genuine participation. We respected student groups' privacy by not observing their role-plays within each group. This decision was also related to the lack of sufficient faculty to closely monitor and provide meaningful feedback to every group. While we understand that role-play may not be easy for all learners, we find this method irreplaceable outside of formal simulated patient experiences, which can be cost-prohibitive. In addition, undergoing the experience of being the patient, even when pretending, can itself be illuminating. In a subsequent year, we also attempted framing the written assignment (i.e., role-play transcripts) in the same vein as clinical charting to reduce the

perception of busywork. This written assignment allowed us to systematically gauge student progress, especially within the context of larger class sizes at undergraduate medical schools.

Limitations of our evaluation include cautioning against generalizing our results, especially as the data were not collected from multiple institutions. Our sessions occurred over one cohort only, and aggregate data over time would be more robust. The evaluation was limited to self-reported attitudes and role-play transcript review rather than direct skills assessment. Our brief pre- and postsession mobile polling items were limited by curricular time constraints. Our brief tool prevented (1) more robust measurement of importance and confidence levels; (2) studying potential subitems related to these two variables, such as specific attitudes (e.g., negative attitudes about patients' motivation to change) that might be related to perceived importance and confidence levels; and (3) reliability and validity testing, which were not part of our survey design process. Although the questions about perceived gains on the Educational Objectives were modified from our assessment and evaluation team's surveys, these were all unpiloted survey tools given the dearth of preexisting validated instruments (Appendix F). We specifically attempted to model application of stages of change in our polling, using items to determine students' interest and confidence in lifestyle counseling to give us an idea of their readiness for change. However, this focused attempt resulted in limited data. An earlier presession survey could allow better tailoring of the session for the class's estimated stage of change regarding employment of lifestyle counseling. Likewise, a formal needs assessment could have strengthened and enriched this session.

Future interventions could use thematic analysis of recorded student role-plays or objective structured clinical examinations in real time.¹⁹ This would enable observations and evaluation of lifestyle counseling skills in real time, thereby addressing the limitations of relying on self-reported data and role-plays. Embedding this session within the longitudinal coverage of motivational interviewing content would be ideal. Such spaced learning with 3- or 6-month follow-up evaluations would be particularly helpful in assessing long-term impacts, which may differ from short-term learning gains. As for the practicality of implementing this content in the densely packed medical education curriculum, topics such as motivational interviewing can be integrated into clinical skills courses in the preclinical curriculum, clinical rotations such as family medicine, and electives across the span of the undergraduate medical education curriculum.

Appendices

- A. Preparatory Material.docx
- B. Health Behavior Counseling.pptx
- C. Facilitator Guide.docx
- D. Case Scenarios.docx
- E. Case Scenarios Example Responses.docx
- F. Evaluation instrument.docx

All appendices are peer reviewed as integral parts of the Original Publication.

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Ethical Approval

The Wright State University Institutional Review Board deemed further review of this project not necessary.

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