An Interprofessional Approach to Teaching Nutrition Counseling to Medical Students

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Abstract

Introduction: Many physicians do not feel competent providing nutritional counseling to patients. A minimum of 25 hours dedicated to nutrition is recommended in preclinical years, but only 40% of U.S. medical schools achieve this goal. Nutrition counseling is best done when physicians work collaboratively with registered dietitians (RDs). We sought to introduce this interprofessional approach in our preclinical curriculum.

Methods: In our first-year doctoring course, students viewed a nutrition lecture from a physician and RD. Teams of two to three medical students and one dietetics student were formed. The medical students took a history and performed nutrition counseling on the dietetics student role-playing a patient. The RD student provided feedback and reviewed clinical questions pertaining to the nutrition case. Medical students presented answers to their assigned case to the whole group. Medical students completed pre-/postsurveys assessing satisfaction and perceived confidence with nutrition counseling and were formally assessed using a standardized patient. The scores were compared to students from the year before who received the lecture but not the RD student activity.

Results: Eighty-one medical students participated. After the activity, there was an increase in confidence with nutrition counseling (p < .001), and 74% found working with dietetics students to be helpful or extremely helpful. The nutrition counseling mean score increased from 68% (historical control, n = 76) to 84% (n = 75, p < .001) on the standardized patient assessment.

Discussion: This format is an effective method of teaching nutrition counseling and promoting interprofessional behavior among rising physicians and RDs.

Keywords

Standardized Patients, Nutrition, Nutrition Counseling, Interprofessional Curriculum, Dietetics Students, Preclinical Medical Students

Educational Objectives

By the end of this activity, learners will be able to:
1. Perform a focused history and nutrition counseling on a patient.
2. Apply knowledge of the components of a healthy diet to clinical cases.
3. Interact with members from a different health care profession.

Introduction

Nutrition is an essential part of health as it plays an integral role in the development and prevention of many chronic diseases; however, many physicians do not feel competent providing nutritional counseling to patients. The National Academy of Sciences suggests a minimum of 25-30 classroom hours dedicated to nutrition in the preclinical years. Only 40% of U.S. medical schools are attaining this goal. Meeting this requirement is a challenge given the large volume of material and reduced lecture hours in the preclinical curriculum. Since nutrition knowledge and skills in assisting patients in improving nutrition are integral to patient care, it is essential that the allotted time be used wisely to create a strong foundation that can be expanded upon in the clinical training years.

Interprofessional education (IPE) has been defined as an intervention where the members of more than one health and/or social care profession learn interactively together for the purpose of improving collaboration and/or the health of patients. In response to new accreditation and licensing standards,
health professions schools must introduce IPE activities into their curricula. Research on IPE has found it can lead to positive outcomes for patients. IPE experiences have been shown to lead to measurable and significant improvements in the interprofessional competencies for undergraduate medical students. Based on the theoretical framework of Kirkpatrick’s classification system, interprofessional learning affects four categories of educational evaluation: reaction, learning, behavior, and results. Our resource focuses on reaction and learning. Reaction is the evaluation of the learning experience by the students. Learning is the effect on students’ knowledge and skills. We sought to introduce this interprofessional approach in our doctoring course by having senior registered dietitian (RD) students and first-year medical students work together to perform nutrition counseling and answer clinical questions pertaining to nutrition counseling.

The Academy of Nutrition and Dietetics recently published a position paper stating that RDs should play a significant role in the education of medical students, residents, fellows, and physicians in practice. While recent Cochrane reviews have examined the overall impact of IPE on professional practice and health care outcomes, more rigorous studies are needed to reach generalizable conclusions about its various elements, especially pertaining to nutrition. Two MedEdPORTAL publications describe activities integrating medical students and RDs to teach nutrition counseling, but these activities vary in methodology, and although showing improved satisfaction with learning how to counsel patients on nutrition, they do not have any outcome data. Another resource uses an interprofessional standardized patient (SP) exercise to provide learners (including medical students, RD students, etc.) with the opportunity to discuss various health care professionals’ roles in caring for a patient interested in integrative health strategies, as well as to collaborate on a care plan. This activity does not specifically focus on nutrition counseling or show improved outcomes, but it has received positive satisfaction scores from different learners. Research studies on the effectiveness and efficacy of nutrition as part of the interprofessional curriculum design are needed to guide future educational efforts to integrate nutrition into team-based care.

At our institution, prior to this intervention, first-year medical students received a 1-hour live lecture on how to perform a dietary history and nutrition counseling. Immediately after the lecture, students would practice this skill through role-play with each other. The following week, we assessed the students’ dietary history and nutrition counseling skills using an SP. Students routinely reported feeling less prepared for this type of counseling as compared to other types, including smoking cessation and exercise counseling, despite teaching these skills in a similar way. Students also achieved lower mean scores on nutrition counseling assessments than they did on smoking cessation counseling and exercise counseling. We hypothesized that introducing a novel teaching activity utilizing senior-level RD students to teach nutrition counseling would improve satisfaction and skill, as well as helping professional students to better understand each other’s roles on the health care team.

Methods
Survey Procedure
Eighty-one medical students completed a preintervention survey (Appendix A) the week prior to the nutrition counseling curriculum. At our institution, we teach nutrition counseling in the first semester after students learn how to perform a medical history. This is part of a unit on counseling where we teach students how to counsel patients to increase exercise, reduce alcohol intake, and quit smoking. The curriculum is based on the 5 A’s (ask, advise, assess, assist, arrange) of counseling. This survey aimed to assess the perceptions students had about nutrition counseling.

Medical students received a 1-hour online lecture (with audio, Appendix B; without audio, Appendix C) given by an RD. The objectives of the lecture were to teach medical students basic nutrition guidelines and to give guidance on how to obtain a complete dietary history and perform nutrition counseling with a patient. Medical students were asked to view the lecture online the night before class. RD students were required to participate in this activity as a component of one of their classes.
During class time, the medical students were split into groups of two to three. Each group of medical students was paired with one RD student. The medical students divided the medical history and nutrition counseling into equal parts, and each took turns interviewing and counseling the RD student who played the role of a patient. The RD student used one of the three assigned clinical scenarios (Appendix D; with answers, Appendix E) to provide a history to the medical students. These scenarios included a pregnant patient with a history of anorexia, a patient with prediabetes, and a patient with hypertension and hyperlipidemia. After the completion of the interview, RD students provided feedback to the medical students on nutrition-focused interviewing.

The medical and RD students then worked together on several clinical questions at the end of their assigned case to enhance medical students’ learning of basic nutrition principles. RD students had the answer key to the questions to ensure uniformity of teaching. Afterward, a medical student representative from each small group reported the group’s answers to the entire class so each student heard the answers for each of the three cases. RD faculty were present to facilitate the discussion and add to the discussion points or clarify misconceptions.

A postintervention survey (Appendix A) was given to the medical students immediately following this activity in order to evaluate satisfaction with the curriculum and perceived competence with nutrition guidelines and counseling. Pre- and postintervention surveys were compared and analyzed.

SP Assessment

Two months later, we assessed the students’ dietary history and nutrition counseling skills using an SP. To determine whether this interprofessional activity was an effective way to teach medical students how to counsel patients to make dietary changes, we compared assessment scores of the current students in 2016 (n = 75, six missing of 81 who completed the survey) with those of the students from the prior year who had only received the lecture and did not engage in the activity with RD students (n = 76). The SP case was used only for assessment and was not a necessary part of the educational component of this activity. SP training included 4 hours on assessment of interviewing and interpersonal skills and 2 hours on case portrayal. Training included standard-setting videos, one-on-one review/discussion, and role-play practice with trainers. The SP in this case was presenting to the doctor with the desire to improve eating habits because she had remotely lost her husband and over the last year had replaced home cooking with fast food. SPs scored the students on the nutrition counseling domain. To score the counseling, SPs used a checklist that included components of the case history and the 5 A’s of counseling.

Analytical Method

We used identical pre- and postintervention surveys to assess students’ learning experience of the nutrition activity. Each survey included the same items. One item—“Currently, how would you rate the overall quality of your nutritional counseling?”—was rated on a scale of 0 (poor) to 5 (excellent). The remaining eight items formed two subscales—counseling interpersonal skills and communication skills—rated on a scale of 0 (not skilled at all) to 5 (extremely skilled). An overall summary rating totaled all eight items, ranging from 0 to 40. In addition, for the SP session, a summary index of nutritional counseling scores ranging from 0 to 100 was used to assess student nutrition counseling skills in 2015 and 2016, as stated above. Means and standard deviations were reported. Student’s t test was used to assess the difference between pre- and postintervention; p values less than .01 were reported as significant.

Results

Survey Results

Of 81 first-year medical student survey participants, 12% rated the quality of their nutritional counseling from good to excellent on the presurvey. On the postsurvey, 74% perceived the quality of their nutritional counseling to be good to excellent (p < .001). In the Table, counseling interpersonal skills (measured by medical students’ ratings of the hypothetical patient’s readiness and motivation to change, cultural and social aspects of change, and quality of counseling) significantly improved postsurvey (p < .001).
Communication skills (measured by medical students’ ratings of their comfort with providing the hypothetical patient relevant information, developing a shared plan, and arranging appropriate follow-up) also significantly improved postsurvey ($p < .001$).

Table. Student Ratings of the Nutritional Counseling Curriculum

<table>
<thead>
<tr>
<th>Survey Item</th>
<th>Pretest</th>
<th>Posttest</th>
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<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
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<tr>
<td>Quality of nutritional counseling$^a$</td>
<td>2.56</td>
<td>0.78</td>
</tr>
<tr>
<td>Counseling interpersonal skills</td>
<td>13.69</td>
<td>3.00</td>
</tr>
<tr>
<td>Counseling overweight and obese patients on diet$^b$</td>
<td>2.29</td>
<td>0.63</td>
</tr>
<tr>
<td>Patient’s readiness to change diet$^b$</td>
<td>2.88</td>
<td>0.80</td>
</tr>
<tr>
<td>Patient’s motivation to change diet$^b$</td>
<td>3.00</td>
<td>0.79</td>
</tr>
<tr>
<td>Cultural differences that influence diet$^b$</td>
<td>2.55</td>
<td>1.06</td>
</tr>
<tr>
<td>Social aspects that influence diet$^b$</td>
<td>2.97</td>
<td>0.90</td>
</tr>
<tr>
<td>Communication skills</td>
<td>8.24</td>
<td>2.16</td>
</tr>
<tr>
<td>Providing patient with information on nutrition$^b$</td>
<td>2.63</td>
<td>0.96</td>
</tr>
<tr>
<td>Working with patients to develop a shared plan to change diet$^b$</td>
<td>2.68</td>
<td>1.00</td>
</tr>
<tr>
<td>Organizing a follow-up meeting to assess patient’s progress with dietary changes$^b$</td>
<td>2.93</td>
<td>1.03</td>
</tr>
<tr>
<td>Overall summary ratings</td>
<td>24.49</td>
<td>5.04</td>
</tr>
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</table>

$^a$Rated on a 5-point scale where 1 = poor and 5 = excellent.
$^b$Rated on a 5-point scale where 1 = not skilled at all and 5 = extremely skilled.

In the end, 94.5% rated their satisfaction with the nutritional counseling curriculum in the range of somewhat satisfied to extremely satisfied. Seventy-four percent of participants found working with the senior-level RD students to be helpful or extremely helpful. The majority of students commented that they desired training collaborations with additional professional students in the future.

Clinical Skills Assessment Result on Nutritional Counseling

The mean scores on nutrition counseling of the class that did not receive this intervention in 2015 were compared to those of the class that received the intervention in 2016 (see the Figure). The class that received the intervention achieved a mean of 84% (of a 100% scale; 95% CI, 80-87; $SD = 22.5$) on nutrition counseling versus 68% (95% CI, 63-74; $SD = 15.6$) for the class that did not receive the intervention ($p < .001$).

Figure. Means and 95% confidence intervals of nutrition counseling scores. Error bars indicate confidence intervals. The change in curriculum is shown as the Intervention line. There is a statistically significant difference in the scores of the students ($p < .001$).
Discussion

Existing literature indicates that physicians do not feel comfortable with nutrition counseling. Our results show improved confidence with nutrition counseling skills after our intervention. There is also a paucity of outcome data on IPE with regard to nutrition counseling, but our results show a statistically significant improvement in nutrition counseling scores using an SP case. Based on Kirkpatrick’s educational evaluation system, both reaction and learning were positively affected by this interprofessional approach. Overall, our survey shows that medical students enjoyed this method of learning nutrition counseling and valued the interaction with the RD students. All of these data suggest that this module acts as an effective method to improve understanding of nutrition concepts while developing nutrition interviewing and counseling skills and promoting interdisciplinary interactions. This model can be used to effectively teach other subjects in clinical medicine courses. It could also be translated to other disciplines that partner with physicians to take care of patients, including nursing, pharmacy, physical therapy, social work, and case management.

There are potential challenges when delivering this curriculum. The activity required approximately 17 senior-level RD students per session because we wanted to pair a knowledgeable RD student with two to three early first-year medical students. Participation was a mandatory requirement for the RD students in a class they were taking, so attendance was excellent for our activity. If the activity had been volunteer based, recruiting RD students would likely have been more difficult. RD students were also on a separate campus from the medical students, so they were required to travel to the medical school, which made logistics more challenging. The medical school did provide parking vouchers to the RD students, which was the only cost incurred by the activity. RD faculty volunteered their time to be present during this activity in order to clarify teaching points and answer questions. They were not paid by the medical school directly, so this might affect recruiting at other institutions if a relationship between the two schools is not established. RD students were given answers to the clinical cases but were also allowed to use their own knowledge to supplement those answers. This may have given a slightly different experience to each of the small groups. We tried to make things more uniform by asking a medical student representative from each of the small groups to report the group’s answers to the entire class to ensure all students were hearing the same information. Overall, the benefit we saw both through satisfaction data on the survey and via the improvement in clinical skills assessment scores outweighed the challenges we faced for this activity.

Our study had several limitations. It involved only a single institution. Our evaluation was also limited to simulation and not real-life behavior. Our SP assessment addressed the role-playing exercise only as an incremental addition to the lecture, rather than considering the lecture plus role-playing.

This activity could be modified to meet the needs of learners at different levels of training than in our study. Using a trained SP, rather than the RD student, as the patient would permit RD students to work with medical students in obtaining a nutrition history and counseling patients to make dietary changes. Then, the medical and RD students could debrief and reflect on their approach to history taking and nutrition counseling as well as their interaction with each other during the activity.

In conclusion, our results demonstrate that this interprofessional activity is an effective and highly rated way to teach medical students how to perform nutrition counseling.

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Prior Presentations
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Ethical Approval
The University of Connecticut School of Medicine Institutional Review Board Human Subjects Protection Program approved this study.

References

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