Nutrition Education of Medical Students: Evaluating the Health meets Food Education Program vs. Online Education Modules

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Background

The correlation between diet and disease has long been established (5). High intake of saturated fatty acids, trans fatty acids, and cholesterol is linked with an increased risk of cardiovascular disease, stroke, and diabetes (5).之心健康因素（2010）：1537-42. doi:10.1097/ACM.0b013e3181eab71b

The National Academy of Sciences recommends 25 hours of nutrition education for medical students. A survey of 109 medical schools showed that not all medical schools provide nutrition education. Of 105 schools requiring nutrition education, only 25% provided a dedicated nutrition education course. During the course of medical school, medical students received, on average, 19.6 hours of nutrition education (2). Another study of 133 medical schools showed that 36% of schools studied required 12 hours or fewer or nutrition education, and that 9% required no nutrition education at all (3).

Various educational models may be used to address the nutrition educational deficiency among medical students. This includes traditional lectures, problem-based learning, or hands-on learning. The multiyear prospective observational cohort study, Cooking for Health Optimization with Patients (CHOP), conducted by researchers at Tulane University, showed superiority of hands-on cooking and nutrition education compared to nutrition education alone in a sample of 627 medical students (4). In their more recent multisite cohort study, hands-on cooking and nutrition education improved 3,248 medical students' nutritional counseling competencies as well as improved student's diets (5).

At Lake Erie College of Osteopathic Medicine (LECOM) campuses, nutrition education is required and integrated into the pre-clinical years. For example, biochemistry covered information regarding metabolic processes, physiology related dietary restrictions for certain patient populations, and genetics nutrition-related readings represented less than 10 hours of nutrition education. LECOM’s course, Nutrition Teaching Day, Bradenton provides an 11-hour dedicated nutrition education course.

Methods

During the 2016-2020 years a cohort of 47 third-year LECOM students completed the Health Meets Food program while a second cohort of 57 third-year LECOM students completed Nutrition Teaching Day.

To assess baseline nutrition knowledge, all cohorts completed a baseline nutrition knowledge assessment as well as the CHOP research curriculum. The 28 hours of education in Health Meets Food spanned 8 individual weekly sessions. Module videos were viewed before or after attending the corresponding hands-on cooking session. Students were given a week to complete the respective module’s quiz. Individual cooking sessions were completed together with subsequent discussion of the module’s respective problem-based learning.

Nutrition Education of Medical Students: Evaluating the Health meets Food program, versus the GCCM online curriculum only (Nutrition Teaching Day).

Results

The average baseline assessment score (Graph 1) for students that completed the Health Meets Food program was 47.93% correct and 40.64% correct in students that completed the Nutrition Teaching Day program. The difference between these two averages was statistically significant, with a p-value of <0.001.

The average post-program score, calculated by averaging the scores from modules 1 through 8 (Graph 2), was 80.24% correct in the Health Meets Food program and 64.69% correct in the Nutrition Teaching Day program. The difference between these averages was statistically significant, with a p-value of <0.001.

The improvement calculated by taking the difference between the post-program score and the baseline assessment score, was 31.34% for the Health Meets Food program and 23.45% for the Nutrition Teaching Day program. The difference between these averages was statistically significant, with a p-value of 0.001.

Conclusions

This prospective cohort pilot study suggests that completion of the GCCM online learning modules increases the level of nutrition knowledge of medical students. However, this increase in knowledge is less than that gained by students who complete the comprehensive GCCM curriculum, including hands-on cooking and online learning. Limitations include small sample size, short-term follow-up, and non-compliance completing the online curriculum, and statistical significance different individual baseline assessment scores. Future studies should improve the study design by administering the online curriculum simultaneously to Health Meets Food and Nutrition Teaching Day participants, decrease the testing burden of baseline knowledge assessment, assess long-term knowledge retention, and assess adjustment based on student’s past exposures, and assess difference in program completion during the proctorial versus clinical years. This study is on-going and will continue to improve and compile data.

Acknowledgments

We thank all those that participated in the Health Meets Food Program, the staff at the Economic Opportunity Program of Chemung for allowing us to use their kitchen, Ann Andrade for all of her incredible help in communications, and Dr. Harlan and Tulane University School of Medicine with the Goldring Center for Culinary Medicine for creating this program, and Lake Erie College of Osteopathic Medicine for sponsoring this program.

References


Overall Average Scores Pre- and Post- Nutrition Education Programs

<table>
<thead>
<tr>
<th>Module</th>
<th>Pre-Program Score (%)</th>
<th>Post-Program Score (%)</th>
<th>Overall Improvement (%)</th>
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</thead>
<tbody>
<tr>
<td>HMF</td>
<td>46.91</td>
<td>80.3</td>
<td>33.39</td>
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<tr>
<td>NTD</td>
<td>40.64</td>
<td>53.39</td>
<td>12.75</td>
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Graph 1: Average pre-program and post-program scores of students who completed the Health Meets Food class or Nutrition Teaching Day. Overall improvement calculated by the difference between average post-program and pre-program scores.

Overall Average Module Quiz Scores (%)

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<thead>
<tr>
<th>Module</th>
<th>Average Module Quiz Scores (%)</th>
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<tbody>
<tr>
<td>HMF</td>
<td>60.3</td>
</tr>
<tr>
<td>NTD</td>
<td>53.39</td>
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</tbody>
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Graph 2: Average module scores of students who completed the Health Meets Food class or Nutrition Teaching Day.

Pre-Program Score (%) Post-Program Score (%) Overall Improvement (%)

<table>
<thead>
<tr>
<th>Program</th>
<th>HMF</th>
<th>NTD</th>
<th>HMF-NTD</th>
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Table 1: Pre-program, post-program, and overall improvement scores for Health Meets Food and Nutrition Teaching Day.