Building a Food Foundation: An Assessment of Clinical Nutrition Education Elective

Amy Xia,[1] Hali Nguyen, MD,[1, 2] Jaclyn Albin, MD[1,3]

[1]University of Texas Southwestern Medical Center, Dallas, TX, [2]Department of Pediatrics, Dallas, TX, [3]Department of Combined Internal Medicine and Pediatrics

Background

Clinical nutrition education in medical school is limited.

In a survey of UT Southwestern medical students, 85% did not believe that UT Southwestern education has given them sufficient exposure to the subject of clinical nutrition.

In the context of high burden of disease attributed to poor nutrition, physicians have a responsibility to provide evidence-based nutrition counseling to patients about the effects of lifestyle on health.

"Building a Food Foundation" is an optional month-long fourth year medical school elective at UT Southwestern Medical Center that aims to increase nutrition education opportunity through a self-guided and personalized approach.

In March 2020, in-person components of the elective were converted to virtual to address the need for remote learning opportunities during the COVID-19 pandemic.

Elective Components

Components of "Building a Food Foundation" include:
1) evidence-based nutritional approaches to prevent and address chronic disease,
2) case-based learning to improve patient care about nutrition,
3) culinary skills through hands-on culinary medicine sessions in a kitchen with a chef-trained dietitian and physician **or** designing educational materials for Community Health Workers (CHW)
4) promoting personal health and well-being.

Elective Schedule
Week 1: Food Policy
Week 2: Nutrition Research
Week 3: Community Outreach
Week 4: Patient Case-Based Learning

Methods

We analyzed evaluations from 73 medical students who completed surveys, including confidence level in clinical nutrition settings. In addition, students completed a previously validated survey[1] testing their knowledge of nutrition in patient care through intern level clinical scenarios and decision making. 67 students completed the post survey.

Total # Students	# in Original Elective	# in Virtual Elective
73	49	24

Results

Confidence Level in Clinical Nutrition: Clinical Scenarios

1. A 15 year old female with poorly controlled type I diabetes seeks your counsel for dietary recommendations to control her blood glucose.
2. A morbidly obese 14 year old male teenager with sleep apnea seeks your help losing weight.
3. You are consulted for nutritional recommendations on an 87 year old male underweight geriatric patient scheduled for semi-elective surgery.
4. You are referred a 75 year old female for a 40 pound unintentional weight loss.
5. You are in charge of examining recent political refugees and examine a 16 month old girl infant who is grossly malnourished and more lethargic than the other infants.
6. A mother brings her 3 year old son into the office for an annual visit. She is concerned that he is a very picky eater and only eats sweets, and asks you what to do.
7. You diagnose a 45 year old male with hypertension, and he asks your recommendations to control blood pressure.
8. You are asked to give nutritional recommendations for a 42 year old female with > 45% surface area burns from a motor vehicle accident.
9. A 25 year old healthy female, attempting to conceive, comes to your office asking for prenatal dietary recommendations.
10. An expectant mother comes to you for advice. She wants to know the difference between baby formulas.

Likert Scale	Pre-Survey	Post-Survey
1= Well Prepared	76	262
2= Somewhat Prepared	222	300
3= Not Very Prepared	282	98
4= Not Prepared at All	150	10
TOTAL	730	670

	Pre-Survey	Post-Survey
Average Confidence Score	2.699	1.785
Chi-square	323	
P-value	**< 0.00001**	

Tables 1-3: Confidence in Clinical Nutrition
List of ten intern level clinical scenarios students' feeling of preparedness. Levels of preparedness were on Likert Scale including "well prepared," "somewhat prepared," "not very prepared," and "not at all." Chi-square test was performed with statistically significant p-value, indicating a **statistically significant difference in distribution of Likert scale between pre- and post-surveys.**

Competence in Clinical Nutrition: Clinical Scenarios

1. You are the resident on call in the surgical intensive care unit on a Friday night. A trauma patient arrives in critical condition after emergent surgery. The patient is hemodynamically stable and adequately resuscitated. The unit's nutrition support team will not be back until Monday. Which method of nutritional support is best? (Enteral and parenteral access are equally available.)
2. Early enteral feeding (within 24 hours of admission) of a resuscitated intubated patient is:
3. A 23 female just learned that she is pregnant. She is overweight with a BMI of 27.5. According to the ACOG (American College of Obstetrics and Gynecology) and IOM (Institute of Medicine) guidelines, how much weight should she gain during her pregnancy?
4. A previously well-nourished female patient was admitted 72 hours ago for sepsis. She remains intubated and has not been fed. She is adequately resuscitated and off pressers. You want to start enteral feedings but are unsure if you should. You talk to the nurse and find out that the patient stooled this morning. You examine the patient and you do not hear bowel sounds. What do you do?
5. A morbidly obese male and you are discussing his diet. He is very worried about his health and asks you what are the odds of being malnourished?

Score out of 5	Pre-Survey	Post-Survey
0-1	16	6
2-3	33	20
4-5	24	41
TOTAL	73	67

	Pre-Survey	Post-Survey
Average Score	57.6%	71.9%
Average Score Increase	14.3%	
Chi-square	6	
P-value	**.048**	

Tables 4-6: Competence in Clinical Nutrition
List of 5 intern level clinical questions on clinical nutrition in a range of specialties with competency scores before and after course. Chi-square test was performed with statistically significant p-value, indicating a **statistically significant difference in distribution of competency scores between pre- and post-surveys.**

Qualitative Feedback

Qualitative feedback on "Building a Food Foundation" elective included praise on its exposure to clinical nutrition and its relevance to future clinical practice. Below are quotes from qualitative feedback.

Exposure to Clinical Nutrition:

"Course was strong in every respect and I enthusiastically believe this material (and more) should be mandatory for every medical student. Our current nutrition education is severely lacking and is not up to date with the evidence-based body of research and growing recognition of prevention/culinary/plant-based diet/lifestyle medicine to treat and reverse chronic disease**."**

Relevance to Future Clinical Practice:

"I loved the flexibility of this elective and how it continued to teach me how to be a self starter. The type of learning in this elective is very reflective of what studying in residency will be like--you have to be self motivated in order to succeed."

"Highly relevant topic in medicine today given obesity epidemic and increasing rates of diabetes and cancer and other illnesses related to nutritional issues. Will be useful in future clinical practice."

Discussion

Overall, this elective demonstrated that students felt **more prepared to face clinical nutrition scenarios** after taking the elective. There was a statistically significant difference between results pre-survey and post-survey with **p-value <0.00001**. There was no difference in p-values for students taking the original elective compared to the converted virtual elective.

The intervention successfully **improved student performance** (% correct) on the previously validated study, with an overall **average 14.3% increase in score**. This was a statistically significant increase with **p-value <0.05**. Again, there was no difference in statistical significance for students taking pre-COVID and post-COVID elective.

Despite changing the hands-on and in-person elective components to remote learning, students still demonstrated an increase in confidence and competency in clinical nutrition.

The qualitative feedback on this elective demonstrates its strengths in exposing students to clinical nutrition and preparing students for their future clinical practice.

Conclusion

The success of this elective in **improving confidence and competence in clinical nutrition** demonstrates a potential solution to help solve the problem of lack of nutrition education for medical students.

In addition, this elective demonstrates that **remote learning is just as effective for students to improve confidence and competence in clinical nutrition.**

To fully address the impact of lifestyle on health care morbidity, mortality, and cost, physicians must take ownership of nutrition knowledge, both in the kitchen and in the clinic.

References

1. Cross-Sectional Study of U.S. Interns' Perceptions of Clinical Nutrition Education.: JPEN J Parenter Enteral Nutr. 2016 May;40(4):529-35. doi: 10.1177/0148607115571016.