

Integrating nutrition education into the cardiovascular curriculum changes eating habits of second-year medical students

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Rate Your Plate questionnaire

BACKGROUND: Survey of medical curricula continues to show that nutrition education is not universally adequate. One measure of nutritional educational competence is a positive change in student eating habits.

OBJECTIVE: The objective of this study was to evaluate whether integrating nutrition education within the second-year cardiovascular course for medical students, using the “Rate Your Plate” (RYP) questionnaire, coupled with knowledge of student personal 30-year risk of a cardiovascular event was useful in changing students’ eating behaviors.

METHODS: Thirty-two students completed an unpublished 24-item questionnaire (modified-RYP) about their eating habits in the spring of their first year. The same students then completed the questionnaire in the spring of their second year. Paired *t* test was used to analyze the difference in RYP scores. Pearson correlation coefficients were calculated for the Framingham 30-year cardiovascular event risk and change in RYP score to examine whether risk knowledge may have changed eating habits.

RESULTS: Mean scores at baseline and 1 year later were 57.19 and 58.97, respectively (paired *t* test, $P < .01$). Correlation coefficient between 30-year relative risk, adjusted for family history, and change in RYP score was -0.322 .

CONCLUSION: Although medical students were eating healthy at baseline, integration of nutrition education within the second-year cardiovascular medical curriculum was associated with improved heart healthy eating habits. Because student attitudes about prevention counseling are influenced by personal eating habits, this suggests that students with a more healthy diet will be more likely to recommend the same for their patients.

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Despite the recommendation of the National Academy of Sciences in 1985, which stated a minimum of 25 hours of nutrition education be provided to medical students over the 4-year curriculum, Adams et al¹ found a 12% decline between 2004 and 2009 and noted only 27% of the 105 schools met the minimum.¹ In 2001, >14,000 US

medical students completed the Association of American Medical Colleges graduation questionnaire; 56% felt their nutrition-related experiences were inadequate.² Furthermore, 66% felt their clinical decision-making and care skills about nutrition were poor. Similar experiences have been noted among Canadian medical students.³

A number of suggestions have been made to combat this trend, such as development of a competency-based certification program modeled after the American Heart Association program in Cardiac Life Support.⁴ Rather than draft

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new curricula, wider distribution of already existing curricula has been advocated,⁴ such as teaching modules developed by the Nutrition in Medicine Project,⁵ which conform to the consensus guidelines of the American Society of Clinical Nutrition.⁶ Another curriculum guide was developed by the National Institutes of Health-supported Nutrition Academic Award Program.^{7,8}

It is with this background that our institution appointed a multidisciplinary task force to determine how and when nutrition was taught in our curriculum and to make recommendations to ensure that nutrition education was adequately incorporated. The report, presented to faculty in 2006, was approved by the curriculum committee and distributed to the course committees for implementation. Many of the learning objectives of this task force mirrored those of the Nutrition Academic Award,⁷ especially objectives related to the cardiovascular system and were incorporated into the nutrition component of the organ system-based integrated second-year cardiovascular block.

One nutritional objective not addressed in most guidelines is to promote changes in student eating habits toward more heart healthy behavior. Multiple studies have shown that first-year medical students tend to consume a lower fat diet with more fruits and vegetables and to exercise moderately.^{9–11} However, those eating habits begin to decline during the clinical years.¹⁰ This is important because medical students “preach what they practice.”¹² Students and physicians who have a healthy lifestyle are more likely to see the importance of diet and exercise in disease prevention and to counsel their patients accordingly.^{12–17} Unfortunately, the importance of prevention counseling declines over the 4 years of medical school.^{13,14,16}

The purpose of this study was to determine whether integrating nutrition within the second-year cardiovascular course, plus 2 small changes to the curriculum, would result in more heart healthy personal dietary choices by medical students. The first was to introduce the Rate Your Plate (RYP) dietary questionnaire into the curriculum as a means for students to assess personal eating habits. This is one of the counseling tools presented in one of the papers in the Nutrition Academic Award symposium on Innovative Teaching Strategies.¹⁸ The second was to provide a free fasting lipid panel for study participants to calculate their personal 30-year risk of developing a cardiovascular event, as a means to stimulate interest to improve personal risk factors. The 2 hypotheses of our study were (1) integrating nutrition education while adding the RYP dietary assessment to the curriculum would improve heart healthy eating habits and (2) students with the higher perceived cardiovascular risk would improve their eating habits more.

Methods

Study rationale

The presentation of nutrition education within the cardiovascular course used a variety of components. There

were 2 hours of lecture on lipoprotein transport and a third hour on practical nutritional advice, and 2 separate Problem-Based Learning (PBL) cases that had dietary elements. During the hypertension PBL case, students discussed the Dietary Approach to Stop Hypertension diet,¹⁹ and the coronary artery disease PBL case had a learning objective to use the Therapeutic Lifestyle Change diet recommended by the Third Adult Treatment Panel of the National Cholesterol Education Program.²⁰ There was also a separate nutritional exercise. Students in the PBL groups of 8 students were required to analyze the eating habits of 2 patients, one with heterozygous familial hypercholesterolemia and the other with metabolic syndrome. Half the students were assigned to one or the other problem and were required to take specific dietary components, visit grocery stores and fast food and upscale restaurants, and determine what was “good” and “poor” about their patient’s dietary selections. They were then asked to recommend better choices to achieve lipid goals that were based on individual patient Framingham risk assessment. They returned approximately 2 weeks later for discussion of their findings and recommendations within the full PBL group. The learning objectives for these activities covered most objectives present in the Nutrition Curriculum Guide for Training Physicians,⁷ under the cardiovascular system (section D) and all those ranked in the top one-third of importance.

An additional assignment at the same time was a third “patient”, themselves. Most did little on this component for 2 reasons. Ten-year cardiovascular risk evaluation had little meaning for students in their mid-20s. This problem was resolved when in 2009 the Framingham Heart Study published a simple algorithm to quantify 30-year risk.²¹ The second problem was that students found quantifying their own 24-hour food consumption formally in terms of nutritional composition was too tedious and did not seem practical. After reviewing various dietary self-assessment tools, it seemed that the RYP questionnaire might be particularly suitable for our purposes. It was easy to complete, used language familiar to students, and dealt specifically with dietary components likely to affect cardiovascular health.^{18,22,23} RYP is a semiquantitative food-frequency questionnaire that provides a single numerical ranking of the quality of food choices and a ranking into 1 of 3 qualitative groups. It also provides positive reinforcement for healthy choices and specific recommendations on how less healthy choices can be improved, thus making it a useful tool for patients. RYP has been directly compared with the Willett food-frequency questionnaire and found favorable.²² The validation was stronger when RYP was administered before the Willett questionnaire, than when given after. The researchers suggested that the much longer 136-question Willett may have led to a more haphazard filling out of the brief RYP. Moreover, as noted above, RYP has been advocated as a strategy to train primary care physicians in nutritional skills.¹⁸

However, we were concerned that using identical questionnaires 3 times to train students and to assess student eating habits before and after training might confound the

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