

The Importance of Physicians' Nutrition Literacy in the Management of Diabetes Mellitus

Jessica A. Schulman, PhD, MPH, RD, LD/N* and Barbara A. Rienzo, PhD†

*Department of Health Services Administration

†Department of Health Science Education
University of Florida

Abstract - Despite pharmacological advances in diabetes treatment, medical nutrition therapy (MNT) continues to be an essential component of diabetes management. Nonetheless, physicians have missed opportunities to provide nutrition counseling to their patients. This presents a problem because type 2 diabetes is an epidemic with severe consequences that result from non-adherence to nutrition protocols. The goals of this article are: 1) to explore reasons for the continued paucity of nutrition education in medical training programs, 2) to describe how a power educative approach can be used to improve patient outcomes, and 3) to identify considerations for improving nutrition literacy among physicians. These analyses lead to several recommendations for improving nutrition education for physicians.

*The void between theoretical knowledge and its translation to street-level reality is of substantial importance to us today. . . we have known for more than a quarter of a century that cigarette smoking is a major source of human morbidity. . . Yet it required a generation before there was significant public recognition of this hazard. . .*¹ (p. 9s)

Aronson's astute observations about smoking in the late 1980s could easily be applied to dietary practices today. Whereas in the past physicians missed opportunities to encourage smoking cessation to their patients, more recently physicians have missed opportunities to provide nutrition counsel.¹⁻³ Given that the value of nutrition education and medical nutrition therapy (MNT) in medical practice has been well established⁴⁻⁷, the failure of physicians to emphasize nutrition counseling is a puzzling oversight. The purpose of this paper is to explore this omission with respect to one of the leading causes of morbidity today, type 2 diabetes, and to review specific recommendations for improving nutrition literacy among physicians.

Type 2 diabetes is a chronic disease with an increasing incidence, high cost of treatment, and severe consequences due to non-adherence to nutrition protocols. In 1992, indirect and direct annual costs for diabetes were \$98.2 billion.⁸ By 1995, diabetes was the number one cause of amputation, blindness, and end-stage renal disease, and the 7th leading cause of

mortality listed on death certificates.⁹ With the prevalence of diabetes approaching six percent of the U.S. population and 798,000 new cases being reported annually⁸, target objectives for diabetes, as stated in Healthy People 2010, will be difficult to achieve.

Despite pharmacological advances in diabetes treatment, nutrition therapy remains an essential component of diabetes management.^{10, 11} Comprehensive treatment of type 2 diabetes patients improves quality of life and is cost effective.¹² Similarly, medical insurance coverage of MNT can reduce health services expenditures. In people aged 55+ years, savings in health services use has exceeded the cost of providing MNT.¹³

Examining the Problem

Primary care physicians (PCPs) can play a pivotal role in promoting diabetes management by ordering diets, providing accurate information, referring patients to qualified nutrition experts, and facilitating

lifestyle change.¹⁴⁻¹⁸ Thus, assessing the adequacy of MNT in this country requires evaluating nutrition education provided by medical schools. To review the literature addressing this issue, we searched in major health related and peer reviewed journals (e.g. *American Journal of Clinical Nutrition*, *Academic Medicine*, *Journal of the American Dietetic Association*, *Journal of the American Medical Association*), in nutrition reports identified from the Office of Disease Prevention and Health Promotion at the U.S. Department of Health and Human Services, and in

relevant to nutrition education among medical students and physicians. For the years 1963-1999, this review may be considered exhaustive; for literature outside that range, this review may be considered selective. Figure 1 shows the rate at which research on this topic has been published over the past thirty-five years. As the figure reveals, research on this issue has been published with increasing frequency, highlighting the timeliness of a review of the literature to date.

Publications on Nutrition Education in Prospective and Practicing Physicians: Frequency by Year

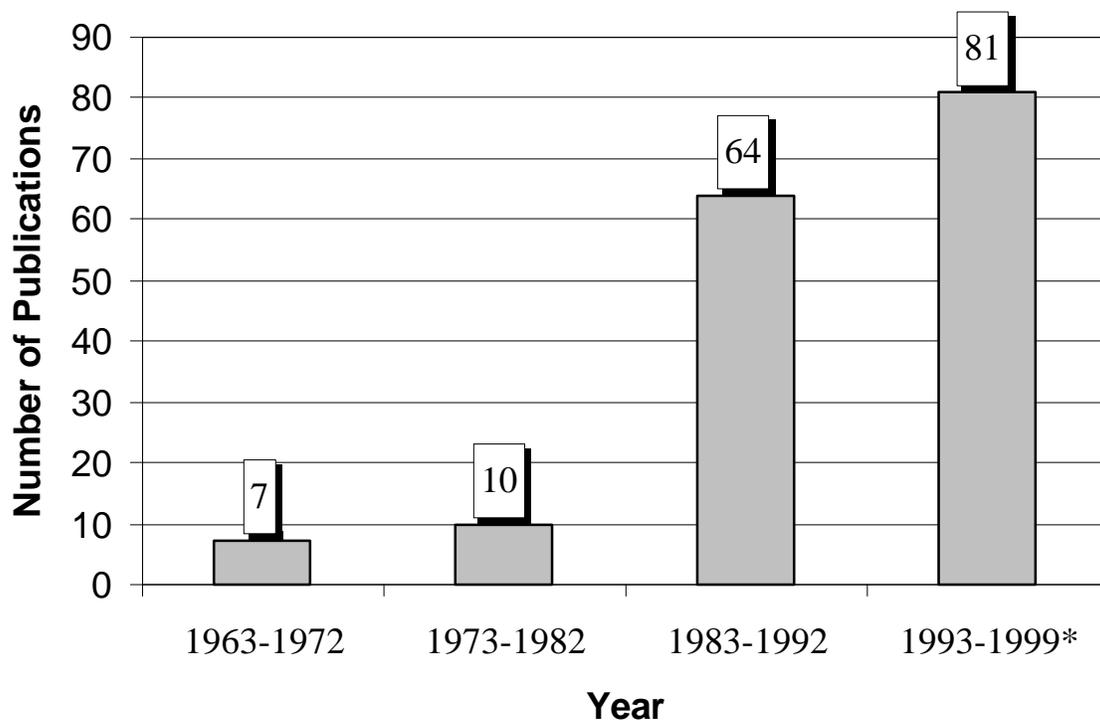


Figure 1. Number of peer reviewed publications on nutrition education in prospective and practicing physicians by 10-year interval. *Denotes that 7 rather than 10 years were reviewed for this category.

Medline®, HealthStar, and PsychLit citation indices (using the key words: nutrition education, medical students, prospective physicians, medical school, medical curricula, nutrition and diabetes) for citations

The Need for Training - The 1985 National Health Interview Survey was conducted to investigate the extent to which physician contacts currently provide nutrition information. Persons surveyed

were asked, "When you visit a doctor or other health professional for routine care, is eating proper food discussed?".¹⁹ (p. 67) Twenty-nine percent of women and 22% of men reported that diet was discussed "sometimes" or "often".¹⁹ (p. 67) Consequently, the U.S. Department of Health and Human Services (DHHS), proposed a national nutrition objective, "By 1990, virtually all routine health contacts with health professionals should include some element of nutrition education and nutrition counseling".¹⁹ However, by 1992, the percentages for physicians who developed a nutrition plan for at least 81-100% of patients with chronic disease were as follows: pediatricians--31%; nurse practitioners--31%; obstetricians/gynecologists--19%; general internists--33%.²⁰ These percentages are far below the 2000 target goal, which was 75% for each specialty.^{20, 21} This is unfortunate because the importance of nutrition in primary care medicine has been well established. As Myron Winick, M.D. points out, nutrition literacy is essential across most medical specialties: "Internists must be able to prescribe special diets for patients . . . surgeons must be able to maintain good nutrition in their patients both before and after an operation. Obstetricians must be sure that both mother and fetus are adequately nourished during pregnancy. Pediatricians must be able to instruct mothers on how best to feed their infants. Psychiatrists are treating eating disorders such as obesity and anorexia nervosa. And the family practitioners are concerned with almost all of these problems."²² (p. 12s)

Further research demonstrated a particular need for PCPs to understand the importance of dietary management for diabetes care.²⁰ During the 51st annual scientific session of the American Association of Family Physicians, researchers presented a study that compared how well physicians comply with testing guidelines. They determined that less than 20% of doctors ordered and interpreted glycosylated hemoglobin (HbA_{1c}) values, even though HbA_{1c} is essential for assessing blood glucose control over the past three months and determining adherence to nutrition protocols. These and similar analyses have lead other researchers to conclude that many physicians do not have basic nutrition skills to screen, monitor, or provide follow-up to patients living with diabetes.^{23, 24}

Recently, the U.S. Department of Health and Human Services developed goals to improve life expectancy and quality of life. Objectives for Healthy

People 2010 have become particularly relevant to nutrition education practices among physicians. Again, new objectives corroborate that nutrition counseling services for diabetes must be improved. The 2010 target goal (75%) for diet counseling across physician practitioners continues to be far above baseline (42%).²⁵ It is notable that only 3% of patients received counseling during an office visit for weight management, which is a risk factor for type-2 diabetes. Without sustained efforts of educating prospective physicians about nutrition, Healthy People 2010 objectives will not be reached.

Nutrition in Medical Curricula - The need for nutrition expertise among physicians and the documented gaps in their training have been recognized for decades. For example, in 1947, the Association of American Medical Colleges (AAMC) published concern about the lack of responsibility for medical schools to adequately train their students in nutrition: "...unless the medical schools realize their responsibility and do something about teaching their students the rudiments of nutrition, at least, the subject will never be developed as fully as it should be".²⁶ (p. 240) Thirteen years later, the American Medical Association's Council on Foods and Nutrition criticized medical schools for their lack of commitment to the teaching of nutrition.²⁷ By 1985, the National Academy of Sciences (NAS) established that nutrition education in medical schools was inadequate²⁸ and the American Dietetic Association (ADA) issued a report stating that educational opportunities for nutrition were unrecognized or underused in medical schools.²⁹ Aronson (1988) affirmed this failure and concluded that physicians will play a primary role in teaching--or not teaching--the elements of diet to those that seek their counsel.¹

Despite this consensus about the need for improved nutrition education among physicians, there has been considerable neglect of and even opposition to integrating nutrition education in medical curricula. The AAMC publishes data that indicates the level of nutrition course offerings for all U.S. accredited medical schools. In the academic years 1991-1992 to 1998-1999, less than 30% of schools reported a *required nutrition* course³⁰⁻³⁷ (Figure 2). For years 1994-1995 to 1998-1999, about 50% of schools reported an *elective nutrition* course. Though some medical schools report that they offer elective nutrition courses, this does not guarantee that the course is offered routinely, that students are actually completing it, and that nutrition information is entering into the graduating students' knowledge base.

Furthermore, even when nutrition is provided within a medical course, there is no systematic method to measure quality and quantity of nutrition training.³⁸ In 1998, The Intersociety Professional Nutrition Education Consortium (IPNEC) reported that many medical schools integrate nutrition concepts into basic medical courses such as biochemistry and physiology. When taught in this manner, however, students often do not recognize the concepts as nutrition.³⁹ In addition, the role of diet in disease prevention is not adequately highlighted.³⁹

Improving Physician Training

Curricular Changes - Recent years have witnessed modest trends toward increasing the number of PCPs⁴⁰ and giving more attention to the role of environmental factors in health.⁴¹ Though critics argue that curriculum reform initiatives have not been successful⁴², some progress evidently has been made.⁴³ For example, at a forum on academic medicine, Michael Whitcomb, MD dispelled the be-

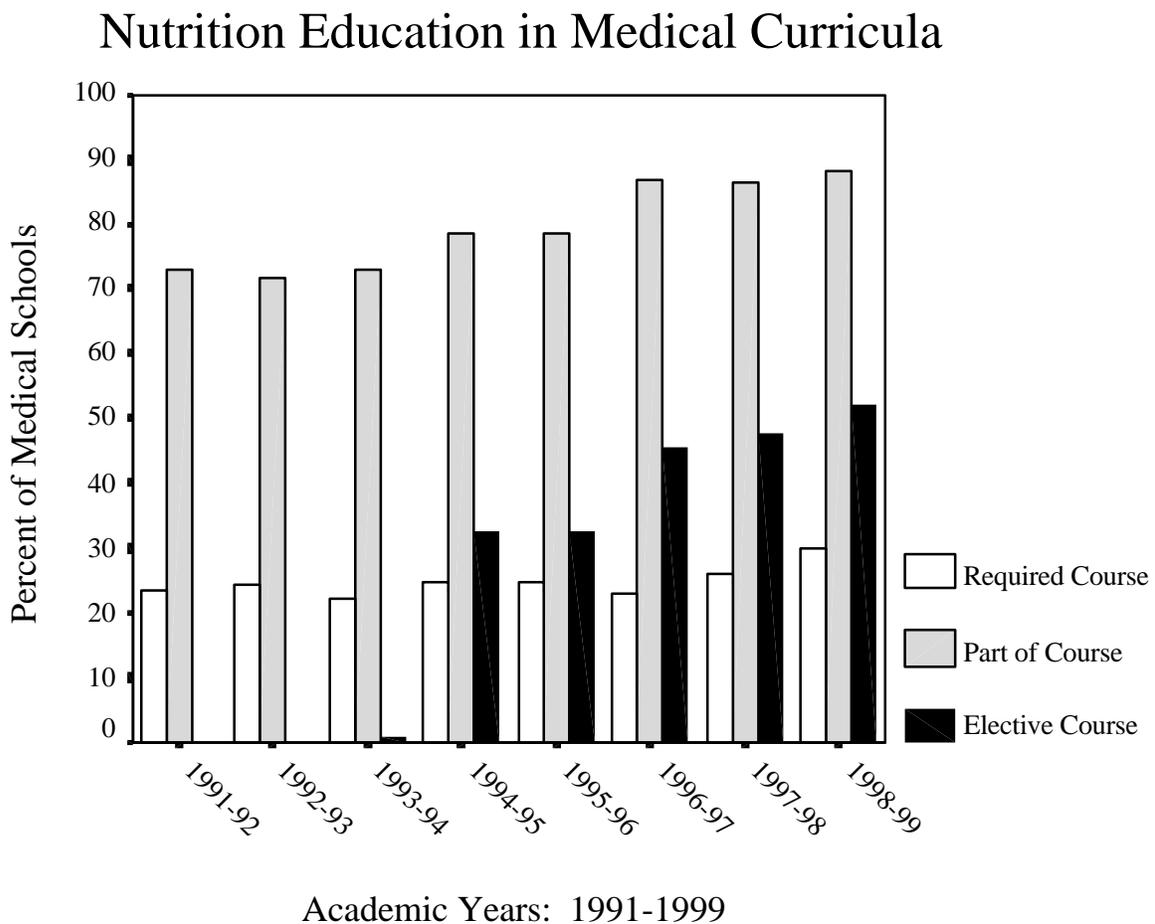


Figure 2. Percentage of U.S. accredited medical schools offering nutrition education. Response rate > 90% for all years (N = 128 in 1998). Annual figures are provided by the AAMC, Washington, D.C.³⁰⁻³⁷

belief that medical schools cannot change their curricula, pointing out that at least 24 medical schools have worked with the AAMC's Medical Schools Objectives Project on curricular reform.⁴⁴ In addition, Shils (1994) pointed out that the number of medical schools with a new form of instruction, problem-based learning, has soared.⁴¹ Thus changes to integrate innovative nutrition courses into medical curricula are both plausible and possible.⁴⁵

Power Educative Approach - Most traditional nutrition education programs focus on individuals and how to change their knowledge, attitudes, skills, and dietary intake. However, recently developed theoretical and pragmatic rationales draw attention to elements of the social environment that may enable individuals, such as health care professionals, to address health problems.⁴⁶ Green and Kreuter (1991) developed a model, the power educative approach, which educates leaders or strong forces in the community in order to affect social and organizational change. This model could be used to enlighten prospective physicians to the negative consequences of failing to initiate appropriate diabetes-MNT, thereby facilitating the provision of optimal patient care. Improving physicians' practice of nutrition therapy may well improve patient health.

In addition to an individualized approach to MNT, a number of environmental supports must be in place in order to provide patients access to sound nutrition advice within the health care setting.⁴⁶ This is especially true of patients that require diabetes self-management training. Physicians, as primary sources of medical counseling, are uniquely positioned to exert influence over their patients' attitudes and behaviors and encourage dietary modification.^{38, 47} Moreover, as Glasgow and Orleans note, physicians can have a significant impact on the health of the public with little additional effort:

*Glynn and Manley (1989) projected that if only half of United States physicians delivered even a brief quitting message to their patients who smoked and were successful with only 1 in 10, this effort would yield 1.75 million new ex-smokers every year--more than double the national annual quit rate.*⁴⁸ (p. 358)

Physicians have power and authority over their patients by virtue of their knowledge, skill, and training.⁴⁷ They are, in fact, accorded a preferred

and special status, which in turn reinforces their power and authority.⁴⁷ This power is often invoked to influence health behaviors and promote adherence to health protocols. Thus, the use of power educative and empowerment approaches applied to nutrition education may realistically influence widespread behavior change.⁴⁹ In a power educative approach, prospective physicians (our medical authorities) are the primary targets of nutrition education, because they are not well trained in nutrition therapy⁵⁰, whereas the public is the secondary target (but the ultimate beneficiary).

How feasible is this approach? To address this question, Hiddink (1997) investigated the role of the PCP in providing nutrition information to patients.⁵¹ A random sample of Dutch consumers (n = 628) were asked about: the type of referral they received for nutrition information, their perceived expertise of these sources, their interest in nutrition information, and their nutritional attitudes and beliefs. Analyses revealed that PCPs are in a better position to provide nutrition advice, compared with dietitians or the chief public health nutrition agency, even though dietitians are perceived to have higher expertise.⁵¹ Consumers in this sample preferred PCPs to other sources of information because: (1) they are likely to be in contact with physicians versus other practitioners, and (2) physicians are perceived as a non-commercial, or unbiased source of information.

Skilled physicians can serve as *efficacy builders* by conveying positive or negative appraisals about a patient's nutrition status.⁵² In addition, they are well suited to cultivate a patient's belief in their own capabilities.⁵³ However, physicians can not serve as efficacy builders for their patients if they themselves do not feel competent at conducting basic nutrition assessments or offering dietary advice. Bandura documented that influential mentors must be diagnosticians of peoples' strengths and weaknesses and must be knowledgeable about how to modify activities so that potentiality can be turned into actuality.⁵² As applied to physicians, this means that an understanding of methods to improve a patient's nutrition status (e.g. ordering appropriate diets, referring patients to nutrition experts, providing a self-management prescription, among others) is necessary for behavior change to occur. It must be noted here that if a patient's requisite skills are lacking, social persuasion by a physician alone can not substitute for skill development.⁵²

Physician efficacy builders can have a positive impact on health behavior by providing individualized nutrition self-management education. Attempts to shape the course of their patient's life without providing efficacy-affirming experiences are likely to become empty admonitions.⁵² That is, a physician who is not competent at providing MNT will not be able to cultivate an authentic sense of self-efficacy in their clients, and, paradoxically, may preclude lifestyle change or adherence to nutrition protocols. Today, innovative educational methods are being developed⁵⁴ to improve the way in which nutrition is addressed in medical school and the health care sector. This has potential to influence many people by improving the quality and coordination of available nutrition education to prospective physicians and, ultimately, to their patients.

Summary and Recommendations

Several decades of literature on medical students' and physicians' knowledge of nutrition and self-efficacy to practice MNT suggests that nutrition training in medical schools is still inadequate.⁵⁵⁻⁶⁰ In light of this literature, what can be done to ensure that prospective physicians receive proper training in nutrition in the future? Several promising approaches exist to support nutrition education of physicians⁴⁵ and some have recently been implemented.

First, there must be adequate organizational, administrative, and financial supports for nutrition departments that are affiliated with medical colleges. Over the last three years, the government has funded twenty-one Nutrition Academic Awards (NAA) which will enable medical schools to increase their commitment to nutrition education. Some of the NAA awardees involve medical schools at Albert Einstein, Brown University, Northwestern University, Tufts University, University of Alabama, University of Iowa, University of Pennsylvania, University of Rochester, University of Texas Southwestern Medical Center, and the University of Washington, Columbia University, Harvard University, Mercer University, Stanford University, University of Arkansas, University of Colorado, University of Maryland, University of Nevada, University of Texas/Houston, University of Vermont, and the University of Wisconsin. The University of Texas-Houston Medical School (UTHMS), for example, has already developed a Medical Nutrition Education website (<http://www.uth.tmc.edu/courses/nutrition/index.html>) to make nutrition education more effective for medical students. Their website is devoted to pro-

viding an overview of medical nutrition education activities at UTHMS and serves as a resource for students, residents, and faculty. It is critical that there are opportunities for faculty, as well as students, to learn about nutrition and to serve as mentors or role models who value MNT.⁵⁰ Additional strategies may involve recruiting, training, and retaining physician nutrition specialists.

Second, collaboration between and among health care facilities and academic departments should be encouraged, both for teaching and research in nutrition education. For example, the University of California at Los Angeles (UCLA) has developed a longitudinal, interdisciplinary curriculum, called Doctoring. The purpose is to provide medical school graduates with an understanding of patients, families, and communities in order to give care that is compassionate, humanistic, of high quality and evidence-based.⁶¹ Nutrition education will probably best fit within this type of interdisciplinary medical curricula. In another medical school program, Cancer Teaching and Curriculum Enhancement in Undergraduate Medicine (CATCHUM) at the University of Texas Southwestern Medical School at Dallas, integration of a cancer prevention curricula was achieved through levels of involvement and collaboration among deans, department chairs, committees, and key faculty.

Third, it is important that medical schools identify and agree upon nutrition education goals and objectives for their unique medical curricula. This should be followed by implementation of innovative and effective teaching modules, which are being developed by NAA recipients. However, the use of any new nutrition programs and modules should be evaluated concurrently. Educational technology may seem like a promising means of integrating nutrition into medical curricula, but effective skill development in nutrition counseling will not be achieved by mere addition of computer software or memorization of facts. The National Boards should continue to include and expand on the number of questions that cover basic nutrition knowledge, but medical schools must also evaluate their graduates' ability to comply with nutrition guidelines in a practice setting. Furthermore, research that examines the impact of practicing MNT on medical outcomes of significant health issues, such as diabetes, must be conducted.

Finally, adequate reimbursement for nutrition services must be secured from health insurance providers. Coverage of MNT services is cost-effective for treating and preventing disease complications.

Sheils, Rubin, and Stapleton (1999) evaluated the potential savings of MNT to the Medicare population.¹³ Data from enrollees of the Group Health Cooperative of Puget Sound, Seattle, Washington were analyzed. Differences in health care services utilization levels were observed for individuals with diabetes, cardiovascular disease, and renal disease who did, and did not, receive MNT. For patients with diabetes, MNT was associated with a reduction in hospital services utilization by 9.5% and physician services declined by 23.5%. The researchers concluded that Medicare coverage of MNT has potential to pay for itself with savings in utilization for other services.¹³ At this time, however, the majority of private insurance plans at best partially reimburse for nutrition services. The American Dietetic Association will publish a position paper on the effectiveness of MNT by the year 2002. This article may be useful in demonstrating the need for MNT to managed care organizations and encouraging teaching hospitals to adequately train their residents in nutrition.

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Correspondence

Correspondence concerning this article should be directed to Jessica A. Schulman, University of Florida, College of Health Professions, P.O. Box 110195, Gainesville, FL 32610-0195 or via email to mnt@ufl.edu.