NUTRITION JOURNAL
UNOFFICIAL IMPACT FACTOR 2.02

Research

Open Access

Inadequate physician knowledge of the effects of diet on blood lipids and lipoproteins.

Mary Flynn[1,2], Christopher Sciamanna[1,2,3] and Kevin Vigilante[1,2]

1 Brown University, Providence, Rhode Island, USA
2 The Miriam Hospital, Providence, Rhode Island, USA
3 Brown University, Department of Community Health, 1 Hoppin Street, CORO West, Suite 500, Providence, RI 02903 USA

author email corresponding author email

Nutrition Journal 2003, 2:19 doi:10.1186/1475-2891-2-19

The electronic version of this article is the complete one and can be found online at: http://www.nutritionj.com/content/2/1/19

Received: 7 August 2003
Accepted: 1 December 2003
Published: 1 December 2003

Abstract

Background

To assess the nutrition knowledge of physicians on the basic effects of diet on blood lipids and lipoproteins.

Methods

Anonymous mailed dietary knowledge surveys to 6000 randomly selected physicians in the United States licensed in either Internal Medicine or Cardiology.

Results

Response rate: 16% (n = 639). Half of the physicians did not know that canola oil and 26% did not know olive oil were good sources of monounsaturated fat. Ninety-three percent (84% of cardiologists vs. 96% of internists; $p < 0.001$) did not know that a low-fat diet, in general, would increase blood triglycerides. Approximately three-quarters (70% of cardiologists vs. 77% of internists; $p < 0.01$) did not know a low-fat diet would decrease HDL-c and almost half (45%) thought that a low-fat diet would not change HDL-c.

Conclusions

Nutrition Journal
Volume 2

Viewing options:
- Abstract
- Full text
- PDF (194KB)

Associated material:
- Readers' comments
- Pre-publication history
- PubMed record

Related literature:
- Articles citing this article
  - on BioMed Central
  - on Google Scholar
  - on PubMed Central
- Other articles by authors
  - on Google Scholar
    - Flynn M
    - Sciamanna C
    - Vigilante K
  - on PubMed
    - Flynn M
    - Sciamanna C
    - Vigilante K
- Related articles/pages
  - on Google
  - on Google Scholar
  - on PubMed

Tools:
- Download references
- Download XML
- Email to a friend
- Order reprints
- Post a comment
- Sign up for article alerts

Post to:
- Citeulike
- Connotea
- Del.icio.us
- Digg
- Facebook

If physicians are to implement dietary and cholesterol management guidelines, they will likely need to become more knowledgeable about nutrition.

Background

Diet modification is recommended by the Third Report of the National Cholesterol Education Program (ATP3) as the initial treatment to lower blood cholesterol [1]. It is the physician's responsibility, according the ATP3, to encourage patients with elevated cholesterol to initiate a Therapeutic Lifestyle Changes Diet (TLC). The TLC diet recommends a range for the percent of calories from various sources including saturated fat (<7), total fat (25–35), and carbohydrate (50–60) [1]. Physicians' ability to effectively counsel patients to adopt a TLC diet, however, has never been examined. One of the major changes to ATP3 (v. ATP2) is to advocate lowering triglycerides, as a secondary target to lowering LDL, for persons with triglycerides (TG) >200 mg/dl. In this study, we set out to examine physician's understanding of basic nutritional physiology underlying recommendations in the TLC diet, particularly those recommendations specific to triglycerides, as triglycerides are a new prevention treatment target.

Methods

A random sampling mailing list of 6000 physicians licensed in the United States stratified to include physicians licensed in either Internal Medicine or Cardiology was purchased from Buckley Dement (Ridgewood, NJ) in April 1998. A brief questionnaire, nine items total, was sent to a random sample of 4000 physicians from the purchased list. Questions were designed by two of the authors (MF, KV), a Ph.D. nutritionist and a physician, respectively. The four survey items examined in this analysis are listed in Table 1. The remaining 5 items were based on dietary recommendation strategies that are no longer consistent with the ATP3, so they are not reported here. A cover letter indicated that the survey was anonymous and a postage paid return envelope was provided. Physicians who did not respond were not sent a second survey. Physicians were not paid for completing the survey.

Table 1. The response to dietary knowledge questions for the total group (A: n = 639), Cardiologists only (B: n = 120) and General Internists only (C: n = 517).

Descriptive statistics are reported as percentages using whole numbers. The Chi-squared test was used to evaluate differences between cardiologists and internists. Significance was set at 0.05. All data were analyzed with SPSS, version 4.1.

Results

A total of 639 surveys were returned (16% response rate). Sixty-six percent were internists (n = 419), 19% were cardiologists (n = 120), 7% identified themselves as "other" and 8% did not indicate a specialty. The responses to these questions are in Table 1 for the total group and by cardiologist and general internist. Half of all those responding did not know that canola oil and 26% did not know olive oil were good sources of monounsaturated fat. Thirty percent mistakenly thought safflower, a highly polyunsaturated fat oil, was a good source of monounsaturated fat. Ninety-three percent (84% of cardiologists vs. 96% of internists; $p < 0.001$) did not know that a low-fat diet, in general, would increase blood triglycerides. Approximately three-quarters (70% of cardiologists vs. 77% of internists; $p < 0.01$) did not know a low-fat diet would decrease HDL-c and almost half (45%) thought that a low-fat diet would not change HDL-c. About one-half (47%) (22% of cardiologists vs. 53% of internists; $p < 0.001$) did not know carbohydrate was the diet component most likely to raise triglycerides.

Discussion

The main finding in this study was that physicians might be lacking adequate nutrition knowledge to counsel their patients accurately about TLC diets, a diet recommended for all patients with high blood cholesterol [1]. Physicians showed a poor understanding of the effects of changing the

relative intake of carbohydrates and fats on triglycerides and HDL. Only half of physicians identified canola oil as a good source of monounsaturated fatty acids and few physicians understood the relationship of changes in dietary fat with either triglycerides or HDL levels. On average, cardiologists in our study had a better understanding of nutrition than general internists, which we expected given their additional training and the fact that cardiologists often receive referrals to manage elevated cholesterol levels.

Physicians note many barriers to counseling their patients about making health behavior changes [2]. These findings agree with Kushner and colleagues, who found that primary care physicians often note a lack of knowledge, in addition to a lack of time and physician confidence, as main barriers to diet counseling [2]. This is also in keeping with a U.S. Public Health Service study noting that physicians are "woefully undertrained in nutrition" [3]. Additional training may well be an important component, as cardiologists in our sample had a much better understanding of the effects of dietary changes on triglycerides and HDL than their general internist counterparts.

Our findings have several noteworthy limitations. First, the response rate of 16% raises the possibility of a significant response bias among physicians responding to the survey. As we did not evaluate a sample of non-responders to examine differences between responders and those who did not respond, the possibility of non-response bias remains. We believe, however, that this risk is minimal. As the survey was clearly to measure nutrition knowledge, we presume that biases inherent in a physicians desire to be knowledgeable about medical issues would increase the likelihood that the responding physicians were more knowledgeable about nutrition. No studies to our knowledge have attempted to measure nutrition knowledge of practicing physicians, so it is impossible to examine the comparative validity of these findings. Other studies are needed to understand whether or not these findings generalize to other groups of physicians (e.g., family physicians) or to other nutritional issues (e.g. dietary fiber).

Second, we did not examine other aspects (e.g., sources of dietary fiber) of a physicians' nutrition knowledge. The rationale for the study grew out of conversations with physicians and a continuing education seminar by one of the investigators (MF) for physicians, which identified a lack of understanding of the dietary aspects of cholesterol management. There are many other aspects of nutrition in medical practice and it is possible, though unlikely, that physicians have an excellent knowledge in these other areas.

Third, the term "low fat" was not defined, so it is left open to interpretation, which may not have been consistent across physicians. We chose not to define the term because, as it is frequently used without being defined, we wanted to assess the response of physicians using their working definitions of low fat diets and not impose a definition. This is in keeping with standard practice as a study of over 6000 adults with hypercholesterolemia revealed that 65% had been instructed by a physician to follow a "low-fat diet" without further defining the term [4].

Physicians showed a poor understanding of the effect of common dietary modifications used in TLC diets. Given the level of importance assigned to lifestyle changes in the TLC diet from the ATP3 report, it may prove more useful to develop counseling services from allied health care providers [3]. This is the standard of care for patients with diabetes, as the American Diabetes Association recommends yearly counseling with a nutritionist for all patients with diabetes [5]. Enhancing physician training about nutrition, in medical school, residency and beyond, may also be a reasonable approach, though modifying medical student curricula and changing physician practice are both important but notoriously resistant to change [6].

While recommendations have been made to increase nutrition counseling by physicians, physicians may not be receiving adequate training in nutrition. The National Nutrition Monitoring and Related Research Act of 1990, recommended "that students enrolled in United States medical schools and physicians practicing in the United States have access to adequate training in the field of nutrition and its relation to human health" [7], yet the number of medical schools that require, or even offer courses in nutrition was declining as of 1994 [8].

Conclusions

As physicians are viewed as reliable sources of information, including nutrition, and their nutrition counseling responsibilities have greatly increased in the ATP's TLC diet, it is imperative that physicians become more knowledgeable about nutrition.

List of abbreviations

HDL: High Density Lipoprotein

LDL: Low Density Lipoprotein

TG: Triglycerides

ATP3: Third Report of the National Cholesterol Education Program

TLC: Therapeutic Lifestyle Changes Diet

Authors' contributions

Mary Flynn: Study design, data collection, data analysis, manuscript preparation

Christopher Sciamanna: data analysis, manuscript preparation

Kevin Vigilante: Study design, data collection, data analysis, manuscript preparation

Acknowledgements

This study was funded in part by a grant from the Rhode Island Foundation

References

1. Executive Summary of The Third Report of The National Cholesterol Education Program (NCEP) Expert Panel on Detection, Evaluation, And Treatment of High Blood Cholesterol In Adults (Adult Treatment Panel III)
Jama 2001, 285:2486-2497. PubMed Abstract | Publisher Full Text

2. Kushner RF: Barriers to providing nutrition counseling by physicians: a survey of primary care practitioners [see comments].
Preventive Medicine 1995, 24:546-552. PubMed Abstract | Publisher Full Text

3. Bruer RA, Schmidt RE, Davis H: Nutrition counseling--should physicians guide their patients?
American Journal of Preventive Medicine 1994, 10:308-311. PubMed Abstract | Publisher Full Text

4. Pieper RM, Arnett DK, McGovern PG, Shahar E, Blackburn H, Luepker RV: Trends in cholesterol knowledge and screening and hypercholesterolemia awareness and treatment, 1980-1992. The Minnesota Heart Survey.
Arch Intern Med 1997, 157:2326-2332. PubMed Abstract | Publisher Full Text

5. Association American Diabetes: Standards of medical Care for Patients with Diabetes Mellitus.
Diabetes Care 2000, 23:1514-1522.

6. Ockene JK, Zapka JG: Provider education to promote implementation of clinical practice guidelines.
Chest 2000, 118:33S-39S. PubMed Abstract | Publisher Full Text

7. Congress US: National Nutriiton Monitoring and Related Research Act of 1990, Public Law 101-445.
Washington, DC, U.S. Congress 1990.

8. Position of the American Dietetic Association: nutrition--an essential of medical

education
J Am Diet Assoc 1994, 94:555-557. PubMed Abstract | Publisher Full Text