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The personal nutrition–related attitudes and behaviors of Australian optometrists: Is there evidence for an evidence-based approach?

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ABSTRACT

Objective: The aim of this study was to investigate the personal nutrition–related attitudes and behaviors of Australian optometrists and, in particular, their understanding of the evidence relating to the merit of specific dietary supplements, as applicable to their own health.
Methods: An online survey was distributed to optometrists registered in Australia (N = 4242). Respondents anonymously provided information regarding their demographic characteristics (age, sex, practice location and modality), diet and lifestyle behaviors (assessment of self-perceived diet quality, smoking status), and nutritional supplement intake (including the rationale for consumption).
Results: Completed surveys were received from 283 practitioners. Although most respondents considered themselves to eat a healthy, balanced diet, approximately 75% indicated taking nutritional supplements in the preceding year. The four most common supplements were fish oil/ω-3 (62%), multivitamins (54%), vitamin C (30%), and vitamin D (29%). In addition to vitamin D, which was typically recommended by a general medical practitioner for an established deficiency, the other three supplement categories were consumed on the basis of the respondents' self-assessment and decision. Analyses of the motivations for taking these supplements highlighted a significant misunderstanding of the evidence; furthermore, these practitioners appeared to base their personal behaviors on this misinterpretation.
Conclusions: These findings demonstrate scope for optometrists to enhance their critical thinking and/or understanding of the available evidence relating to the merit, or otherwise, of nutritional supplementation in managing their own health, and more broadly, improving their understanding of what a healthy diet is and its role in eye health.

Introduction

Good nutrition is fundamental to maintaining health and preventing disease. It follows that inadequate nutrition can contribute to a range of potentially serious health problems, including immunodeficiency, increased susceptibility to infection, delayed wound healing, and impaired development [1]. Nutrition is recognized to encompass both whole foods and dietary supplements. The Australian Dietary Guidelines (2013) make recommendations based on whole foods [2]. Similarly, the Dietary Guidelines for Americans, which are the basis for federal food and nutrition policy in the United States, specify that nutritional needs should be ideally achieved primarily from food [3]. Because dietary supplements cannot replicate the spectrum

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of nutrients that can be obtained from whole foods, they are not recommended to act as food substitutes [4]. In recent years there has been an exponential increase in the use of nutritional supplements in developed countries [5]. It has been estimated that in the United States alone, consumers spend >$30 billion/y on dietary supplements [5].

In some cases, nutritional supplementation has been shown to be an effective means of addressing major public health issues. For example, vitamin A deficiency is a leading cause of blindness in undernourished children [6] in Africa and Southeast Asia [7]. Vitamin A supplementation in children >6 mo of age is recognized to contribute substantially to reducing childhood morbidity in developing countries [8–10]. A further relevant illustration is the mandatory inclusion of folic acid into wheat flour for bread-making purposes in a number of countries. Periconceptional folate significantly reduces the incident risk for fetal neural tube defects [11,12]. International guidelines recommend that women consume 400 μg/d of folic acid, at least 1 mo before conception and during the first 3 mo of pregnancy [13]. However, in 1996, in recognition of the potential both for unplanned pregnancy and limited compliance with taking nutritional supplements [14], Food Standards Australia and New Zealand introduced voluntary folic acid fortification of food. The initiative resulted in a 26% reduction in the incidence of neural tube deficits [15]; mandatory incorporation of folic acid into bread-making flour was instituted in Australia in 2009 [16]. Also in 1996, the FDA required that folic acid be used to fortify specific flour, breads, and other grains, which was expanded to include other products using enriched flour and made mandatory in 1998.

The consumption of nutritional supplements is becoming increasingly prevalent among adults in developed countries [17]. In 2007, the Council for Responsible Nutrition reported that more than two-thirds of adults in the United States indicated using dietary supplements [18]; similar trends have been described in other geographic regions, including Australia [19]. Nutritional supplements, being popular and easily accessible, are regulated differently than therapeutic goods. Products containing vitamins and minerals are categorized as "Complementary and Alternative Medicines" by the FDA and the Therapeutic Goods Administration; this classification extends certain freedoms with regard to the claims that can be made in relation to their health benefits. Although scheduled medicines must undergo rigorous scientific and quality assurance testing (including appropriately powered, randomized controlled clinical trials) before being FDA-approved for human use, it is considered the responsibility of the manufacturer to confirm the safety of nutritional products before marketing. The FDA does, however, reserve the right to remove a product from the market should evidence of harm be demonstrated, as was the case for dietary supplements containing ephedra [20].

The relative merit of nutritional supplementation for well-nourished adults has recently undergone considerable scrutiny from prominent commentators in the field [21]. This sentiment from experts has, at least in part, been driven by a common, inaccurate public perception that dietary supplements are both inherently safe and effective [5]. Strong evidence exists for significant health risks with the consumption of certain nutritional supplements in patient subpopulations [5,21]. Conversely, the claimed benefits of many nutritional supplements often are not supported by data arising from high-quality clinical trials. For instance, in the context of eye disease, observational research has highlighted the potential beneficial effects of higher dietary intakes of the retinal carotenoids, lutein and zeaxanthin, for lowering the overall risk for developing late age–related macular degeneration (AMD) [22]. Despite these promising findings, and considerable clinical interest in the potential role of lutein and zeaxanthin supplementation for treatment of AMD, there is a paucity of high-level, high-quality evidence to support their effectiveness in this context [23,24]. Indeed, there is some evidence of no benefit (AREDS2 [Age-Related Eye Disease Study 2]) in subpopulations with an "adequate" diet [25].

In the clinical domain, patients highly regard the recommendations provided by their health care providers in relation to nutrition [26]. Previous research has shown that physicians' personal health habits are a valuable predictor of their patient counseling practices [27]. Although several studies have evaluated the personal dietary behaviors of primary care physicians [27–29], there are no previous studies that have investigated such practices for clinical optometrists, being the major professional providers of primary eye care. The aim of this study was to investigate the personal nutrition–related attitudes and behaviors of Australian optometrists, and in particular their understanding of the evidence relating to the merit of specific dietary supplements, to assess the consistency in adherence to evidence-based practices in the management of their own health. The relative compliance of practitioners' personal behaviors with current research evidence thereby provides insight into a potential driver for clinicians to prescribe nutritional supplements to their patients.

Materials and methods

Participants

In November 2013, an Internet-based questionnaire was distributed via email to 4242 optometrists who were members of the Optometrists' Association Australia (OAA); membership in the OAA is held by >90% of practicing optometrists in Australia. The questionnaire, which was developed and pilot tested by the authors, assessed the personal nutrition–related attitudes and behaviors by practitioners (analyses of these findings are presented in this study) and the recommendations made by practitioners to their patients in relation to nutrition and nutritional supplements. The study received appropriate approvals from the University of Melbourne Human Research Ethics Committee (HREC no. 1340765). At the beginning of the survey, written information was provided to potential participants indicating that their electronic submission of the survey implied their consent to participate in this research project. Participants were assured that all responses were anonymous and that confidentiality would be strictly maintained.

Survey design

The survey consisted of 45 questions that were administered electronically through SurveyMonkey. Questions were presented in sequence, with respondents forced to proceed through the survey without the ability to review or alter previous responses. Three primary areas of personal nutrition–related practices were investigated: practitioner demographic characteristics, lifestyle behaviors and diet, and nutritional supplement intake. The questions that were surveyed in each section are summarized in Table 1.

Data analyses

Statistical analyses were conducted using IBM SPSS Statistics (Version 21.0, SPSS, Armonk, NY, USA). Graphical plots were produced using SigmaPlot (Version 8.02, SPSS, San Jose, CA, USA). Descriptive statistics were used to analyze practitioner demographic characteristics, lifestyle behaviors and diet, and nutritional supplement intake. Data relating to expenditures on beauty and nutritional products are presented as mean ± SEM, with range values detailed where appropriate. A χ^2 test was used to compare data consisting of proportions of respondents. Unpaired t tests were used to compare quantitative data between groups; $\alpha = 0.05$ was adopted for statistical significance.

Results

Participant demographic characteristics

In all, 379 optometrists responded to the survey (response rate, 8.9%) over a 2-wk period, beginning November 4, 2013. Only