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Gina H. Blunt  
*Morehead State University*

Kristi M. King  
*University of Louisville*

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# Health and Fitness Professionals' Knowledge, Attitudes, and Behaviors toward Dietary Supplements

Gina H. Blunt, PhD Morehead State University  
Kristi M. King, PhD University of Louisville



Dietary supplements are used at increasing rates in the US and it is estimated that over half of the population is using at least one supplement regularly (Thompson & Newton, 2005). Motivations to use dietary supplements are complex and can reflect social, psychological, knowledge-based, and economic factors. They can be related to improving health or reducing disease or risk of disease, enhancing athletic or sexual performance, or improving appearance. In some cases, individuals do not know exactly why they are using a particular supplement as use may be socially influenced by a friend or family member or part of a cultural norm (Dwyer, 2008).

Dietary supplements are defined by the 1994 Dietary Supplement Health and Education Act (DSHEA) as: "a product (other than tobacco) intended to supplement the diet that bears or contains one or more of the following ingredients: a vitamin, a mineral, an herb or other botanical, an amino acid, a dietary substance for use by man to supplement the diet by increasing the total daily intake, or a concentrate, metabolite, constituent, extract, or combinations of these ingredients". Furthermore, dietary supplements "are intended for ingestion in pill, capsule, or liquid form, cannot be represented for use as a conventional food or as the sole item of a meal or diet, and must be labeled as a 'dietary supplement'" (USFDA, 2010). These definitions of dietary supplements have produced

a broad spectrum of products on the market. Recent reports estimate that 27,000 dietary supplement products are currently available with sales exceeding over 20 billion dollars a year (Radimer, et al., 2004). With a growing industry, it becomes difficult for consumers to stay informed of the newest products and current research.

Most consumers of dietary supplements assume supplements to be safe since they are readily available at almost any local market or drugstore, and contain "natural" ingredients. However, since supplements are not strictly regulated by the Food and Drug Administration (FDA), product safety and efficacy are growing concerns. Dietary supplements may contain powerful chemicals, much like prescription drugs, although they are available without a prescription. Furthermore, dietary supplement manufacturers are not mandated to conduct rigorous testing prior to being marketed and released to consumers. Although research and efficacy on common supplements such as vitamins and minerals are well known, other products such as herbal remedies and performance enhancement products remain obscure and supporting research is sparse or methodologically poor. Even seemingly "harmless" supplements such as vitamins and minerals can be harmful if taken in excessive doses (Murphy, White, Park, & Sharma, 2007). Other precautions surrounding dietary supplements include

quality, contamination, fraud, interactions with other supplements and drugs, and consumer misuse (Coates, 2008).

Dietary supplements that are marketed as a way to enhance performance and appearance, improve health, and reduce the risk of illness and injury recovery time brings the health and fitness professional to the forefront as a potential leader in supplement information. Malinauskas, Overton, Carraway, and Cash (2007) examined college athletes' primary sources of dietary supplement knowledge and found that a majority of the athletes solicited information from their athletic trainers and strength coaches. Athletes also reported reliance on information from physicians and strength coaches but to a lesser degree.. Another study conducted with adolescent males indicated that physical education teachers, coaches, and health professionals were among the sources identified when asked where they derived their weight gain information, which included dietary supplementation (O'Dea & Rawstorne, 2003). Based on these findings, health and fitness professionals are in a prime position to educate the public on issues surrounding supplement use. Clients of personal trainers and health educators, and athletes working with coaches or physical educators can benefit from the knowledge of the dietary supplement industry and the dangers of misuse.

It is well known that some health

Dr. Gina Blunt is an Assistant Professor in the Department of Health, Wellness, and Human Performance at Morehead State University, Morehead KY

Dr. Kristi King is an Assistant Professor in the Department of Health and Sport Sciences at the University of Louisville, Louisville, KY.

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and fitness professionals recommend, prescribe, and in some cases sell dietary supplements. However, there is a lack of research on the health and fitness professional's attitude toward different types of supplements, knowledge of the supplement industry, and patterns of prescription to clients and personal usage. Therefore, the purpose of the current study was to examine health and fitness professionals' dietary supplement knowledge, attitudes, and behaviors.

## Methods

This research was conducted during a state-wide health and fitness conference. Human Subjects approval was obtained prior to implementing the study. The cross-sectional, descriptive research design study utilized surveys and discussions to collect qualitative and quantitative data. A convenience sample of health and fitness professionals who attended a session regarding dietary supplement usage were recruited for inclusion in this study. Participants were given a cover letter explaining the purpose and protocol of the study, as well as an informed consent form. Only participants who signed the informed consent form participated in the study. Participation was strictly voluntary and no incentive was given for participation.

Prior to the start of the dietary supplements conference session, participants completed a questionnaire developed by the researchers. The variables measured were gender, average nutrient adequacy, personal diet adequacy, perceived and actual dietary supplement safety knowledge, dietary supplement recommendation, personal dietary supplement use, and profes-

sional opinions. Additional qualitative data was collected during the session discussion.

## Results

The following results indicate health and fitness professionals' (n = 13; 8 male and 5 female) dietary supplements knowledge, attitudes, and behaviors. Both quantitative and qualitative data are reported.

### Knowledge

When asked to rate their perceived knowledge of dietary supplements one-third felt "not knowledgeable" and two-thirds felt "knowledgeable." None of the participants felt "very knowledgeable," which was the highest rating for the 4-point scale.

Four of the 13 participants answered correctly that the "manufacturer" of the dietary supplement is "responsible for ensuring that a dietary supplement is safe for consumers before it hits the supermarket shelf." The nine participants who answered the question incorrectly indicated that they thought that the Food and Drug Administration (FDA) or the Federal Trade Commission (FTC) were responsible for ensuring the supplements' safety. One participant stated that "clients and patients are interested and inquisitive and will look to us for answers!" regarding the safety of dietary supplements. Another participant felt that physical educators, coaches, health education professionals, or personal trainers "should not" prescribe dietary supplements."

### Attitudes

The majority of participants indicated that they do NOT "think the average American's diet received adequate vitamins and nutrients necessary for optimal function" (n = 12;

92.3%); whereas two-thirds of the participants felt that their own diets were adequate for optimal function (n = 8; 66.7%). One participant stated that people should understand that "eating right can do the same thing" as using dietary supplements.

### Behaviors

Health and fitness professionals' behaviors regarding dietary supplement recommendation and usage are depicted in Figures 1 and 2. Three of the 13 participants "have never recommended" dietary supplements to a client/student/friend. Sports/nutrition supplements (n = 11), energy boosters (n = 8), meal replacement supplements (n = 7), and performance enhancers (n = 6) were the four most frequently taken supplements by participants. Vitamins/minerals (n = 7), sports/nutrition supplements (n = 7), and amino acids/protein supplements (n = 5) were the next 3 most frequently recommended supplements. All (n = 13) of the participants had taken a vitamin and/or mineral at some point.

Qualitative data from one participant stated that people "don't have to take anything [dietary supplements] with an adequate diet." However this same individual also stated that he/she consumed "protein powder to supplement my diet/provide for my active lifestyle and a multivitamin, just in case."

## Discussion

Health and physical educators, personal trainers, and coaches are often viewed as experts in the health and fitness fields. With this perception comes a professional responsibility to provide accurate information to clients, students, or friends regarding

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supplementation. The wide range of products, questions regarding supplement safety, and unknown interaction effects with other medications make it difficult for the health and fitness professional to have the in-depth knowledge required to prescribe dietary supplements. In the current study, the majority of health and fitness professionals believed that they were not qualified to prescribe dietary supplements to their clients, students, or friends although two-thirds of the subjects felt “knowledgeable” about dietary supplements. When asked who was qualified to prescribe supplements, answers ranged from medical professionals to a variety of “qualified” wellness specialists. It is unclear if the type of supplement or purpose for taking the supplement would dictate who the professional deems qualified to recommend/prescribe it. As a health and fitness professional, it is important to have resources on hand for clients and a list of appropriate referrals for those who are seeking dietary supplement use.

When assessing knowledge of the professionals, a majority did not know how supplements were regulated and who was responsible for the dietary supplement testing and safety. This view may be similar to that of the general population. This view perpetuates the misguided assumption that supplements are tightly regulated and “proven” to be safe prior to being marketed and distributed. Clients can benefit not only from knowledge of individual dietary supplements but also from understanding the framework by which dietary supplements are researched and brought to the supermarket shelves. A better understanding of

this process may encourage clients to take further precautions, such as consulting with their healthcare providers, prior to deciding to take a particular dietary supplement.

The majority of professionals in this study believed that the average American did not receive adequate nutrients for proper functioning however, two-thirds felt that their own diets were adequate. Even though the majority of professionals felt they were receiving proper nutrients, all responded that they have taken a dietary supplement at some point. This shows a possible disconnect between professionals’ attitude and behavior. Another possible explanation could involve when the supplements were taken. The current study did not discern between past and current usage, therefore dietary supplement usage may have occurred in the past.

Based on the current study and a review of the literature, the authors have outlined several guidelines for the health and fitness professional to consider when working with clients and dietary supplements.

1. Know and respect your profession’s scope of practice. Scope of practice refers to providing services within a profession based on education, experience, and competency. In the case of professions such as health educators and personal trainers, it is sometimes difficult to discern where your role stops and where the role of a licensed healthcare provider begins. The American College of Sports Medicine (ACSM) and American Dietetic Association (ADA) recently adopted a joint position statement after a careful review of the safety, efficacy, and prescription of dietary supplements

regarding nutrition and athletic performance (ACSM et al., 2009). The experts recommend that “a qualified sports dietitian and, in particular, the Board Certified Specialist in Sports Dietetics in the United States, should provide individualized nutrition direction and advice after a comprehensive nutrition assessment.” In cases where dietary supplements are sought for disease prevention or treatment, a qualified physician can counsel the client on benefits and risks of supplements versus conventional medicines, interactions of supplements with other drugs, and recommendations based on the patient’s overall condition and health status.

2. Avoid prescribing, selling, or recommending supplements to clients. Although health and fitness professionals work with clients regarding general nutrition and weight management issues, there is potential liability for unauthorized medical practice that would normally be provided by a physician or registered dietitian. Consequences of unauthorized medical practice vary by state and potential lawsuits may be brought against fitness and health professionals with respect to prescribing or selling dietary supplements. If you suspect a client would benefit from dietary supplements, develop a list of referrals to physicians and registered dietitians properly trained to assess need and prescribe appropriate supplementation.

3. Educate yourself to become a resource for clients who do decide to take supplements. You can consult with a dietitian, physician or take continuing education classes on nutritional supplements. Avoid obtaining all of

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your information from non-scientific sources such as popular magazines or non-credible internet sources. Instead, consult peer-reviewed journals and avoid reviewing research only provided by the manufacturer of the supplement.

4. Encourage your clients to become well informed consumers. Educate your clients on the hazards of misuse, drug interactions, contamination, fraud, and other important supplement issues. Provide them with appropriate resources such as websites from the FDA and Federal Trade Commission (FTC) that are designed to educate consumers. The FDA site <http://www.fda.gov/food/DietarySupplements/default.html> provides information on making informed decisions and evaluating the need for supplementation, how to report an adverse event, and information on how supplements are regulated. The FTC provides information on health fraud and current lawsuits on common dietary supplements at <http://www.ftc.gov/bcp/menus/consumer/health/drugs.html>.

This study had several unique strengths and limitations. One methodological strength that this study encompassed was the variety of health and fitness professionals that were represented in the sample. These include health and physical educators, personal trainers, coaches, and college professors who serve students, athletes, professionals in training, and the general population. Limitations of the study included the sample size and questionnaire reliability and validity. The small convenience sample was comprised of individuals from a limited geographic region recruited from a state health and fitness conference. Furthermore, there was

the potential that subjects self-selected into the study based on their attendance in a dietary supplement workshop. Participants who took an interest in the workshop topic may have had specific biases related to dietary supplements that were different from professionals who did not attend. The questionnaire was self-report which inherently presents problems with subjects' recall and misrepresentation. The survey questions were not validated by the researchers and general categories of supplements were collected instead of specific products taken or recommended to clients limiting the analysis of the data. Future research should include assessing knowledge, attitudes, and behaviors toward specific products in each of the broad categories (i.e. type of vitamin/mineral, protein powder, herbal/botanical), determining use of referral systems, and should include a larger sample from a more diverse geographic area.

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Figure 1. Number of health and fitness professionals who “recommended that a client/student/friend take any of these items.”

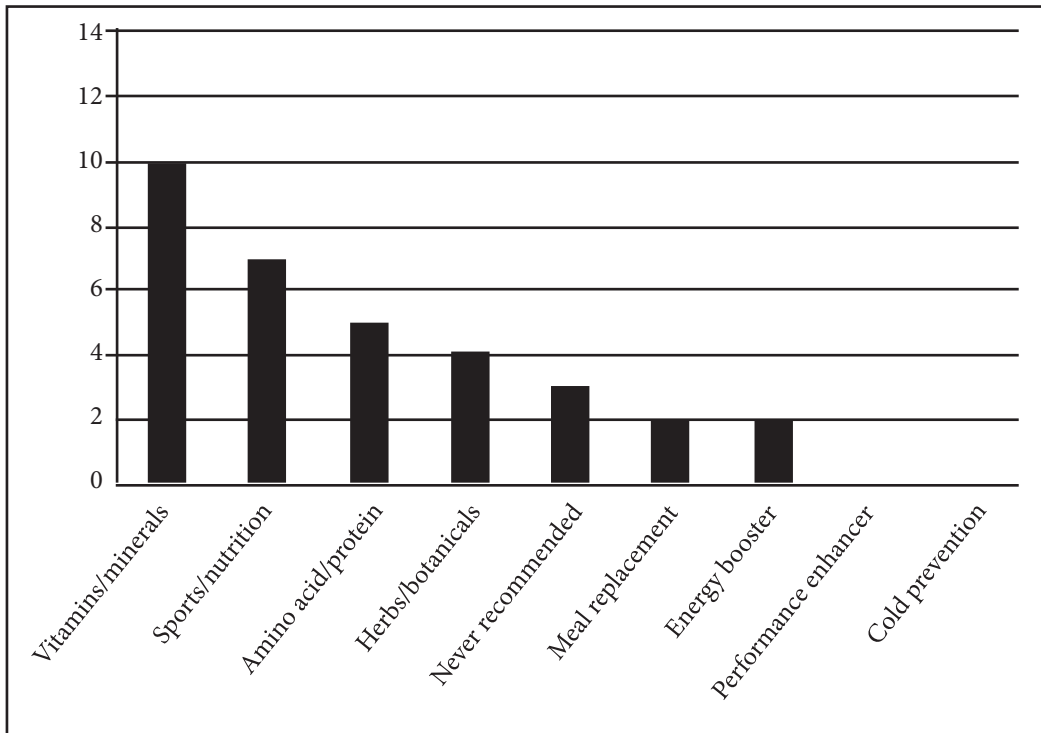


Figure 2. Number of health and fitness professionals who “have ever taken any of these items.”

