

BACKGROUND

Dietary supplements are used by the majority of U.S. adults, according to national surveys, including the National Health and Nutrition Examination Survey (NHANES) 1999-2000. [1] Dietary surveys routinely show that population intakes of some vitamins and minerals are inadequate, and shortfall nutrients are specifically recognized in the *Dietary Guidelines for Americans*. [2] Supplemental intakes of some specific nutrients are recommended for some population groups not only in the *Dietary Guidelines* but also in some of the reports of the Institute of Medicine relating to Dietary Reference Intakes. [3]

Some medical and nutrition experts have indicated that it would be prudent for adults to consume a daily multivitamin and perhaps additional amounts of some specific nutrients, in order to ensure adequate intakes and potentially help protect against some chronic diseases. [4,5] Increased intakes of calcium and vitamin D can help ensure bone health and reduce the risk of osteoporosis, and vitamin D is associated with protection against other conditions as well. [6,7] Supplemental intakes of other compounds such as the omega-3 fatty acids EPA and DHA have also been shown to have benefits for cardiovascular health and cognitive function and are currently being investigated in a large-scale government-sponsored clinical trial assessing their effect on the progression of eye disease. [8] Specialty supplements such as glucosamine and chondroitin sulfate have been shown to improve joint health, and a variety of botanical products have functional and health benefits. [9,10]

Health professionals including physicians and nurses are just as interested in healthy lifestyles as members of the general public and are just as likely to benefit from rational supplementation. There have been relatively few reported surveys of health professionals' use of dietary supplements, but the available surveys suggest that health professionals are as likely as other members of the public to use dietary supplements. [11-17]

We report results of a survey regarding the use of dietary supplements by physicians and nurses, and the extent to which they recommend dietary supplements to their patients.

METHODS

The Council for Responsible Nutrition (CRN), a trade association representing the dietary supplement industry, contracted with Ipsos Public Affairs in 2007 to conduct the "Life...supplemented" Healthcare Professionals Impact Study (HCP Impact Study), intended as the first of a series of surveys of health professionals regarding their dietary supplement use and whether they recommend dietary supplements to patients. "Life...supplemented" is a consumer wellness initiative funded by a number of CRN member companies. [18]

The survey questionnaire was administered online October 2-11, 2007 to 900 physicians and 277 nurses. The 900 physicians surveyed included 300 primary care physicians (PCP), 301 obstetricians/gynecologists (Ob/Gyn) and 299 other specialists (excluding pediatricians). The results for physicians were weighted to reflect the actual

proportions of PCPs, Ob/Gyns and other specialists among all active physicians practicing in the United States as reported by the American Medical Association.

A total of 8,768 physicians and 3,028 nurses who are members of the All Global online panel were contacted and invited to take part in the survey. The All Global online panel is comprised of physicians, nurses and other healthcare professionals recruited by telephone to serve on a panel designed and used exclusively for market research studies.

[19] Qualifications for participation in the current survey included: being a physician practicing any medical specialty except pediatrics; being a registered nurse or nurse practitioner; working primarily in an outpatient practice; seeing patients in their office each week; and not being affiliated with an advertising agency or public relations agency in the health care area, a medical education company, a market research company, a pharmaceutical company, or a dietary supplement company.

A total of 1,378 physicians and 483 nurses accessed the survey. Nine hundred physicians and 277 nurses met all qualifying requirements and fully completed the survey. As an incentive to participate in the survey, healthcare professionals were offered a small honorarium. The honorarium amount (ranging from \$25 to \$50) and the response rates of 16% for both physicians and nurses are well within the norms for online surveys among healthcare professionals.

In the survey instrument, dietary supplements were defined to include vitamins, minerals, herbals, botanicals or sports nutrition or specialty supplements. Respondents who said they used dietary supplements were asked if their use was regular, occasional, or seasonal. Occasional use was defined as taking supplements “throughout the year

when I think of it or when the need arises.” Seasonal use was defined as “taking them only during part of the year such as during the cold/flu season or allergy season.”

[14]RESULTS[j5]

Most of the physician respondents to the survey were male (83%), while most of the nurse respondents were female (94%). Of the physicians, 72% were in the age range of 40 to 59, as were 69% of the nurses.

The survey found that 72% of physicians and 89% of nurses used dietary supplements, when regular, occasional, and seasonal users are all included. Regular[a6] use of dietary supplements was reported by 51% of physicians and 59% of nurses; occasional use by 19% and 27% respectively; and seasonal use by 2% and 3% respectively. Fourteen percent of physicians and 8% of nurses said they [a7]had taken supplements in the past but no longer considered themselves supplement users; only 14% of physicians and 3% of nurses said they had never taken dietary supplements. For a summary of the main results, see **Table 1**.

The dietary supplement product most commonly used was the multivitamin, with or without minerals. In our survey, 87% of physicians and 86% of nurses who used dietary supplements (regularly, occasionally, or seasonally) said they used a multivitamin, and many also used additional products. Among physicians, 51% said they were *regular* supplement users. This included 27% who said they regularly used a variety of dietary supplements and 24% who said they typically used only a multivitamin on a regular basis. Among nurses, 59% said they were regular supplement users. This

included 32% who regularly used a variety of dietary supplements and 27% who typically used only a multivitamin on a regular basis.

Vitamins and minerals most commonly used, after multivitamins, included vitamin C, B complex, vitamin D, vitamin E, and calcium. The non-vitamin/mineral products most often used by physicians were green tea, fish oil, glucosamine, soy, flax seed, and chondroitin^[18]. The non-vitamin/mineral products most often used by nurses were green tea, fish oil, echinacea, glucosamine, and flax seed.

The most common reason why physicians and nurses in this survey said they took supplements was for overall health and wellness (40% of physicians and 48% of nurses), but more than two-thirds cited more than one motivation for using the products. For nurses, most of whom were female, bone health was the next most commonly mentioned motivation (46%). Many^[19] physicians^[a10] as well as nurses also mentioned reasons relating to flu or colds (27% and 43%, respectively), heart health (24% and 22%), immune health (18% and 32%), joint health (22% and 30%), and energy (20% and 29%).

In this survey, healthcare professionals were asked, “Do you ever recommend dietary supplements to patients?” A large proportion of physicians and nurses said they recommended supplements to their patients (79% of physicians and 82% of nurses). Among those who used supplements themselves, the proportion who recommended supplements to their patients was slightly higher (85% of physicians and 84% of nurses). However, even among those who did not use supplements themselves, there was still a high prevalence of recommending supplements to patients (62% of physicians and 67% of nurses).

Most^[j11] physicians and nurses^[a12] said they trusted professional journals (61% in each group) and clinical studies (56% of physicians and 57% of nurses) for reliable information about the dietary supplements they recommended to patients^[113]. Most physicians and nurses indicated they had not received any formal education or training on the subject of dietary supplements, but 75% ^[114]of physicians and 79%^[115] of nurses indicated they would be interested in Continuing Medical Education regarding these products.

DISCUSSION

The level of usage of dietary supplements by physicians and nurses reported in this survey is similar to the level of usage reported in some surveys of the general population. However, the reported level of usage in the general population is not consistent across surveys, in part because the exact nature of the question asked varies among surveys. Some surveys inquire about use within a short period of time such as the past two weeks or month, some ask about use within the past year, and some pose a general question about supplement use without specifying a time period. The first of these approaches will capture primarily regular users as well as some occasional users, while the last approach will capture virtually all supplement users. Some surveys inquire only about vitamin/mineral supplement use and some cover a broader range of dietary supplements.

The HCP Impact Study asked whether respondents took dietary supplements regularly, occasionally, seasonally, in the past, or never. The question was not limited to vitamin/mineral supplements, but included all types of dietary supplements. The

prevalence of *regular* dietary supplement use among physicians and nurses (51% and 59%, respectively) was not dissimilar to the prevalence of use reported among adults in NHANES 1999-2000, where 52% of adults surveyed said they had taken supplements in the past month. [1] The NHANES question about usage within the last month captures mostly regular users. In the NHANES 1999-2000 study, the prevalence of supplement usage was higher in subgroups of adults more nearly comparable to the health professionals in the HCP Impact Study, in terms of age and education: usage was 56% among adults in the age range 40 to 60 and 62% among adults with more than a high school education^[a16]. [Table 2]

A 2007 consumer survey conducted for the Council for Responsible Nutrition (CRN Consumer Confidence Survey) also provides information about current dietary supplement use in the general population. [20]. In the CRN survey, 68% of the adult population identified themselves as dietary supplement users (regular, occasional, or seasonal), as compared to 72% of physicians and 89% of nurses in the HCP Impact Study. [Table 2]

Other surveys of dietary supplement use among health professionals have reported levels of usage generally similar to those observed in the HCP Impact Study. A recent survey of medical students found that 50% of male medical students and 63% of female medical students had used a vitamin or mineral dietary supplement in the month prior to the survey. [11] In a survey of women physicians, it was reported that 64% used vitamin or mineral supplements at least occasionally, and 47% of the women used a vitamin or mineral supplement at least 5 days a week. [12] Two surveys of health professionals enrolled in an online course on dietary supplements reported high levels of supplement use (over 80%), perhaps reflecting the interest that led them to enroll in the course. [13, 14] A small convenience sample of pharmacists found that just over half (52.9%) reported taking dietary supplements. [15] Similar levels of dietary supplement use have been reported among directors of dietetic internship programs (53%) and dietetic interns (43%), and among Registered Dietitians [17] in the state of Washington (nearly 60%). [16,17]

There are reports on the use of multivitamins, but not on the overall use of dietary supplements, from several very large and longstanding cohorts of health professionals that have been the subject of many investigations of diet/disease relationships by researchers at Harvard University. In the Nurses' Health Study initiated in 1980 and the Health Professionals Follow-up Study (mostly dentists) initiated in 1986, use of multivitamins was reported by about one-third of participants. [21, 22] An older report on a subset of 2000 nurses in 1979 noted that 38% took multivitamins. [23] These levels of multivitamin use are comparable to that observed in the NHANES 1999-2000 survey,

where 35% of adults in the general population said they had used multivitamin supplements in the past month. A similar but somewhat lower level of use (29%) of multivitamins was reported in a very large (over 80,000) cohort of male physicians who were among those screened in 1982 for possible participation in the Physicians' Health Study [24].

The use of dietary supplements can be viewed as one of several elements of a healthy lifestyle, since it is known that users of dietary supplements also tend to adopt other healthy habits, including control of body weight, engaging in moderate or vigorous physical activity, and not smoking. [1] In some nutrition surveys, users of dietary supplements have been shown to have somewhat higher nutrient intakes from food alone, indicating that they pay more attention to their diets. However, the magnitude of the difference in dietary nutrient intake is small, and the intakes of many users as well as nonusers of dietary supplements fall short of Estimated Average Requirements, let alone Recommended Dietary Allowances or Adequate Intakes, for a number of vitamins and minerals. [25,26]

Respondents to this survey were physicians and nurses who volunteered to serve on a national panel created for the purpose of participating in market research and also volunteered to participate in this particular survey relating to dietary supplements. These respondents therefore could potentially be self-selected to include healthcare professionals with an interest in dietary supplements. However, the similarity between our results and those of other surveys of health professionals provides confidence that this sample is not atypical.

CONCLUSIONS

The HCP Impact Study shows that physicians and nurses are as likely as other members of the adult population to use dietary supplements, and further shows that most physicians and nurses recommend dietary supplements to their patients. Presuming physicians and nurses to be knowledgeable about health-related practices, the prevalence of dietary supplement use among these health professionals provides support for the proposition that such use is rational and has potential for conferring benefit, when approached intelligently.

LIST OF ABBREVIATIONS USED

CRN: Council for Responsible Nutrition

HCP Impact Study: “Life...supplemented” Healthcare Professionals Impact Study

NHANES: National Health and Nutrition Examination Survey

COMPETING INTERESTS

Dickinson is a consultant to the Council for Responsible Nutrition (CRN), and was formerly a VP and President of the association. Shao is a VP of CRN. Boyon is SVP with Ipsos Public Affairs, which conducted the survey for CRN.

AUTHORS' CONTRIBUTIONS

Dickinson prepared the original draft of the article, for subsequent evaluation and elaboration by all of the authors working collaboratively. Boyon participated in the design and administration of the survey, including the data analysis. All of the authors provided meaningful insight regarding the results and implications of the survey findings, in the context of previously reported research, and all approved the final version of the article.

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TABLES AND CAPTIONS

Table 1: Use and recommendation of dietary supplements by physicians and nurses in the HCP Impact Study

	Physicians (n = 900)	Nurses (n = 277)
Percent that use dietary supplements (regularly, occasionally, or seasonally)	72%	89%
Percent <i>regular users</i> of dietary supplements	51%	59%
Recommend dietary supplements to patients	79%	82%

Table 2: Percent supplement users, HCP Impact Study compared to NHANES 1999-2000 and the CRN Consumer Confidence Survey 2007

	HCP Impact Study, Physicians (n = 900)	HCP Impact Study, Nurses (n = 277)	NHANES, 1999-2000, Adults (n = 4,862)	CRN Consumer Confidence Survey, 2007 (n = 2,153)
Percent using supplements, overall (regular, occasional, seasonal)	72%	89%	--	68%
Percent regular users	51%	59%	52% overall; 56% among ages 40 to 60; 62% among those with 12+ years education	52%