

Exploratory survey about dietary supplement use: a hazardous and erratic way to improve one's health?

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Summary

INTRODUCTION: Dietary supplement (DS) use increased rapidly in recent years. However, evidence of benefits of many DSs for healthy users is scarce and may not equate with known risks of overdose, drug interaction and recently discovered negative long-term effects. This exploratory study aimed to investigate the perceptions and motivations of DS users in Lausanne, Switzerland.

METHOD: A convenience sample (n = 147) was recruited at the entrances of local sales points. Data were collected in on-site semistructured interviews that assessed dietary supplementation habits.

RESULTS: The majority of DSs were all-in-one products, containing a mixture of minerals and vitamins, or products containing only minerals. Among the 147 users, 72 (49%) used one all-in-one product and 3 (2%) used two all-in-one products. Thirty-one (21%) consumers did not know for at least one product what the purpose of their DS use was. Seventy-five percent of participants thought that DS use presents no risk or nearly no risk. Only 49% of participants stated that their physicians were informed about their consumption. Although men searched more often for potential risks (p < 0.001), they turned less frequently to health professionals to get this information (p = 0.007).

DISCUSSION: As in other surveys performed elsewhere, our study shows that, in Lausanne (Switzerland), DSs are commonly used as mixed products. Risk perception seems generally low among DS users. Physicians should be trained to evaluate patients' perceived needs and DS consumption in order to provide good evidence-based information or to propose alternatives to DS use.

Keywords: *dietary supplement; risk perception; medication; complementary medicine; sales; Switzerland*

Introduction

In industrialised countries, diet is usually well balanced and contains sufficient nutrients, which is notably linked with the variety of foods available and a significant extension

of enriched food products [1, 2]. In Switzerland, enriched food products doubled between 1996 and 2000, and increased by 30% in the following two years [3]. Nevertheless, dietary supplement (DS) use increased rapidly in recent years [4, 5] and reached a prevalence of 56.5% in the United States general population in 2001 [6], 49% in Italy in 2008 [7] and 26% in Lausanne, Switzerland in 2007 [8]. Although some populations benefit from DS intake [9], excessive intake might have deleterious effects [10].

DS consumers usually have an enhanced nutritional intake and adopt healthier lifestyles than nonconsumers [11–14]. However, recent data showed that DSs are also used by unhealthy users [13]. For healthy subjects without nutritional deficiency, some studies showed a reduction of cardiovascular disease or cancer incidence with a few substances such as selenium [15–17]. However, other studies, such as the Iowa women's health study, questioned the long-term safety of dietary supplementation and revealed increased cancer incidence [18, 19] and overall mortality for supplement users [20]. Dietary supplementation can also provoke adverse events [21, 22] and interactions with medication [23], which may be especially problematic as 30% to 50% of nutritional supplement users declare that they do not inform their physician about their consumption [24, 25].

As DSs are so popular, it is important to know the reasons for choosing to take a DS and the perception of risks. A study of lifestyle characteristics found that 48% of DS users agreed that the use of the product is an easy way to stay healthy [14]. Reasons for DS use vary a great deal, with the most common being general improvements in health and wellbeing, such as feeling better (41%), improving overall energy levels (40.8%) and boosting immune systems (35.9%) [26]. One study by Neuhauser [27] showed that only 21% used supplements on the advice of health professionals and 41% used supplements because they made them feel good. Some participants thought that supplements could prevent cancer or heart disease. Up to 60% of users stated that a balanced diet did not contain enough nutrients. The belief that taking a DS has a bene-

ficial effect on health could decrease the desire for other changes, like exercise activity or a healthy diet [28]. Given the scarcity of information in this area, our aim was to explore the category of DS used, motivations and risk perception of consumers in a convenient sample of the general population in the region of Lausanne, Switzerland, and to explore potential gender differences. Our hypothesis was that DS users were unaware of potential short- and long-term risks and that most of them did not take a specific supplement for a known deficiency, but rather one or more products with a mixture of nutrients for a variety of reasons. This preliminary study should provide more information for physicians and health authorities on consumers' habits with DS use.

Methods

We used the definition published by the National Center for Complementary and Alternative Medicine (NCCAM) [29], referring to the Dietary Supplement Health and Education Act (DSHEA). Participants were recruited at the entrances of pharmacies, supermarkets and sports centres in different regions of the City of Lausanne, Switzerland. During short periods of 1 to 3 hours randomly spread between June and August 2011, all French-speaking customers were invited to participate in the study.

Data were collected by one researcher (DT) on site, using a semistructured interview lasting 2 to 5 minutes. The first part of the questionnaire recorded demographic data. The second part of the questionnaire consisted of open-ended questions on product identity (name, content or other information that allowed exact identification of the product such as packaging design or description of the advertisement), reason for use and sources of information, and a closed question on a subjective estimate of potential effects (yes, no, don't know). We also asked about products consumed by household members, but only if the respondent was the buyer or the person who recommended the DS. The third and last part of the questionnaire concerned the perception of risks; the participants' were asked to what extent they agreed with the following sentence: "the use of dietary supplements presents no risk" (agree, rather agree, rather disagree or disagree). Participants were then asked if and where they looked for information about possible risks, and if they informed their physicians about their DS use. They were also asked to estimate the monthly cost of their DS consumption. Participants' answers to open questions were coded and then regrouped for data analysis.

Statistical analysis was conducted using SPSS Statistics 19 for Macintosh OS X (IBM). Quantitative variables were expressed as mean \pm standard deviation (SD). Comparisons between males and females were made using chi-square tests. Statistical tests were performed at a two-sided 5% significance level. The study has been submitted to the ethics committee of the University of Lausanne, which approved running the survey as planned.

Results

Out of a total of 483 people contacted, 259 rejected participation and 105 were excluded for not taking dietary supplements within the last 12 months. The 119 included participants provided information on 147 users within their household (table 1). The acceptance rate was lowest in supermarkets (28%) and highest in sports centres (59%). Men refused participation more often than women (63% vs 48%).

The products most often consumed were all-in-one products containing a mixture of minerals and vitamins or products containing only minerals, followed by botanicals, protein products and products containing essential fatty acids. The interviewer noticed that DS users, especially all-in-one users, often ignored the substances contained in their DS.

Among the 147 users, 72 (49%) used one all-in-one product and 3 (2%) used two all-in-one products. Sixty-six (45%) subjects used one single product, containing one or multiple ingredients, 54 respondents (37%) used two and 26 (18%) regularly combined three supplements or more. There were numerous combinations of products (fig. 1). Most products were taken once daily. Estimated expenses were between CHF 2 and CHF 200 monthly per person, with a mean estimate of CHF 36.70 (\pm 30.40). People used

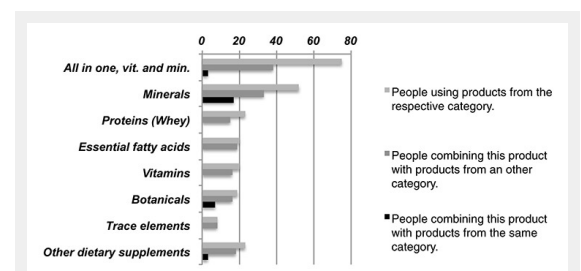


Figure 1

Categories and combinations of dietary supplements used (n = 147).

Table 1: Description of the study group (n = 147).

		n
Sex	Male	58
	Female	89
Age	<18 years	8
	18–30 years	26
	31–45 years	39
	46–60 years	26
	>60 years	48
Interview location	Pharmacy	49
	Supermarket	54
	Sports centre	44

DSs for a variety of reasons. The most commonly cited reasons were to improve general health and wellbeing as well as fitness, or medical reasons. Thirty-one (21%) consumers did not know for at least one product what the purpose of their DS use was. Some participants mentioned common concerns such as fatigue (n = 22; 15%) and the desire to improve wellbeing (n = 24; 16%). Only 15 (10%) people clearly stated that they took DSs to prevent an illness. Protein-only products were exclusively used to improve fitness and products containing only minerals were especially often used for medical reasons. Products (n = 273) were recommended primarily by health professionals (physicians and pharmacists; n = 102; 37%) and peers (n = 62; 23%). Less often, people learned of them from print media (n = 30; 11%) or sales points (n = 28; 10%). The Internet was mentioned as primary source in only 8 (3%) cases.

Seventy-five percent of participants thought that dietary supplementation presents no or hardly any risk (table 2) and 39% stated that they looked for potential risks of the products they used. Five had no opinion or did not want to answer this question. There was a significant difference between male and female participants (table 3). Although men searched more often for potential risks (p < 0.001), they turned less frequently to health professionals to obtain this information (p = 0.007). Concerns raised were limited to misuse and overdose: nobody questioned the long-term safety of a correctly used product. Forty-nine percent of participants stated that their physicians were informed about their consumption. Male participants shared this information significantly less frequently with their physicians than female participants (p = 0.008).

Discussion

The aim of this study was to explore categories, motivations and risk perception of DS use in Switzerland in a convenient nonclinical sample of the general population. As in our study, a study in Italy showed that vitamins and minerals were the most commonly used DSs [7]. According to other studies [30–32], the majority of respondents used products containing a variety of substances. Giammaroli showed that 44% of DS users used only one category of food supplement and 54% were multiple users [7]. We noticed during the interviews that all-in-one DS users especially often ignored the substances contained in their DS. They just desired a DS and did not care about its exact

content. A respondent using vitamins stated: “it just feels good in the morning [to take my vitamins]”. Six respondents over 60 years old reported that they felt compelled to take dietary supplements because of their age. More than half of DS users stated that they felt positive effects from the intake of DSs. As in other studies that explored risk perception of DS among specific populations [24, 33], our study also showed that risk perception is generally low. This leads to positive perceived evaluations of risk-benefit [34, 35] even if there is no clear scientific evidence for the benefits of many DSs. They are often used on a “if it doesn’t help, it won’t harm” basis, with the users ignoring potential risks. Blendon [26] showed that more than one-third of supplement users (35.9%) had not told their physician that they used any DS. Our results also showed that physicians could miss information about DS use if they do not ask their patients. As shown in figure 1, three DS users combined all-in-one products with other DSs and even with another all-in-one DS, which could lead to an excess of one or another substance. Physicians could point out this risk to their patients, especially to men who seemed not to speak spontaneously with their physician about DSs, and help them to read the ingredients of the DS.

Our study showed that men discussed DS use with their physician less frequently than female participants. Many studies showed that men seek professional help less frequently than women and, when they do seek help, they ask fewer questions [36]. It seems to be the same for DS use. Our results showed that women searched for potential risks less frequently than men. A potential explanation could be that they already received enough risk information from their physician.

There are some limitations to our exploratory study. First, our convenient sample was relatively small and we faced refusals from potential participants, thus we were not able to define specific profiles of users nor to draw any conclusion regarding the representativeness of our sample. For example, participants recruited at sport centres are more likely to belong to the healthy group of DS users [37]. We made no distinction between prescribed supplements linked with medical conditions (for example, calcium supplementation) and other types of supplements, as subjects sometimes did not know whether a supplement was prescribed by their physician or not.

There are some lessons that can be learned from this study. As DS consumption is common in our society and patients often do not speak spontaneously about DSs during a con-

Table 2: Risk perception.
Answer to the statement “the use of dietary supplements does not present any risks” (n = 114).

	n	%
I agree	54	47.4%
I rather agree	32	28.1%
I rather disagree	13	11.4%
I disagree	15	13.2%

Table 3: Gender differences in attitudes to dietary supplements.

	Female	Male	p-value
Searched for potential risks (n = 118)	21 (28%)	25 (60%)	<0.001
Turned to health professionals to get information (n = 46)	10 (48%)	3 (12%)	0.007
Shared information about consumption with their physicians (n = 119)	44 (57.9%)	14 (32.6%)	0.008

sultation, physicians should be trained to assess actively the use of supplements by their patients, not only to prevent interactions with medication but also to evaluate the patients' knowledge, needs and perceptions in this area. According to the current scientific data for healthy subjects, physicians should also discuss the high benefit for health of some moderate exercise [38] and balanced diet in comparison with DS use. Also, owing to concerns regarding the long-term safety of such products [18-20], physicians should warn their patients about the potential negative impact of a regular consumption of high doses of products containing multiple components, whose effects are not well understood. Finally, health authorities should develop more resources that could help the public and professionals to obtain factual information about the benefits and risks of DSs. Future studies with larger samples should, for example, focus on potential interactions of DSs with drugs used by patients, or on physicians' attitudes toward DS use.

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Figures (large format)

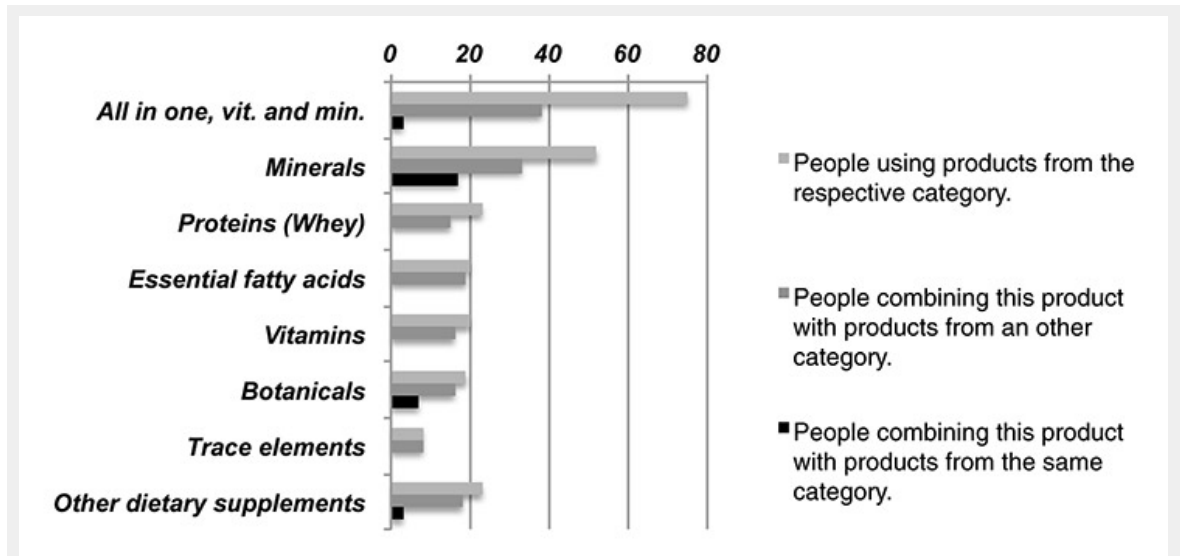


Figure 1
 Categories and combinations of dietary supplements used (n = 147).