

## A B S T R A C T

Basic information on seniors' use of supplements is lacking. In this study, a convenience sample of community-living older adults (n=128) was recruited from 10 sites to determine the prevalence, frequency, duration and type of supplement use. Use information, demographics and medical/nutritional history were collected with an interview-administered questionnaire. Supplement use included both vitamin-mineral and/or herbal preparations. Average age of participants was 76 years and 73% were female. Users comprised 79.9% of the sample. Vitamin E was the most common vitamin-mineral and herbal teas were the most popular herbal preparations. The predominant reason for use was to "improve one's health". Initial results suggest that older adults are learning about, using and purchasing these supplements from a variety of sources. With this common use and the concerns over interactions with prescription medications, further work is required to determine if these findings are consistent in a more diverse, randomly selected older Canadian population.

## A B R É G É

On manque d'information sur l'utilisation des suppléments nutritifs par les personnes âgées. L'étude, fondée sur un échantillon de commodité composé d'adultes âgés vivant dans la communauté (n=128), recrutés à 10 endroits, cherchait à déterminer la prévalence, la fréquence, la nature et la durée d'utilisation des suppléments. Les statistiques d'utilisation, les données démographiques et les antécédents médicaux/nutritionnels ont été recueillis à l'aide d'un questionnaire d'entrevue. Nous avons considéré comme des suppléments les vitamines/minéraux et les produits à base d'herbes médicinales. Les participants avaient en moyenne 76 ans, et 73 % étaient des femmes. Les utilisateurs représentaient 79,9 % de l'échantillon. La vitamine E était le produit le plus communément utilisé dans la catégorie des vitamines/minéraux, et les tisanes dans la catégorie des produits à base d'herbes médicinales. On utilise principalement les suppléments pour « améliorer sa santé ». Les premiers résultats portent à croire que les adultes âgés font appel à plusieurs sources pour s'informer au sujet des suppléments, les utiliser et en acheter. Étant donné l'usage courant des suppléments et les craintes quant à leurs interactions avec les médicaments sur ordonnance, il faudrait pousser les travaux pour déterminer si les constatations seraient les mêmes dans un groupe plus diversifié de Canadiens âgés sélectionnés au hasard.

# Vitamin-Mineral Supplementation and Use of Herbal Preparations Among Community-Living Older Adults

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There is evidence that an increasing number of seniors are turning to vitamin-mineral preparations and complementary forms of health care. Use of self-prescribed vitamin-minerals among this population is increasing with an estimated use ranging from 26-80%.<sup>1-5</sup> Unfortunately, the greatest number of users are seniors who are the least in need of supplementation.<sup>3</sup> Older adults are thought to be especially prone to nutrition quackery because of their fear of growing old, presence of chronic conditions, attitudes about health and diets, and dissatisfaction with medical care.<sup>6,7</sup> As seniors have the highest prevalence of chronic disease that is not relieved by traditional medicine, alternative therapies are frequently explored.<sup>8</sup>

Self-prescription of herbal remedies is also a popular complementary health practice. Research in the United States has shown that more than one third of the *general* American population use herbs for health purposes;<sup>9</sup> there has been a 380% increase in the use of herbal preparations from 1990 to 1997.<sup>10</sup> Typically white, educated women with a higher income use herbal preparations.<sup>11-15</sup> Limited research has focused specifically on older adults who are often considered less likely to use these herbal preparations. A 1997 CTV/Angus Reid poll indicated that 16% of older Canadians have tried herbal preparations, yet the specific types of herbs used were not examined.<sup>11</sup> Whether for pragmatic or ideological reasons, older individuals are subscribing to a philosophy that they can take steps on a personal level to postpone deterioration and mortality.<sup>16</sup> Given that aging seniors experi-

ence a number of chronic health conditions, and that this sub-group of the population is increasing, it has been proposed that their demand for complementary health care will increase proportionately.<sup>12</sup> Other than general use of vitamin-minerals and herbal preparations, little is known about purchasing practices, trends in use, and the sources of information seniors employ to make their usage decisions. This study will describe the self-reported prevalence, frequency and duration in the use of vitamin-mineral and herbal preparations by older Canadian community-living adults, identifying their source of information, purchase point and reasons for use.

## METHODS

### Study participants

This study was a sub-section of a main study involving the validation of a nutrition risk screening tool (SCREEN – Seniors In the Community, Risk Evaluation, Eating and Nutrition).<sup>17</sup> Although a convenience sample was used, it provided the opportunity to obtain previously lacking data on supplement use. Ten different sites were involved in the project: senior apartments (n=37 participants), supportive housing (n=39), a day hospital and a rehabilitation centre (n=23) and a seniors' centre (n=29). Participants were recruited by supportive housing workers, mail, advertisements, or during nutrition information seminars. Eligible individuals were those aged 55 years and older, living in the community, who consented to a full nutritional assessment. A sample of 137 older adults were recruited and 128 completed the study.

### Data collection

Self-reported subject information was collected with an interview-administered questionnaire at individual study sites. To

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ensure content validity and readability, the questionnaire was reviewed by nine dietitians and pre-tested with eleven seniors. Demographic characteristics, medical/nutritional history, and use of vitamin-mineral and/or herbal preparations (termed "supplement use") were included. Supplement use, purchase point, information sources, money spent on supplements and reasons for use and non-supplement use were examined. Herbal teas were classified under herbal preparations because of their ingredient list (e.g., chamomile, dandelion, rosehip) as was previously done in the NHANES III investigation.<sup>14</sup> Current use was defined as taking the supplement at present. Use was further classified to express low (2 or fewer individual supplements), moderate (3-4 supplements) and high supplement users (5 or more supplements). Subjects were asked to bring supplements with them at the time of the interview so content could be accurately recorded; only 47.2% of the users complied with this request. Dosage accuracy was thus considered invalid and will not be reported.

**Statistical analyses**

SPSS (version 7.5) was used for all statistical analyses. The majority of analyses were descriptive in nature with emphasis on the reasons/influences for taking supplements. Specifically, the proportion using supplements as well as the frequency and duration of use were calculated.

**RESULTS**

**Sample characteristics**

A total of 128 community-living seniors participated in the study (73.4% female). Average age was 76.1 years (range: 50-94 yrs). Widowers were most common (43.7%) and 64.1% of the participants lived alone. Two thirds had obtained a high school diploma. Income was not collected. The majority reported a little (36%) or a great deal (29%) of difficulty in completing daily tasks due to their health, although 83% believed their health was good to excellent compared to others their own age. Subjects had 5.2 (SD=2.8) self-reported medical problems and took an average of 4.3 prescription medications (SD=3.5). There were no significant differ-

Nutrient	Number Currently Using*†‡ (n=92)	(%)
Multivitamin-mineral	40	(43.5)
<b>Vitamins</b>		
Vitamin E	45	(48.9)
Vitamin C	37	(40.2)
Vitamin B-complex	13	(14.1)
Vitamin D	11	(12.0)
Vitamin A	6	(6.5)
Beta carotene	4	(4.3)
Vitamin B <sub>12</sub>	4	(4.3)
<b>Minerals</b>		
Calcium	30	(32.6)
Magnesium	3	(3.3)
Iron	2	(2.2)
Potassium	2	(2.2)
Selenium	2	(2.2)
Zinc	2	(2.2)
Manganese	1	(1.1)
Multi-mineral	1	(1.1)
Phosphorous	1	(1.1)

\* Can be using/used more than 1 supplement simultaneously  
 † Mean use: 2.3, median: 2.0, mode: 1.0; range of use: 1-8  
 ‡ 53.3% (n=49) vitamin-mineral users also used 1 or more herbal preparations

ences among sites for demographics and medical data.

**Supplement use**

Overall, 79.9% (n=102) of the participants were using supplements. Seventeen different vitamin-mineral preparations were taken by 72% (n=92) of subjects (Table I). The average number of vitamin and/or mineral preparations taken was 2.3 (SD=1.6; range 1-8). More than half of vitamin-mineral users (64.1%) were classified as low users, 27.2% were moderate and 8.7% were considered high users. The most common preparations were vitamin E, multi-vitamin-minerals, vitamin C and calcium.

A total of 28 different herbal preparations were used by 46% (n=59) of the study participants (Table II); 83.1% (n=49)

Herbal Preparation*	Current Use†‡¶ (n=59)	n (%)
Herbal tea§	21	(35.6)
Garlic pills	18	(30.5)
Echinacea	10	(16.9)
Cod liver oil	6	(10.2)
Glucosamine sulphate	5	(8.5)
Grape seed extract	4	(6.8)
Ginseng	4	(6.8)
Halibut oil	4	(6.8)
Herb mix	4	(6.8)
Lethicin	3	(5.1)
Flax seed/oil	3	(5.1)
Ginkgo biloba	3	(5.1)
Kelp	2	(3.4)
Decosamine hydrochloride	2	(3.4)
Alfalfa	1	(1.7)
Bran	1	(1.7)
Chondroitin sulphate	1	(1.7)
Devil's claw	1	(1.7)
Kava kava	1	(1.7)
Lycopene	1	(1.7)
Melatonin	1	(1.7)
Novofibre	1	(1.7)
Evening primrose oil	1	(1.7)
Salmon oil	1	(1.7)
Saw palmetto	1	(1.7)
St. John's wort	1	(1.7)

\* Herbal remedies is the broader term which also includes some food supplements (e.g., bran)  
 † Can be using more than 1 herbal remedy simultaneously  
 ‡ Mean use: 1.7, median: 1.0, mode: 1.0, range of use: 1-6  
 ¶ 83.1% (n=49) herbal users also used one or more vitamin-mineral preparations  
 § Types of teas included: raspberry, fennel, parsley, ginger, dandelion, lemon balm, mint, fenogreen, rosehip, chamomile, apple-cinnamon, apel (a tea imported from Europe – not available in Canada), cranberry, green, Italian malva, wildberry.

of these herb users also consumed one or more vitamin-mineral preparations. More than three quarters (83.1%) were classified as low herb users, 11.9% were moderate and 5.0% were considered high users. Herbal preparation users averaged 1.7 products (S.D=1.1; range 1-6). Herbal teas, garlic pills, echinacea and cod liver oil were the most common preparations. Removal of herbal teas from the analysis resulted in a smaller proportion of herbal users (n=22).

	Vitamin-Minerals (n=92)		Herbs (n=59)	
	%		%	
Drug store/pharmacy	83.5	(76)	33.9	(20)
Health food store	12.1	(11)	42.4	(25)
Grocery store	6.6	(6)	28.8	(17)
Direct sales	1.1	(1)	3.4	(2)

\* More than one purchase point could be cited by participants

**TABLE IV**  
**Sources of Supplement Information\***

	Vitamin-Mineral Users		Herbal Users	
	%	(n=92)	%	(n=59)
Physician	51.0	(47)	13.6	(8)
Newspaper/magazines	26.0	(24)	25.4	(15)
Books	19.6	(18)	27.0	(16)
Family and friends	17.4	(16)	39.0	(23)
Other health care professionals	14.1	(13)	1.7	(1)
Television and radio	9.8	(9)	10.2	(6)
Pamphlets	5.4	(5)	3.4	(2)
Health food store personnel	4.3	(4)	11.9	(7)
Naturopath	—		3.4	(2)
Chiropractor	—		1.7	(1)
Health food store literature	—		1.7	(1)

\* More than one information source could be cited by participants

**TABLE VI**  
**Reported Reasons for Non-Supplement Use\***

	Non-Vitamin/Mineral Users		Non-Herb Users	
	%	(n=36)	%	(n=68)
Adequate diet	25	(9)	10	(7)
Lack belief	19.4	(7)	34.3	(24)
Do not need	16.7	(6)	12.9	(9)
Questions what to take	13.9	(5)	14.3	(9)
Cost	5.6	(2)	—	
Tried and do not work	2.8	(1)	2.9	(2)
Recommended against their use	2.8	(1)	1.4	(1)

\* Some non-supplement users did not specify a reason

Length of use varied with the supplement and ranged from 1 week to 50 years. Average length of use for vitamin-mineral and herbal preparations was 6.5 years and 2.9 years respectively. Length of use was significantly and positively associated ( $r=0.55$ ,  $p<0.01$ ) with an increased number of preparations used.

Supplements were commonly purchased from one venue with an average expenditure of \$18.83 (median=\$10, mode=\$5, range=\$1.50-\$160) per month. The most frequent purchase point for vitamin-mineral users was a drug store/pharmacy while herbal users reported a health food store as the most typical purchase place (Table III). The most popular information source for vitamin-mineral users was a physician (51%) and for herb users was family or friends (39%) (Table IV).

“To improve one’s health” was the primary reason for supplement use, followed by considered “good for you”, diet factors (e.g., nutritional inadequacy of food, poor diet), and others recommending the preparations (Table V). Seniors who did not take vitamin-minerals or herbal preparations were asked to report their reasons for not using these supplements. These seniors

provided several explanations for not taking supplements and these reasons varied for the two supplement categories (Table VI).

**DISCUSSION**

*Vitamin-Mineral Preparations:* Current vitamin-mineral utilization in the present investigation is consistent with American studies that report a high prevalence of use (59-80%) by older adults.<sup>1,2,18-20</sup> Few researchers in Canada have shown such high proportions of use for vitamins and minerals (range 35-54%).<sup>3,21,22</sup> Differences in methodology (i.e., how current use defined), sample size and population characteristics could explain some of the discrepancy between this and other Canadian studies. However, the European Longitudinal Study on Ageing demonstrated that supplementation has increased 2.5-fold within a 10-year period.<sup>23</sup> The regularity and duration of use by current study participants as well as that reported in previous investigations suggest that use of these preparations has become a consistent “health habit” in the last decade.<sup>24</sup> Given this supplement boom, future work should

**TABLE V**  
**Reported Reasons for Supplement Use**

	%	(n=102)
To improve one’s health	39	(40)
Good for you	21	(22)
Diet factors*	17	(17)
Recommended by others	16	(16)
Unknown/no reason	7	(7)

\* e.g., nutritional inadequacy of food, poor oral diet

continue to investigate whether the dosage has also increased from previous decades and whether toxic levels are being reached.

Despite the overall increasing trend toward vitamin-mineral use,<sup>10,19,23</sup> the four most common preparations in this study were consistent with reports from previous literature.<sup>7,24-28</sup> Single trace minerals were also used in this sample, yet by a very small number. Although this study involved a small convenience sample and generalizations cannot be made, others have found similar usage trends. Gray et al. found an unexpected wide variety of single mineral use in their elderly sample.<sup>5</sup> While the high use of calcium was consistent with other studies,<sup>24,27,29</sup> use of potassium, iron, zinc, magnesium and selenium was unusual.<sup>5</sup> Examination of specific reasons for use in the current study found that these users of trace minerals typically felt that their diet lacked these nutrients. This is of concern; the population may be self-diagnosing the need for individual minerals. This supplementation may lead to nutrient interactions and potential toxicity, especially in the case of trace minerals. Further work should continue to monitor the use of these minerals and reasons for their selection.

*Herbal Preparations:* Research on the use of herbal preparations among the older Canadian population is in its infancy. In 1997, 12% of the general adult U.S. population<sup>10</sup> and 16% of the older Canadian population<sup>11</sup> reported herb use, yet the current investigation has found much greater usage. Garlic, ginseng and echinacea parallel the commonly reported herbs used from American population studies,<sup>14,30</sup> yet many (83.1%) of the herbal users in the present study also took one or more vitamin-mineral preparations. Whether the use of vitamin-mineral preparation is a gateway to the use of herbs remains unknown and requires further investigation. However, the significant

positive association between length of herb use and the increasing number of preparations suggests that seniors in the present investigation are concerned about their health and are self-prescribing a wide variety of preventive and curative treatments.

*General Issues in Supplementation:* Concern arises when seniors do not have a reason for their supplement use or have misconceptions with their use. While the physician is consistently reported as the number one information source for vitamin-mineral preparations in this and other studies,<sup>2,24,28,29</sup> seniors continue to use non-scientific and popular information sources in making decisions about both vitamin-mineral preparations<sup>24,27,31,32</sup> and the use of complementary therapies.<sup>7,13,16,32,33</sup> Assessing the safety and appropriateness of advice given to seniors in Canadian newspaper health advice columns, it was found that 34% of the articles were considered unsafe and 52% were inappropriate.<sup>34</sup> Use of these sources by supplement users without questioning the information provided could be problematic, especially without considering appropriate indications and contraindications before use.<sup>30</sup> This further reinforces the importance of health care providers inquiring about supplement use by their clients and then providing appropriate education about use.

Cost is also a factor. The majority of older adults who are supplement users must typically pay out of their own pockets. While the average amount spent was not excessive, concern arises if the money spent on these supplements was displacing money that would have been spent on food and other essential needs. In this study, there was a wide range in the amount of money spent on supplements, with a maximum of \$160 being spent per month.

This study has a number of limitations; it was an exploratory project and generalizations must be made with caution as a small convenience sample was used. The purpose of this study was to explore in a more thorough manner, supplement use in older Canadian adults. It was anticipated that this information would guide further research into supplement use, so that questions beyond general use could be asked in a meaningful way. This work does provide insight into some issues with supplementa-

tion that were previously lacking and indicates the need for further investigation. Self-reporting of information without corroboration may also have led to inaccuracies and misclassification of information. While interview questions were kept consistent, memory problems pertaining to use as well as frequency and duration of use may have had an impact. Further work is necessary to determine if the findings from this investigation are consistent in a more diverse, randomly selected, older Canadian population.

## CONCLUSION/APPLICATION

Past research as well as the present investigation have shown that older adults are aware of supplements and frequently use them. Forty-three different types of supplements were reported in the present study and were taken for a variety of reasons. While the majority of past research has focused solely on the use of vitamins and minerals, the findings of the present study also show the importance of continued investigation into the use of herbal preparations. Seniors are concerned about their health and are willing to take steps on a personal level to "improve their health". This use emphasizes the need and importance for communication between the older adult and health professionals qualified to offer information on the appropriate use of supplements.

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