

Use of Supplements in Puerto Rican Older Adults Residing in an Elderly Project

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Objective: There has been a notable increase in the use of nutritional supplements in elders. Studies indicate that there may be a health risk in this population associated with the possible interactions of supplements with medications. **Objective:** Explore the profile of use of nutritional supplements in the elderly and the possible health risks from the concurrent use of certain supplements and medications.

Methods: This was an exploratory cross-sectional study in a convenient sample of 130 subjects aged 60 years and older. The data was collected using a previously validated questionnaire. Chi² was used to associate the use of supplements by demographics and health information and Spearman correlation to establish the relationship between the number of nutritional supplements, medications used and health conditions reported.

Results: About 63% of the subjects were women. Women used more supplements compared to men ($p < 0.05$). Most common supplements used were multivitamins and calcium. Non vitamin non mineral (NVNM) supplements use was low and the most used were garlic, chondroitin, glucosamine, and ginger. The conditions most related to the use of supplements were hypertension and arthritis. There was a significant correlation between the number of nutritional supplements with number of medications ($R = 0.27$; $p < 0.01$) and number of health conditions ($R = 0.31$; $p < 0.01$). There were 8 possible health risks associated with the use of NVNM together with anticoagulants and antidiabetics.

Conclusion: Supplement use was higher in women and in participants with hypertension and arthritis, with some potential risks to health between the use of certain NVNM and medications. [*P R Health Sci J* 2012;4:213-219]

Key words: Nutrition, Dietary supplements, Elderly, Health Risks, Supplements and medications

Dietary supplements, defined as a product intended to supplement the diet and which contains one or more of the following ingredients: vitamin, mineral, herb or plant, amino acid, and other substance, e.g. enzymes, organ tissues, glandular substances, and metabolites (1), have notably increased its sale and use in the recent years. The majority of supplement users in the United States (US) are elders (2). According to the results of the US 3rd National Health and Nutrition Examination Survey (NHANES III), 56% of middle-aged adults and older consume at least a daily supplement compared to 40% in the general population (2). Data from the National Center for Health Statistics shows that the use of nutritional supplements is higher in women (59%) than in men (47%) and its use increases with age (3). Supplement use is also higher in those with higher socioeconomic status and education level (4). Some health conditions are also associated with the use of supplements, particularly hypertension, arthritis and cardiovascular disease, while diabetes and depression have been associated less with the use of nutritional supplements (5).

The use of nutritional supplements may be beneficial to the health of older adults; however, not all supplements are beneficial

and safe. The improper use of some dietary supplements may lead to adverse health consequences (6) and there is a potential risk associated with concurrent use of medication in the elderly (7-8). Other studies also show potential adverse health effects with the use of supplements and medications in the elderly (9-10). According to these studies some supplements can mimic and/or magnify the effects of drugs and may cause adverse health effects when used with certain medications. An example found in these studies is the possible interaction of the use of warfarin concurrently with Ginkgo Biloba, which could potentially lead to bleeding.

In Puerto Rico, the group of individuals 60 years and older represent 15% of the population (11), and it is expected to increase to 20% in 2020. This population has high rates of morbidity

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in hypertension (43.5%), arthritis (34.5%), diabetes (26.6%), cataract (8.6%), and asthma (7.2%), among others (12). These conditions are precisely those that are associated with the use of supplements and medications (5, 7). In addition, it has been found that 29% of this population takes five or more medications regularly (7). Therefore, it is important to learn about the supplement use in this group, as nutritional supplements can be used to prevent and treat nutritional deficiencies in this population, but it could also lead to potential health risks if used with certain medications (8). In addition, dietary supplements do not require prescriptions, are easily accessible and most, particularly the non-vitamin non-mineral (NVNM) supplements, do not specify contraindications or potential health risks on their labels (9).

There are no studies published to date that have characterized the pattern of supplement use in elders in Puerto Rico. This study aimed to explore the use of nutritional supplements in a group of elders residing in an elderly project in San Juan, Puerto Rico and infer on potential health risks if used concurrently with medications. The results of this study may serve as preliminary data for future studies and may have implications for public health educational programs.

Methods

This was a cross-sectional exploratory study of data collected in an elderly project in San Juan, Puerto Rico, in 2010-2011. Subjects were chosen from a non-probabilistic convenient sample of residents 60 years and older from an elderly project that consented to participate. The numbers of individuals who reside in this project are approximately 350 older adults. Inclusion criteria included being a resident of the elderly project selected, being 60 years or older and being able to provide an informed consent. There were no exclusion criteria. All participants that met the inclusion criteria were invited to participate in the study. Participants who consented to participate were scheduled for a face-to-face interview with the student investigators. This study was approved by the Institutional Review Board (IRB) of the Medical Sciences Campus of the University of Puerto Rico (# A4540310) and by the administrator of the elderly project.

Data collection instrument

A previously validated questionnaire of supplement use in older individuals (13) was used for data collection (Figure 1). The questionnaire was adapted and modified for this study. Reproducibility was determined before the study begun in 8 subjects from the sample. For this, the questionnaire was administered two (2) times within a two (2) weeks interval under the same conditions. Spearman correlations analysis showed excellent reproducibility in the number of supplements used ($\rho=0.99$; $p<0.01$), number of medications used ($\rho=1.0$, $p<0.01$) and number of conditions reported ($\rho=1.0$, $p<0.01$).

The instrument consisted of four (4) sections:

1. Demographic information, which included age, gender, socio-economic status and education.
2. Use of vitamins and minerals: we included the same list of vitamins and minerals defined in the previously validated questionnaire (13). Participants chose the frequency of use from the following options: 2 times or more per day, 1 time per day, 3 or 4 times per week, 1 or 2 times per week, 1 or 2 times per month and never.
3. Use of other supplements: we included the same list of non-vitamin non-mineral (NVNM) supplements defined in the previously validated questionnaire (13). Participants chose the frequency of use with the same options as for vitamins and minerals.
4. Chronic diseases history and the use of prescription and over the counter drugs: a pre-defined list was included with the most common chronic diseases in this population. Participants who reported any of these conditions were asked to report the medications (prescribed and not prescribed) used for each condition.

For the interview, participants were required to bring all the supplements and medications they were currently using for verification of the information. The interview was conducted by the nutrition graduate student investigator.

Data analysis

Descriptive statistic was used to obtain a socio-demographic (age, gender, socio-economic status, and level of education) and health profile of the sample. Chi² analysis was used to associate the use of supplements with these variables. Spearman correlation was used to establish the relationship between the use of supplements and medications and between the use of supplements and chronic conditions. The analysis was performed with Statistical Package for the Social Sciences (SPSS), version 15.0. Significance was set at $p<0.05$.

Results

Table 1 shows the socio-demographic characteristics and most common health conditions in the sample. A total of 130 subjects participated in the study. Most were women (63%), 75-84 years old with a high school education or less and with a very low income level. Hypertension was the most common health condition (62.3%), followed by cardiovascular disease (30.8%) and diabetes (30%).

We only reported the supplements used by at least 15% of the sample. The most common nutritional supplements are shown in Table 2. Overall, the nutritional supplement most used by participants was multivitamins (36.9%), followed by calcium (21.5%). Most supplements were used once (about 90%) or twice per day (about 10%). Women reported a significantly greater use of calcium, magnesium, vitamin D, omega 3, and

Supplement	Frequency						
	More than once a day	Once a day	5-6 times/ week	3-4 times/ week	1-2 times/ week	2-3 times/ week	1 time/ month
Multivitamin, No minerals (Example: Focus Factor)							
Multivitamin and minerals (Example: One-A-Day, Centrum Silver, Equate, Geritol Complete etc.)							
B Complex							
Ocuvite							
Calcium							
Chromium							
Folate (Folic acid)							
Iron							
Magnesium							
Niacin							
Selenium							
Vitamin A							
Vitamin B12							
Vitamin B6							
Vitamin C							
Vitamin D							
Vitamin E							
Zinc							
Echinacea							
Garlic							
Ginger							
Ginkgo biloba							
Ginseng							
Hawthorn							
Saw Palmetto							
St. John's Wort							
Valerian							
Apple cider vinegar							
Chondroitin							
Coenzyme Q10							
EDTA							
Elderberry Extract							
Fish oil							
Flax seed oil							
Glucosamine							
Lutein							
Other:							

Figure 1. Validated questionnaire for supplement use in older individuals (13).

zinc compared to men ($p < 0.05$). The use of omega 3 was significantly greater in women age 60-74 years compared to other age groups ($p < 0.05$). Men aged 85 years and older reported a greater use of magnesium compared to the other age groups, while men aged 60 to 74 years reported a greater use of zinc compared to the other age groups ($p < 0.05$). In relation to education or socio-economic status, we did not find a significant association in the use of any of the nutritional supplements with a higher education or socio-economic level.

The use of NVNM supplements was very low; therefore, we here report the NVNM used by at least 3% of the sample (Table 3). Overall garlic was the NVNM most used by the sample (7.7%), followed by ginger (6.2%). Most participants used these NVNM once (about 60%) or twice (30-40%) per day. As reported by participants, garlic was mostly used to prevent or treat hypertension problems; glucosamine and chondroitin were used to alleviate arthritis and ginger was used to sleep, prevent colds, stomach problems, and dizziness, among others. The use of NVNM was similar among gender, age and socio-economic status. However, chondroitin and glucosamine were used more in participants with university degrees compared to the other educational levels ($p < 0.05$).

Tables 4 and 5 show the use of nutritional supplements and NVNM supplements according to health conditions, respectively. Cardiovascular disease was significantly associated with the use of multivitamins ($p < 0.05$). No significant association was found between hypertension or hypercholesterolemia and the use of any supplement. Diabetes was associated with the use of magnesium ($p = 0.06$) and zinc ($p < 0.05$). Arthritis was associated with the use of calcium, magnesium, vitamin D, zinc, chondroitin, ($p < 0.05$) and with glucosamine ($p = 0.076$). We found a significant positive correlation between the number of supplements used and the number of health conditions reported by the sample ($r = 0.31$; $p < 0.0001$).

Table 1. Socio-demographic characteristics and most common health conditions in the sample (n = 130)

Characteristic	N	%
Women		
60-74 years	34	41.5
75-84 years	36	43.9
85 years or more	12	14.6
Subtotal	82	63.1
Men		
60-74 years	27	56.3
75-84 years	15	31.3
85 years or more	6	12.5
Subtotal	48	36.9
Education		
Elementary or less	36	27.7
Middle school	28	21.5
High school	36	27.7
Technical school	13	10.0
University	17	13.1
Subtotal	130	100
Income		
\$0-1,000	25	19.2
\$1,001-5,000	30	23.1
\$5,001-10,000	47	36.2
\$10,001 or +	28	21.5
Total	130	100
Health conditions		
Hypertension	81	62.3
Cardiovascular disease	40	30.8
Diabetes	39	30.0
Hypercholesterolemia	33	25.4
Arthritis	34	26.2

Table 6 shows the possible interactions between dietary supplements and prescription medications. We found eight (8) potential health risks from NVNM supplements and prescription medications used concurrently. The largest number of potential health risks may occur between participants using glucosamine and medications to treat diabetes; glucosamine may increase insulin resistance or reduced insulin production. Another potential health risk found in this study was between the concurrent use of garlic and anticoagulants, which can increase the effect of these drugs. A significant positive correlation was found between the number of supplements used and the number of the prescription medications ($p = 0.002$). In addition, we also found that only 41.5% of the sample reported the use of any of these supplements to their doctor.

Discussion

The present study conducted in a sample of 130 individuals 60 years and older residing in an elderly project showed that the nutritional supplements most used by participants were multivitamins (36.9%) and calcium (21.5%) and the NVNM most used were garlic (7.7%) and ginger (6.2%). Women reported a significantly greater use of calcium, magnesium, vitamin D, omega

3, and zinc compared to men but no gender differences were found in the use of NVNM. We also found some differences in the use of supplements by age and by education. Cardiovascular disease was significantly associated with the use of multivitamins; diabetes with the use of magnesium and zinc; and arthritis with the use of calcium, magnesium, vitamin D, zinc, chondroitin, and glucosamine. The number of supplements was significantly and positively correlated with number of medications used and with the number of health conditions.

Other studies have also found a gender difference in supplements used. Our results are consistent with the US statistics from 2001 to 2004 (3) which reported a higher use of supplements among women (59%) than men (47%). Similar results were also reported in the Puerto Rican Elderly Health Conditions (PREHCO) study, in which the proportion of vitamin use was higher in women (54.4%) than men (41.7%) (11). This greater use of supplements in women could be attributed to several reasons; during women's reproductive life, there is a tendency to use supplements to reduce anemia during menstruation and pregnancy, folic acid to prevent fetal problems during pregnancy, calcium to reduce the risk of developing osteoporosis at menopause, and vitamins E, C, and B (B6, B12, and folic acid) to reduce the risk of cardiovascular disease (14-15). It may also be related to psychosocial factors such as beliefs and attitudes related to diet and health (16).

Contrary to other reports, the present study found that women 60-74 years old used more omega 3 compared to the other age groups. In men, magnesium use was greater in those aged 85 years and older, while zinc was use more often in men aged 60-74 years. In other studies such as PREHCO in 2003 (11), people aged 75 years or older were the groups with greater vitamins use. Reports from the US show that individuals over 80 years report the greatest use of nutritional supplements (17). Similarly, reports from Germany show that the use of supplements was directly related to age, which was explained by a healthier eating and lifestyles in older age groups (18). In the present study, diet and life-styles were not included in the questionnaire. Others have also examined the reasons why older people use supplements; among them are to maintain health and prevent chronic diseases, to prevent aging and to exert greater control over their health (19).

In terms of socio-economic level, the present study did not find an association between supplements used and income. It is important to mention that the study population included in this report belongs to a subsidized elderly project, which has income restrictions eligibility for residing there; therefore, we did not have a widespread distribution in income to detect this relationship. Most of the studies show that supplements use is directly related to income (4). This is explained by the fact that most supplements are expensive and not covered by most health insurances; therefore, those with higher incomes may have greater access to them. In relation to education, most studies also show a direct relationship between education level and use of supplements (5-20). Although we did not find in the present

Table 2. Most commonly used nutritional supplements according to socio-demographic characteristics of the sample (n = 130).

Characteristics	Multivitamins		Calcium		Magnesium		Vitamin D		Zinc		Omega 3	
	N	%	N	%	N	%	N	%	N	%	N	%
Women (n=82)												
60-74 years	16	19.5	14	17.1	11	13.4	10	12.2	12	14.6	10**	12.2
75-84 years	11	13.4	8	9.8	7	8.5	7	8.5	5	6.1	6	7.3
85 years or +	4	4.9	4	4.9	3	3.7	3	3.7	1	1.2	3	3.7
Subtotal	31	37.8	26*	31.8	21*	25.6	20*	24.4	18*	21.9	19*	23.2
Men (n=48)												
60-74 years	8	16.7	1	2.1	0	0.0	0	0.0	3**	6.3	0	0.0
75-84 years	6	12.5	0	0.0	0	0.0	1	2.1	0	0.0	0	0.0
85 years or +	3	6.3	1	2.1	1	2.1**	1	2.1	1	2.1	1	2.1
Subtotal	17	35.5	2	4.2	1	2.1	2	4.2	4	8.4	1	2.1
Education												
Elementary	13	10.0	4	3.1	3	2.3	3	2.3	4	3.1	3	2.3
Middle school	12	9.2	5	3.8	5	3.8	5	3.8	5	3.8	5	3.8
High school	13	10.0	8	6.2	6	4.6	6	4.6	6	4.6	6	4.6
Technical	6	4.6	4	3.1	4	3.1	4	3.1	2	1.5	3	2.3
University	4	3.1	7	5.4	4	3.1	5	3.8	5	3.8	3	2.3
Subtotal	48	36.9	28	21.6	22	16.9	23	17.6	22	16.8	20	15.3
Income												
\$0-\$1,000	9	6.9	8	6.2	6	4.6	5	3.8	3	2.3	6	4.6
\$1,001-\$5,000	9	6.9	8	6.2	6	4.6	7	5.4	5	3.8	6	4.6
\$5,001-\$10,000	19	14.6	7	5.4	6	4.6	7	5.4	10	7.7	5	3.8
\$10,001 or +	11	8.5	5	3.8	4	3.1	4	3.1	4	3.1	3	2.3
Subtotal	48	36.9	28	21.6	22	16.9	23	17.7	22	16.9	20	15.3

*Significantly greater use in females compared to males at p<0.05; ** Significantly greater use compared to the other age groups at p<0.05

Table 3. Most commonly used NVNM supplements according to socio-demographic characteristics of the sample (n = 130).

Characteristics	Garlic		Chondroitin		Glucosamine		Ginger	
	N	%	N	%	N	%	N	%
Women (n=82)								
60-74 years	4	4.9	2	2.4	2	2.4	3	3.7
75-84 years	2	2.4	2	2.4	4	4.9	1	1.2
85 years or +	0	0.0	0	0.0	0	0.0	2	2.4
Subtotal	6	7.3	4	4.8	6	7.3	6	7.3
Men (n=48)								
60-74 years	2	4.2	0	0.0	0	0.0	1	2.1
75-84 years	0	0.0	0	0.0	0	0.0	0	0.0
85 years or +	2	4.2	1	2.1	1	2.1	1	2.1
Subtotal	4	8.4	1	2.1	1	2.1	2	4.2
Education								
Elementary	1	0.8	0	0.0	0	0.0	1	0.8
Middle school	1	0.8	0	0.0	0	0.0	1	0.8
High school	7	5.4	0	0.0	1	0.8	3	2.3
Technical	0	0.0	1	0.8	1	0.8	1	0.8
University	1	0.8	4*	3.1	5*	3.8	2	1.5
Subtotal	10	7.8	5	3.9	7	5.4	8	6.2
Income								
\$0.00-1,000	1	0.8	2	1.5	3	2.3	4	3.1
\$1,001-5,000	4	3.1	0	0.0	1	0.8	1	0.8
\$5,001-10,000	4	3.1	2	1.5	2	1.5	2	1.5
\$10,001 or +	1	0.8	1	0.8	1	0.8	1	0.8
Subtotal	10	7.8	5	3.8	7	5.4	8	6.2

*Significantly greater use compared to the other educational levels at p<0.05

study an association between education and the use of nutritional supplements, we did find such association with the use of glucosamine and chondroitin with higher use in those with higher educational level. The high level of education is a typical pattern in NVNM supplement users in the US, and as stated above, the main reason for using these is for treating health conditions (21).

The present study also showed a significant and positive correlation between the number of supplements used and the number of chronic diseases reported by the sample, which could be explain by the fact that most reported the use of these supplements to treat health conditions. Particularly, cardiovascular disease was significantly associated with the use of multivitamins. Others have found an association with the use of omega 3, garlic, ginseng, Echinacea, and Ginkgo biloba (22). Arthritis was associated with the use of calcium, magnesium, vitamin D, zinc, chondroitin, and glucosamine in the present study, similar to other studies (23). However,

other reports have also related this condition to the use of Ginkgo biloba (23) and ginger (24). In addition, similar to our study, others have found that the increase in the use of supplements is attributed to dissatisfaction with traditional medicine and prevention and treatment of health conditions (23).

Based on the studies by Wold (8) and Stupay & Sivertsen (10), several potential health risks were found between the use of certain NVNM supplements and prescription medications, particularly between glucosamine and medications to treat diabetes and between garlic and anticoagulants. Furthermore, we found that only 41.5% reported the use of any of these supplements to their doctor, which can further increase the health risk if physicians are not informed of the use of these supplements. In the Aging Process Study in Mexico (8), the most common potential health interactions between medications and supplements were with Ginkgo biloba, glucosamine, and garlic, similarly to the present study. Garlic has the potential to modify the risk of developing atherosclerosis by reducing blood pressure and thrombus formation and by reducing serum lipids and cholesterol (25). Although some believe that there could be a potential risk of bleeding in individuals using anti-platelet agents or anticoagulants concomitantly with garlic (26), a randomized clinical trial in 42 patients using anticoagulant and aged garlic extract concomitantly for 12 weeks did not show an increase in hemorrhage with the use of garlic (27); therefore, it could be relatively safe in patients

who are constantly being monitored. Studies conducted over the past decade suggested that glucosamine may increase insulin resistance or reduced insulin production (28-29). However, recent research shows that glucosamine does not seem to affect blood glucose in individuals with type II diabetes and appears to be safe for most people with diabetes, provided that glucose blood levels are constantly monitored (30). Chondroitin and garlic can also lead to consequences when used concurrently with anticoagulant medications; it may reduce or increase the effect of the drug (9-10). In theory, excessive amounts of ginger may increase the risk of bleeding since ginger appears to inhibit thromboxane synthetase and decrease platelet aggregation (31-32). This information is important, as studies in PR show that there is a lack in knowledge from health professionals and patients with respect of the implications of taking many drugs, as well as in the proper management of these drugs (33).

This is the first exploratory study published to date to assess the profile use of nutritional supplements in an older population in Puerto Rico. However, there are some limitations related to the study design, such as the limited number of the sample, the demographics of this sample, which is not representative of the population, and the lack of data on diet and life-styles. Therefore,

this study may serve as preliminary data for further studies on the profile use of supplements in larger and more diverse groups. These results have also implications for public health programs focusing on the education of the proper use of supplements in older adults.

In conclusion, the profile use of nutritional supplements in this elderly project shows that women in general used more supplements than men, with some age and educational levels differences in the use of certain supplements. The most commonly used nutritional supplements were multivitamins and calcium and the NVNM supplements most used were garlic and ginger. As the number of medications used increased, also did the number of supplements reported in this sample, which could potentially lead to health risks. Also, as the number of health conditions increased, also did the number of supplements used. Particularly, cardiovascular disease, diabetes, and arthritis were associated with the use of certain supplements.

Resumen

Objetivo: Ha habido un notable aumento en el uso de suplementos en los gerontes. Los estudios indican que puede haber un riesgo potencial a la salud asociado al uso concurrente de suplementos con medicamentos. Explorar el perfil de uso de suplementos en los gerontes y los posibles riesgos a la salud por el uso concurrente de suplementos con medicamentos. **Métodos:** Esta fue un estudio transversal exploratorio en una muestra a conveniencia de 130 sujetos de 60 años y más. Se utilizó un cuestionario previamente validado. Se usó el Chi² para asociar el uso de suplementos con los datos demográficos y de salud y la correlación Spearman para establecer la relación entre el número de suplementos, medicamentos y condiciones de salud reportados. **Resultados:** Alrededor de 63% fueron mujeres. Las mujeres utilizaron más suplementos que los hombres (p<0.05). Los suplementos más utilizados fueron las multivitaminas y el calcio. El uso de suplementos no vitamínicos no minerales (NVNM) fue bajo y los más usados fueron ajo, condroitina, glucosamina y jengibre. Las condiciones de salud relacionadas al uso de suplementos fueron hipertensión y artritis. Se observó una correlación significativa entre el número de suplementos y medicamentos (R=0.27; p<0.01) y condiciones de salud

Table 4. Most commonly used nutritional supplements by health conditions of the sample (n=130).

Characteristics	Multivitamins		Calcium		Magnesium		Vitamin D		Zinc		Omega 3	
	N	%	N	%	N	%	N	%	N	%	N	%
Hypertension	33	40.7	16	19.8	14	17.3	14	17.3	13	16.0	14	17.3
Cardiovascular disease	20*	50.0	11	27.5	8	20.0	10	25.0	8	20.0	7	17.5
Diabetes	12	31.6	11	28.9	10	26.3	9	23.7	10*	26.3	5	13.2
Hypercholesterolemia	14	38.9	9	25.0	8	22.2	9	25.0	8	22.2	9	25.0
Arthritis	14	41.2	13*	38.2	12	35.3	11*	32.4	12*	35.3	6	17.6

*Significantly associated at p<0.05

Table 5. Most commonly used NVNM supplements by health conditions of the sample (n=130).

Characteristics	Garlic		Chondroitin		Glucosamine		Ginger	
	N	%	N	%	N	%	N	%
Hypertension	7	8.6	4	4.9	4	4.9	6	7.4
Cardiovascular disease	2	5.0	0	0.0	2	5.0	3	7.5
Diabetes	5	13.2	2	5.3	2	5.3	4	10.5
Hypercholesterolemia	4	11.1	1	2.8	2	5.6	4	11.1
Arthritis	4	11.8	4*	11.8	4	11.8	4	11.8

*Significantly associated at p<0.05

Table 6. Possible interactions between dietary supplements and prescription medications (n = 130).

Supplement	Medications	# of possible health risks ¹	Possible risks to the health
Garlic	Anticoagulant	2	May increase the anticoagulant effect
Glucosamine	Anti-diabetic Agent	4	May interfere with insulin secretion
Ginger	Anticoagulant	2	May cause bleeding

¹Number of times this supplement was used concurrently with this medication

($R=0.31$, $p<0.01$). Hubo 8 posibles riesgos de salud asociados al uso de NVNM con anticoagulantes y antidiabéticos. Conclusión: El uso de suplementos fue mayor en mujeres y en personas con hipertensión y artritis con algunos riesgos potenciales entre el uso de ciertos NVNM y medicamentos.

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