

# Perceptions of Dietary Supplements Among Older Women With Diabetes

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## PURPOSE

**T**he purpose of this qualitative study was to explore the meaning of taking dietary supplements from the perspective of being an older woman with type 2 diabetes.

## METHODS

Nine women over the age of 65 with type 2 diabetes participated in a single, in-depth semistructured interview that focused on use of, views of, and methods of hearing about supplements. Interviews were audiotaped, transcribed verbatim, and analyzed using phenomenological methodology.

## RESULTS

Eight of the 9 participants used some form of dietary supplement daily. Respondents described methods of hearing about supplements ranging from their daughters to the media to “people talk.” Individual supplements were used primarily to prevent or treat conditions related to aging, such as osteoporosis, arthritis, and vision loss. They were also taken to prevent or lessen conditions associated with diabetes, including heart disease.

## CONCLUSIONS

The older women with type 2 diabetes in this study used dietary supplements. However, taking supplements was not perceived as a means of controlling blood glucose and, as such, supplements were not taken as part of their diabetes treatment regimen.

Public interest in the use of nutritional supplements is on the rise, with almost half of American adults taking dietary supplements daily.<sup>1</sup> Health food stores, magazines, television ads, and the Internet bombard individuals with messages claiming that nutritional supplements treat disease naturally. The increased use of supplements is due to a number of factors, including the increase in chronic disease, consumer interest in natural foods, increased cost of conventional medicine, and the fear of adverse reactions to conventional drugs.<sup>2</sup> Although the number of health-related claims for supplements is vast, the number of clinical trials related to supplements is limited. Not all supplements are safe or beneficial, and much of the alleged effectiveness of dietary supplements has been promoted through anecdotal accounts. However, appropriate intake of vitamins, minerals, and other nutrients can contribute to the management of diabetes.

#### BACKGROUND

Diabetes mellitus is a serious chronic disease characterized by abnormalities in the metabolism of carbohydrate, protein, and fat.<sup>3</sup> Type 2 diabetes, previously referred to as adult-onset diabetes or non-insulin-dependent diabetes, is the most common form of the disease. Type 2 diabetes affects the elderly disproportionately, and women have a slightly higher incidence of the disease than men.<sup>4</sup> In Colorado, the number of persons diagnosed with diabetes has increased by approximately 50% since 1994, with diabetes affecting 6.5% of the total adult population and 25% of adults over age 65.<sup>5</sup> Complications resulting from type 2 diabetes include retinopathy, neuropathy, nephropathy, and peripheral vascular disease. In addition, type 2 diabetes is a major risk factor for cardiovascular disease.<sup>3</sup>

Medical nutrition therapy is an integral component of diabetes care and management. The primary goals of medical nutrition therapy are to improve metabolic control (glucose and lipids), provide appropriate calories, and improve overall health through optimal nutrition.<sup>6</sup> Many of the chronic health conditions seen in the elderly, including diabetes, have nutritional causes as well as nutritional consequences, such as restricted diet and/or activity and nutritional deficiencies due

to food-drug interactions. However, patients and primary care providers identify the following of diet regimens as one of the most challenging components of diabetes care.<sup>7,8</sup>

#### DIETARY SUPPLEMENTS

A *dietary supplement* is defined by the Dietary Supplement Health and Education Act of 1994<sup>9</sup> as a product intended to supplement the diet that bears or contains one or more of the following ingredients: (a) a vitamin; (b) a mineral; (c) an herb or other botanical; (d) an amino acid; (e) a supplement used by man to supplement the diet by increasing the total dietary intake; or (f) a concentrate, metabolite, constitute, extract, or combination of any ingredient in this list. In the United States, dietary supplements are differentiated from drugs and food additives and are not subject to the same regulations. The United States Food and Drug Administration does not authorize or test dietary supplements for safety or effectiveness in relation to the manufacturers' claims.<sup>10</sup>

Estimated sales of dietary supplements have increased from \$10.3 billion in 1996 to \$18.8 billion in 2003.<sup>11</sup> Approximately 48% of supplement sales are in the form of vitamins and minerals, followed by herbs and botanicals. The Third National Health and Nutrition Examination Survey conducted between 1988 and 1994 looked at the prevalence and trends of nonvitamin, nonmineral dietary supplement usage.<sup>12</sup> Results indicated that age was one of the most important factors in the use of herbal and other botanical and nutrient supplements. The highest usage of herbs and botanical supplements occurred among individuals in later middle and earlier older ages (eg, between ages 55 and 74).<sup>13</sup> Women were typically more likely to use dietary supplements than men.<sup>14</sup> People with diabetes use dietary supplements with the hope of lowering their blood glucose level, relieving neuropathic pain, improving coexisting chronic diseases, and improving their well-being.<sup>15</sup>

#### PURPOSE

The purpose of this study was to explore the meaning of taking dietary supplements from the perspective of being an older woman with type 2 diabetes. This research was part of a larger study that explored factors influencing the dietary choices of older women with type 2 diabetes living in rural northwest Colorado.

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### Research Questions

1. When you think of diabetes, what words come to mind?
  2. What led up to your diagnosis of diabetes?
  3. What kinds of changes in your life have you made because of diabetes?
  4. When you think of eating, what words come to mind?
  5. How does your diabetes affect the types of foods you choose? (Probe: What kinds of changes in your eating habits have you made because of diabetes?)
  6. Are there foods that you associate as being good for a person with diabetes?
  7. Are there foods that you associate as being bad for a person with diabetes?
  8. What types of home remedies do you use for your diabetes or other health conditions? Are there herbs, vitamins, or other treatments you use to care for your diabetes or other health concerns?
  9. What are your thoughts on vitamin supplements? What types of vitamins do you associate as being good for a person with diabetes?
  10. Are you familiar with herbs? How do you feel about using herbal supplements? What types of herbs do you associate as being good for a person with diabetes?
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### RESEARCH DESIGN AND METHODOLOGY

A qualitative phenomenological framework guided the present study. Qualitative methods were used to gather information about personal experiences and help in understanding the process, circumstances, beliefs, and values associated with those experiences.

*Phenomenology* is an inductive, descriptive research approach rooted in philosophy, sociology, and psychology. The focus of this approach is to understand and describe the meaning of an experience and identify important concepts in the participants' own words.<sup>16</sup> As a research method, phenomenology is a rigorous, critical, and systematic investigation of phenomena.<sup>17</sup> Phenomenology is not a static philosophy; there is no single methodology to direct research or data analysis. Phenomenology usually involves studying a small number of subjects (up to 10) through extensive and prolonged interviews to develop patterns and relationships of meanings. Purposeful sampling is frequently used in phenomenological research. Individuals are selected for participation based on a particular experience and willingness to share that experience. Phenomenology requires the researcher to identify any preconceived notions about the phenomena under investigation, and bracket those thoughts to best understand the experiences of participants in the study.<sup>18</sup>

### Data Collection

In-depth individual interviews were conducted with women over the age of 65 with type 2 diabetes. An interview guide was developed to assist with questions

and provide a place for taking notes. The interview guide consisted of 10 questions that provided a framework for the interview yet allowed flexibility to explore different pathways as new thoughts developed. In keeping with phenomenological interviewing techniques, each interview began with an introductory question to focus on the experience of diabetes and allow the participants to describe their experience with diabetes. Participants were then asked a series of open-ended questions related to food, eating, and dietary supplements. Probes were used as needed to elicit in-depth responses. Since the original focus of the study was to explore various areas related to food choice, questions specific to these areas were included in the interview guide (see the Table). Questions 8 through 10 related to dietary supplements.

Three certified diabetes educators working with a population similar to the population in this study evaluated all of the interview questions. The primary investigator of the current study (LO) pilot tested the questions with 5 volunteers with backgrounds similar to that of the study participants. Initial questions were revised to increase clarity.

### Study Sample

Criteria for participant eligibility were women aged 65 and over, living in rural northwest Colorado, and diagnosed with type 2 diabetes for at least 1 year. Selection was restricted to females living independently who were the primary food/nutrient purchasers and preparers of food in their households. Nurse educators in northwest Colorado nominated participants who they knew met the selection criteria.

### Setting

Interviews were conducted in the homes of 7 participants; 2 participants chose to be interviewed in the researcher's office. All interviews were audiotaped and conducted by the same investigator (LO). Interviews were semistructured, open ended, and lasted 45 to 90 minutes. Prior to conducting the interviews, the study was reviewed and approved by the Human Research Committee (HRC) at Colorado State University and by the Northwest Colorado Visiting Nurse Association. Each participant signed an HRC-approved informed consent form.

### Data Analysis

Data analysis was guided by Moustakas's (1994) method of analyzing phenomenological data.<sup>18</sup> This analysis was not a linear process but consisted of simultaneous data collection, data analysis, and narrative reporting. Audiotapes from the interviews were transcribed verbatim and read through in their entirety. Significant statements were extracted and treated with equal value, a process known as *horizontalization*. Meanings were formulated from the significant statements by reading, rereading, and reflecting upon the statements in the transcriptions. Statements were then sorted and compared to develop a textural description of the meanings that dietary supplements had for these women.

Issues of trustworthiness were addressed according to the criteria illustrated by Creswell.<sup>16</sup> Credibility was enhanced through the researcher's extensive and varied field experience in nutrition and diabetes. Member checks, or letting participants review the researcher's summary, took place at the end of each interview. Dependability was ensured through dense description of the findings and peer examination. Confirmability was enhanced by the use of an interview guide.

## RESULTS

### Participant Characteristics

Nine women, ranging in age from 65 to 88 years, participated in the study. The sample was predominantly Caucasian (8 Caucasian, 1 Italian Hispanic woman), which is reflective of the population of northwest Colorado (93% Caucasian).<sup>19</sup> Seven of the 9 participants lived alone, and all had at least 1 comorbid illness in addition to diabetes, including multiple sclerosis and cardiovascular disease. Participants had been diagnosed

with type 2 diabetes from 1½ years to 18 years, with an average duration of 8 years. Diabetes treatment regimens varied from diet and exercise guidelines provided by a certified diabetes educator (n=1), to oral medication (n=6), to insulin and oral medication (n=2). Most of the study population (n=8) had been rural dwellers for most of their lives.

### Key Findings

Data analysis provided insight into use, sources of information, and beliefs related to dietary supplements.

### Use of Supplements

Eight of the 9 participants used some form of vitamin, mineral, or herbal supplement. Multivitamins were used by each of the 8 women, and the number of additional supplements taken varied from 2 to 6 per day.

### Sources of Information on Supplements

Participants indicated a variety of sources for information about dietary supplements. Friends, television, the Internet, women's magazines, "people talk," and the radio personality Paul Harvey were all cited.

Family members influenced supplement use for some participants. Daughters were mentioned as the primary source of supplements: "My daughter sent me a bottle and it's got calcium, potassium, and magnesium, and they're real good" and "My daughter-in-law is a very healthy person, very health conscious; she's given me lots of supplements."

Radio was another way that individuals heard about supplements. One participant who was already taking a number of supplements stated:

Right now, I hear Paul Harvey advertising one. He claims that people got their sight back, but I've been scared to talk to them [the company]. Occul, ocul, livite, he advertises. Oculivite, I think it is. He's named two people that have gotten their eyesight back and were doing so great. I've been tempted to call that number.

The news and television were cited as being a source of information for a number of participants. According to one participant, "You hear all about everything [vitamins] now-a-days on it [television]. But I can't take all of them!"

Most participants did not discuss supplement use with their physician. However, one participant valued her doctor's input and was comfortable asking questions about supplement use. This participant said,

“I listen to the news, but I’ll tell you what, I listen to my doctor, what he tells me to do, that’s what I do. If I see something and I wonder, I’ll ask him; he usually says no.”

In general, herbs were viewed with more distrust than vitamin/mineral supplements or healthy natural foods. One participant stated:

I’m not much into the herbs. I’ve been taking flaxseed. . . . I eat that on my breakfast food and different things. It’s healing. . . . A lot of them [friends] take the oil but I went and got the seed. I don’t know if the oil is any better or not. I have friends that have tried to get me to take a lot of this herbal stuff. . . . One friend had been trying to get me to take [ginkgo and ginseng] . . . I don’t really take a lot of that kind of stuff, but I have nothing against vitamins, minerals, and things because I think there are a lot of people that need it. But I think as long as my lab work is always ok, and I’ve never had, except after my hip [replacement], a doctor suggest I take them [calcium]. But I certainly wouldn’t mind taking them.

Another participant commented on the use of herbs:

All those things [herbs] I think are hard to work into where you might get enough to do yourself any good. You get kind of panicky when you have this mess [diabetes]. You hear things and you think now they did tell me one time that you shouldn’t take too many herbs?

One of the participants had been taking bilberry for years but did not recall how she heard about it. She stated: “I did that [bilberry] on my own. I don’t remember who told me, someone told me it was so good. I don’t know if it’s helped me much or not. Maybe it’s helped me from getting worse, I don’t know.”

#### **Beliefs Concerning Supplement Use in Relationship to Diabetes**

Most of the participants took a daily multivitamin. General reasons for use were for nutritional insurance in light of a reduced appetite. One participant explained her use in the following way:

More than for my diabetes, I take it [a multivitamin] because of my age, and the fact that I can’t hold as much [food]. When they say I should have this much carbohydrate and this much protein and this much fruit and this much vegetables and I eat what I can hold. Then I run out of space and can’t finish anything or I leave one of those things out entirely. I feel I need some help.

a number of participants indicated that they used vitamin C and vitamin E primarily to reduce their risk of heart disease.

They just say they’re [vitamin C and vitamin E] real good for your health. It’s supposed to fight off cancer and heart disease. That’s what I heard. Figure it can’t hurt.

Vitamin E is good for the heart and stuff like that. I think at my age a little more vitamin C might do me good and it will help with colds. It’s very difficult when I do get sick . . . so I take vitamins [C and E].

Calcium supplements were also used by many of the participants. Two of the participants explained their reasons for taking calcium supplements as follows: “After my hip replacement, I started taking calcium. My doctor didn’t think I was eating enough food [high in calcium]” and “You’d think I had a drugstore . . . I take these for your bones.”

Arthritis was frequently mentioned as a reason for taking supplements.

I take glucosamine and chondroitin for my arthritis. I started taking it probably 4 or 5 years ago . . . and it was real expensive then, it wasn’t massively produced. It was getting too expensive and I quit taking it. It was like 2 or 3 weeks later and I could tell the difference. I hurt. I started taking it again and it [arthritis pain] got better. So, I do believe in it. Luckily, it has gotten cheaper.

One participant who used garlic said, “Well, they say garlic is good for you and it is. I have arthritis, and it seems like it even helped that.”

#### **DISCUSSION**

The purpose of this study was to explore the meaning of taking dietary supplements from the perspective of being an older woman with type 2 diabetes. Dietary supplements were used by 8 of the 9 participants, with the number of supplements used varying from 2 to 6 a day. Participants were more likely to use vitamin/mineral supplements than herbal supplements, which they viewed with uncertainty.

Supplements were generally used appropriately for the intended conditions. Individual supplements were used primarily to prevent or treat conditions related to aging, such as osteoporosis, arthritis, and vision loss. They were also taken with the aim of preventing

or lessening conditions associated with diabetes, including heart disease. Participants believed that multivitamins (one daily) provided insurance against aging and an inadequate diet. Individual supplements used by participants included calcium to prevent or treat osteoporosis, and vitamins C and E to enhance heart health. One participant took bilberry and lutein in hopes of improving her eyesight. Two participants used glucosamine combined with chondroitin and garlic to alleviate arthritis pain. Overall, however, supplements were not perceived as a means of controlling blood glucose and, as such, were not taken as part of a diabetes treatment regimen.

**S**ources of information on supplements varied from family and friends to the media. A number of women in this study indicated that they listen to the radio for information in lieu of watching television or reading (due to diminished vision). However, none of these sources can offer a well-rounded assessment of the benefits and risks of dietary supplements without knowledge of the individual's medical history. Medical professionals were rarely mentioned as a source of information. These findings correlate with trends reported by Eisenberg and colleagues,<sup>1</sup> who found that less than 40% of alternative therapies were disclosed to a physician. Nonetheless, as evident from the researchers' personal experience and findings by Radimer and colleagues,<sup>20</sup> people do ask nutritionists about dietary supplements.

#### **LIMITATIONS OF THE STUDY**

The findings from this study have limited generalizability because of the homogeneity of the participants, who were primarily Caucasian women over the age of 65 with type 2 diabetes. In addition, the study findings reflect the specific views of women from a rural background and may not apply to women living in urban communities or those from more culturally diverse backgrounds.

A final limitation of the study was the sampling method used. Nurse educators nominated the participants, suggesting that participants had some contact with healthcare providers and were willing to discuss their diabetes. As a result, women who did not seek regular health care were not represented in this study.

#### **IMPLICATIONS FOR DIABETES EDUCATORS**

As interest in and use of dietary supplements increases, research in the field is certain to expand. Results of this study show that patients with diabetes receive mixed messages about dietary supplements from friends, family, and the media. It is important for dietitians and diabetes educators to stay informed about the types of supplements available, the specific health claims related to supplements, the reasons for their use, and interactions with other medications. Dietitians and diabetes educators can use their role to provide accurate and reliable information about dietary supplements and how they may be incorporated into an individual's diabetes treatment plan.

## REFERENCES

1. Eisenberg D, Davis R, Ettner S, et al. Trends in alternative medicine use in the United States, 1990-1997. *JAMA*. 1998;280:1569-1575.
2. Tenney L. *Today's herbal health*. 5th ed. Pleasant Grove, Utah: Woodland Publishing; 2000.
3. Expert Committee on the Diagnosis and Classification of Diabetes Mellitus. Report of the Expert Committee on the Diagnosis and Classification of Diabetes Mellitus. *Diabetes Care*. 2001;24:S5-S20.
4. American Diabetes Association. Facts and figures. The dangerous toll of diabetes, 2000. Available at: [www.diabetes.org/ada/facts.asp](http://www.diabetes.org/ada/facts.asp). Accessed December 2002.
5. Colorado Department of Public Health and Environment, Health Statistics Section/Chronic Disease Section. Prevalence, Health Behaviors, and Preventive Health Practices Among Adult Coloradans With Diagnosed Diabetes: Results from the Behavioral Risk Factor Surveillance System, 1997-2000. Denver, Colo: Colorado Dept of Public Health and Environment; 2002.
6. American Diabetes Association. Evidence-based nutrition principles and recommendations for the treatment and prevention of diabetes and related complications (position statement). *Diabetes Care*. 2002;25:S50-S60.
7. Glasgow R, McCaul K, Schafer L. Barriers to regimen adherence among persons with insulin dependent diabetes mellitus. *J Behav Med*. 1986;9:65-77.
8. Jacques C, Jones R. Problems encountered by primary care physicians in the care of patients with diabetes. *Arch Fam Med*. 1993;2:739-741.
9. US Department of Health and Human Services, Dietary Supplement Health and Education Act of 1994. Washington, DC: US Dept of Health and Human Services; 1994. DHHS publication 103-417, 108 Stat. 4325.
10. Commission on Dietary Supplement Labels. Report of the Commission on Dietary Supplement Labels. Washington, DC: Office of Disease Prevention and Health Promotion; 1997.
11. Global Nutrition Industry 2004. Strategic information for the nutrition industry. *Nutrition Business Journal*, 2003. Available at: [www.nutritionbusiness.com](http://www.nutritionbusiness.com). Accessed January 2004.
12. National Center for Health Statistics. Third National Health and Nutrition Examination Survey, 1988-1994, NHANES III secondary laboratory data file. Hyattsville, Md: National Center for Health Statistics; 1998.
13. Slesinski M, Subar A, Kahle L. Trends in use of vitamin and mineral supplements in the United States: the 1987 and 1992 National Health Interview Surveys. *J Am Diet Assoc*. 1995;95:921-923.
14. Subar A., Block G. Use of vitamin and mineral supplements: demographics and the amounts of nutrients consumed; the 1987 Health Interview Survey. *Am J Epidemiol*. 1990;132:1091-1101.
15. Mozersky R. Herbal products and supplemental nutrients used in the management of diabetes. *J Am Osteopathic Assoc*. 1999;99:S4-S9.
16. Creswell J. *Qualitative Inquiry and Research Design: Choosing Among Five Traditions*. Thousand Oaks, Calif: Sage; 1998.
17. Streubert H, Carpenter D. *Qualitative Research in Nursing: Advancing the Humanistic Imperative*. 2nd ed. Philadelphia: Lippincott; 1999.
18. Moustakas C. *Phenomenological Research Methods*. Thousand Oaks, Calif: Sage; 1994.
19. US Bureau of the Census. Profile of general demographic characteristics: Routt and Moffat County, Colorado. Available at: [www.dola.state.co.us/demog/Census](http://www.dola.state.co.us/demog/Census). Accessed April 2002.
20. Radimer K, Subar A, Thompson F. Nonvitamin, nonmineral dietary supplements: issues and findings from NHANES III. *J Am Diet Assoc*. 2000;100:447-454.