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Patterns of Complementary Therapy Use for Symptom Management for Older Rural Adults with Diabetes

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Abstract

Studies on complementary therapy use among adults with diabetes are limited by crude use measures and lack of specificity of use for treating diabetes. Data are from a study including baseline and repeated 3-day assessments of complementary therapy use among rural African American and White older (age ≥ 64) adults (n=71). Most commonly used complementary therapies for diabetes at baseline included prayer (88.7%), food/beverages (50.7%), herbs (11.3%) and home remedies (9.9%). In repeated measures (1131 interviews), prayer was used on 57.2% of days, followed by food/beverages (12.7%), herbs (3.4%) and home remedies (2.7%). 56.3% who reported praying did so on ≥ 5 reporting periods; other complementary therapy use was sporadic. These data show, with the exception of prayer and food/beverages, limited complementary therapy use for diabetes treatment among rural older adults, and less inconsistent use patterns of most complementary therapies. Further research is needed to understand the motivations and patterns of complementary therapy use for diabetes patients.

Keywords

Complementary Therapy Use; Diabetes Mellitus; Rural Older Adults

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All authors participated in the overall design of the study.

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Introduction

Successful management of diabetes requires performing a combination of personal behaviors, such as adhering to dietary, physical and medication regimens, and checking the feet and blood glucose on a regular basis¹. One particular management strategy that is used for symptom management by some individuals with diabetes is the adoption and use of complementary therapies. These therapies can take a variety of forms, such as herbs, relaxation techniques, vitamins and minerals, and non-nutritional, supplements, and are believed to have therapeutic benefits by those that use them for treating acute and chronic symptoms of diabetes.

A number of studies from clinical, regional and national studies have documented the prevalence of complementary therapy use among adults with diabetes, with varying results with regard to general use and use specific to managing diabetes^{2–10}. These studies are generally lacking in three areas as it relates to our understanding of the use of complementary therapies among adults with diabetes. First, most studies suffer the measurement problem of a long-term, frequently one year, observation period wherein individuals are asked to report about any use of complementary therapies over the previous time period. This results in crude assessments of behavior that undermines clear understanding of complementary therapy use patterns. A second deficiency of previous studies is the variation in the types of complementary therapies considered. Some published studies are secondary analyses of data on complementary therapy use from a compiled list of therapies from the National Health Interview Survey^{2–4}, while others focus more on clinic populations, or regional or ethnic-specific population-based samples^{5–9}. This makes it difficult to adequately consider prevalence rates across studies. A third deficiency is that many of these studies do not consider the reasons for which complementary therapies are used, whether for general use, or if they are used specifically to treat symptoms associated with diabetes.

This study provides an extensive examination of complementary therapy use among rural older adults with diabetes. We conduct two separate analyses: first, we delineate the patterns of various forms of complementary therapy use over a six-month period to document the consistency of use of these therapies. We further explore the reported use of complementary therapies in response to specific symptoms related to diabetes. Results of this study can be used to further understanding of the patterns of complementary therapy use in this population and inform health care providers in assisting their patients with diabetes in successful self-management strategies.

Methods

Data for this analysis come from a study designed to document the daily use of complementary therapies among older adults (age ≥ 64) in three rural counties in south central North Carolina^{11–12}. Data were collected on complementary therapy use for specific symptoms on the days the symptoms occurred, for chronic conditions, and for health promotion and disease prevention. The study utilized a repeated measures design in which each participant completed a baseline interview, and then completed daily interviews on their use of complementary therapies on three consecutive days at one month intervals for six months. The study protocol was approved by the Wake Forest School of Medicine Institutional Review Board and all participants gave signed informed consent.

The three study counties were selected because of their diversity; 50–65% of the population of the study counties is members of ethnic minority groups. The counties have higher poverty rates than the state or nation, with two of the three counties having poverty

rates that exceeded 25% according to the US Census¹³. Eligibility for the study included: community-dwelling in the three study counties; aged ≥ 64; self-identified ethnicity as African American or White; English speaking; and, in sufficiently good health to give informed consent and to complete the series of interviews.

The study design called for the sample to be stratified by ethnicity (African American and White) and sex so that approximately 50 participants were recruited into each ethnic-sex group. A site-based procedure¹⁴ was used to recruit representative participants. Participants were recruited from 34 sites in the community, including county recreation departments (3 different sites), county social service departments (3), county government meetings (2), senior center and congregate meal sites (3), senior housing complexes (3), social and support clubs (7), churches (6), businesses (5), and polling sites (2). In addition, given the study teams' history of research in these counties, recruitment included some individuals who had participated in previous research studies, who were referred by other participants, and who were referred by community interviewers.

The baseline sample included 200 African American and White older adults: 52 African American women, 48 African American men, 50 White women, and 50 White men. Twelve individuals who were asked to participate in the study refused, for an overall participation rate of 94.4%, although we were not able to assess a true participant rate since individuals at specific sites could avoid being asked to participate. Of the baseline sample, 139 (69.5%) completed each of six sets of the follow-up interviews. Of the 61 participants who completed fewer than the six sets of follow-up interviews, 23 (11.5% of total sample) completed five sets, five (2.5%) completed four sets, five (2.5%) completed three sets, twelve (6.0%) completed two sets, eleven (5.5%) completed one set, and five (2.5%) completed only the baseline interview. The reasons for participants not completing all six sets of follow-up interviews varied: three participants died; nine became too ill to continue; twenty-two participants changed addresses and phone numbers and could not be located; fifteen participants decided not to continue. For this analysis, participants with at least one follow-up visit (n = 195) were included.

Recruitment and baseline data collection was completed from April 2008 through May 2009 and follow-up data collection was completed in January 2010 by trained interviewers. Baseline interviews were conducted by trained interviewers, typically in the participants' homes. Participants then completed a series of daily-diary follow-up interviews, either on the telephone or in person, on three consecutive days at intervals of at least one month. Baseline interviews ranged in length from 45 minutes to two hours; follow-up interviews generally took 20 minutes to complete, but ranged in length from 15 to 90 minutes. Participants were given a \$10 incentive for completing the baseline interview and each of the first two sets of follow-up interviews. They were given a \$15 incentive for completing each of the third and fourth sets of follow-up interviews, and a \$20 incentive for completing each of the fifth and sixth sets of follow-up interviews. The maximum incentive received by any participant was \$100.

A series of questions measured use of complementary therapies. These items were based on the general literature, our long-term research in rural communities, and in-depth interviews on complementary therapy use completed with older adults in the study counties^{15–18}. These questions included use of 11 specific home remedies (e.g., honey, lemon, vinegar, baking soda, olive oil, table salt, whiskey, Epsom salt, Vaseline, kerosene or turpentine, or WD-40), seven specific over-the-counter medicines (e.g., antiseptic cream, cough syrups or drops, cod liver oil, Ben Gay or Icy Hot, Vic's VapoRub, aspirin, pain relievers), nine specific vitamins or minerals (e.g., multivitamins, vitamin A, vitamin B6, vitamin C, vitamin E, calcium, iron, magnesium, zinc), nine specific herbs (e.g., aloe, garlic, ginseng, ginkgo

biloba, chamomile, mint), four specific supplements (e.g., flaxseed, fish, or omega-3 oil, coenzyme Q10, glucosamine sulfate, chondroitin), three specific practitioners (i.e., chiropractor, physical therapist, massage therapist), and four specific practices (i.e., relaxation, meditation, massage, formal exercise) in the past year. Participants were asked if they used additional specific therapies within each of these seven groups.

Participants were asked about 37 symptoms on each of the three days of the follow-up interviews. For each symptom that participants experienced in the previous 24 hours, they were asked how the symptom was treated. Participants were asked if they had: (1) taken an over-the-counter medicine; (2) eaten or drunk something to help; (3) taken a home remedy; (4) stayed in bed or rested; (5) prayed; (6) cut back on usual activities; (7) taken a medicine prescribed by a doctor for this symptom; (8) taken another type of prescription medicine; (9) visited a doctor; (10) taken an herb or supplement; (11) visited another health professional; (12) ignored the symptom or decided to wait and see; and (13) taken any other action. The participants were asked to specify the over-the-counter medicine, what they had eaten or drunk, home remedy, herb or supplement, and type of other health professional.

For each of the follow-up interviews participants were also asked how they treated each of four chronic conditions (arthritis, heart disease, diabetes, and respiratory disease), if they had them. The therapies included (1) pray; (2) over-the-counter medicine; (3) eaten or drank something special; (4) home remedy; (5) herb or supplement; (6) medicine prescribed by a doctor for this condition; (7) medicine not prescribed by a doctor; (8) visit a medical doctor; and (9) visit another health professional. The participants were asked to specify the over-the-counter medicine, what they had eaten or drunk, home remedy, herb or supplement, and type of other health professional.

Personal characteristics used to describe the sample include sex, ethnicity (African American, White), age (64 – 74 years, 75 years or older), marital status (currently married, not currently married), educational attainment (less than high school, high school, more than high school), and migration status (always lived in the South, lived outside the South at some point in their life). Measures of health care characteristics included the presence of any of 17 physician-diagnosed chronic conditions. For the purposes of this analysis, we examined three conditions common among persons with diabetes: heart disease, high blood pressure and depression or other mental conditions. Conventional health care characteristics included usual source of medical care (doctor's office or other source such as hospital emergency department, hospital outpatient department, community health center, or public clinic).

Statistical Analysis

The present analysis compares those study participants who reported being diagnosed with diabetes at baseline ($n = 71$, 35.5%) compared to those without diabetes ($n=124$, 64.5%) and had at least one follow-up measure ($n=195$). The high rate of diabetes in this sample is reflective of the increased risk of diabetes in this ethnically diverse population. Percentages were calculated for reported use of prayer, food or beverage, over-the-counter remedies, herbs, home remedies and complementary health professionals for their diabetes in the past year. Of the 71 participants with diabetes at baseline, 52 (73.2%) provided data for all six of the monthly follow-up data collection periods. Calculations were made for the percentage of days (out of a total of 936 for participants with complete date) in which a specific therapy was used to treat their diabetes, and the percentage of participants who reported using a specific therapy for their diabetes at least five of the six follow-up visits. We also selected four symptoms common among people with diabetes (Weakness, Feeling Tired, Low Energy; Constipation, Numbness; Dizziness, Fainting, Lightheadedness) and determined the level of use of the selected complementary therapies for each individual and the number of

days in which the symptom was reported at follow-up. Multiple regression analysis was used to assess associations between use of specific complementary therapies for selected symptoms according to diabetes status, adjusted for the demographic and health characteristics identified above. All analyses were performed using SAS version 9.2 (SAS Institute, Cary, NC).

Results

Demographic and health characteristics of the 71 study participants who reported being diagnosed with diabetes compared to the 124 who did not report having been diagnosed with diabetes are presented in Table 1. The diagnosed diabetes group was slightly more likely to be African American compared to white, to have more than a high school education compared to having a high school degree or less and to be in the 64 – 74 year age group compared to the 75 year age group. About two-thirds were not currently married. Nearly half reported having been told they have some form of heart disease, and about 17% reported being told they have depression or some other mental health condition. Nearly all participants (90.1%) reported being told they have high blood pressure, which was statistically greater compared to those without diabetes (75.0%, $p < 0.05$). Almost all participants (85.9%) reported that their usual source of medical care was provided in a doctor's office compared to another source.

The most commonly reported complementary therapies used at baseline for diabetes were prayer (88.7%) and food or beverages (50.7%) (Table 2). Herbs and home remedies were used by about 10% (11.3% and 9.9%, respectively) of the sample. Use of over-the-counter remedies and complementary health professionals was infrequent (<5%). Examining data across the six-month follow-up period, prayer was used on slightly more than half (57.2%) of the reporting days, and was reported to be used at least five of the six months by 56.3% of participants. Food or beverage use was used less consistently (12.7% of total days and 7.4% reporting use in five of the six months). Use of the other complementary therapies across the follow periods was infrequent (<10%).

Weakness, feeling tired and having low energy was the most commonly reported symptom, being identified by 53 participants over 345 total days (Table 3). For all four symptoms, the vast majority of participants reported praying to relieve the symptoms, and this occurred at least over half of the days in which the symptoms were reported, with exception for numbness (prayed for on 49% of days). Foods or beverages were used by about half the participants for these symptoms, with exception for numbness by 13.3%, but not very frequently across the time period. Use of over the counter medications for symptoms varied by symptom, with 3% of participants using it for dizziness, fainting or lightheadedness for one total day, 24% of participants using them for weakness, feeling tired or having low energy on 8% of the days, 33% using them for numbness on less than 20% of days surveyed, and used most for constipation by nearly 70% of participants on 53% of days of follow-up. Herbs and home remedies were used by up to 16% of participants over less than 10% of the reported days. Complementary health professional and over the counter remedies were rarely if ever used to treat these symptoms.

The only associations of complementary therapy use for symptoms management that were significantly different between those with and without diabetes were higher odds of use among those with diabetes for cutting back when feeling weak, tired or having low energy (odds ratio 1.57, 95% confidence interval 1.01 – 2.44), and in response to constipation (odds ratio 8.36, 95% confidence interval, 1.57 – 44.41) (Table 4) compared to those without diabetes.

Discussion

Diabetes is a common chronic health condition among older adults that represents a significant public health and health care burden¹⁹. Self-management guidelines have been established with the purpose of achieving successful outcomes to avoid the myriad of complications associated with diabetes¹. Despite the availability of these guidelines, many older adults find it challenging to adhere to them for a variety of reasons, including costs, physical limitations, and a limited understanding of the guidelines^{20–22}.

For many chronic health conditions, alternative forms of treatment are often sought to offset the costs of or as a result of dissatisfaction with conventional treatment. There is currently a substantial body of literature on the use of complementary therapies among adults with diabetes^{2–10}. For example, Saydah and Eberhardt³, using data from the National Health and Nutrition Examination Survey, reported that, among adults with diabetes, 41.4% had ever used complementary therapies and 26.4% had used complementary therapies in the past year. Garrow and Egede⁴ showed a prevalence rate of complementary therapy use in the past year of 47% from adults in the 2002 National Health Interview Survey. Arcury et al.⁵ showed high rates of complementary therapy use among rural older adults with diabetes, but limited use specifically for treating diabetes.

In the current study, older adults with diabetes in three rural counties in North Carolina were asked in-depth questions about their use of complementary therapies to treat their diabetes. This study adds to the existing literature on this topic by examining use of these therapies with a repeated measures approach to determine long-term patterns of use. We found that the most commonly used complementary therapies for managing diabetes were prayer and food or beverages, used by at least half of our sample. There was limited use (<15%) of other complementary therapies. Use of prayer was fairly consistent across the six-month study period, being used over half of the days in which data were collected. Use of foods and beverages was used less consistently (12.7% of days reported). Thus, our study demonstrates that, with the exception of prayer, complementary therapy use for managing diabetes is fairly inconsistent among older adults with diabetes. This may indicate that these older adults are largely satisfied with the conventional care they receive to treat their diabetes, or that their use of non-conventional therapies is mostly sporadic, and perhaps used when new or unfamiliar acute symptoms emerge.

Given the deeply held religious values of the residents of these communities, we are not surprised at the high level and consistent use of prayer for treating diabetes. Other studies have shown high levels of use of prayer for health, particularly in the southern United States^{23–27}. Health care providers should be sensitive to the value that their patients place on their religious beliefs, and how they conceptually integrate their religious beliefs into their health self-management. This can lead to discussions in the clinical setting which may elucidate the motivations of these patients in adhering to self-management guidelines for successful diabetes outcomes.

Our study has a number of strengths, including a focus on a rural, low-income, ethnically diverse population at high risk for diabetes and its complications. We also took advantage of data from a repeated samples design to assess patterns of use of a variety of complementary therapies, drawn from the literature and our experience working in these communities. Limitations of the study include the relatively small sample size, affecting our ability to make subgroup comparisons, and our time period of long-term use being limited to six months. Also, given the population from which our sample was drawn, our findings may not be generalizable to other populations. Nonetheless, our study adds an important component to a substantial body of literature on the use of complementary therapies among adults with

diabetes. Further research should expound on the entire experience and rationale of complementary therapy use among adults with diabetes, including assessment, motivations and perceptions of these patients in their self-management experience.

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Table 1

Personal, Health and Health Care Characteristics of Older Adults With and Without Diabetes in Three Rural North Carolina Counties.

Characteristic	Diagnosed with Diabetes (N=71)	Not Diagnosed with Diabetes (N=124)
	Number (%)	Number (%)
Sex		
Male	35 (49.3)	62 (50.0)
Female	36 (50.7)	62 (50.0)
Ethnicity		
African American	38 (53.5)	55 (44.4)
White	33 (46.5)	69 (55.6)
Age		
64 – 74 years	40 (53.6)	76 (61.3)
75 years and Older	31 (43.7)	48 (38.7)
Marital Status		
Currently Married	26 (36.6)	54 (43.5)
Not Currently Married	45 (65.4)	60 (56.5)
Educational Attainment		
High School or Less	34 (47.9)	58 (46.8)
More than High School	37 (52.1)	66 (53.2)
Migration Status		
Always Lived in the South	36 (50.7)	79 (63.7)
Lived Outside the South	35 (49.3)	45 (36.3)
Specific Chronic Conditions		
Heart Disease	32 (45.1)	40 (32.3)
High Blood Pressure	64 (90.1)	93 (75.0) *
Depression/Other Medical Condition	12 (16.9)	23 (18.5)
Usual Source of Medical Care		
Doctor's Office	61 (85.9)	111 (89.5)
Other	10 (14.1)	13 (10.5)

* p<0.05 for comparison between those with and without diabetes.

Table 2

Use (Any Reported Use, Number of Days Used) of Self-Care Practices for Diabetes by Older Adults in Three Rural North Carolina Counties.

Therapy	Baseline (n=71)	Six-Month Follow-Up (n=52)	
		N, % of Days Used (Total of 936)	N, % of Use at Least 5 of 6 Months
Prayer	63 (88.7%)	531 (57.2%)	27 (56.3%)
Food or Beverage	36 (50.7%)	119 (12.7%)	2 (7.4%)
Over-the-Counter Remedies	1 (1.4%)	--	--
Herbs	8 (11.3%)	32 (3.4%)	1 (14.3%)
Home Remedies	7 (9.9%)	25 (2.7%)	0
Complementary Health Professionals	3 (4.2%)	3 (0.3%)	0

Table 3

Use of Complementary Therapies for Diabetes-Related Symptoms Among Rural Older Adults with Diabetes

	Number of Participants with Symptom/ Number of Days with Symptom	Prayer	Food or Beverage	Over the Counter Remedies	Herbs	Home Remedy	Complementary Health Professional
Weakness, Feeling Tired, Low Energy	53/ 345	43 (81.1%)/ 228 (66.1%)	31 (58.5%)/ 101 (29.3%)	13 (24.5%)/28 (8.1%)	8 (15.1%) / 30 (8.1%)	2(3.8%) 2 (0.6%)	2 (3.8%)/ 2 (0.6%)
Constipation	23/ 111	16 (69.6%)/ 57 (51.4%)	13 (56.5%)/ 23 (20.7%)	16(69.57%)/59 (53.2%)	3 (13.0%) / 5 (4.5%)	1 (4.4%) 2 (1.8%)	0 (0.0%)/ 0 (0.0%)
Numbness	30/ 147	25 (83.3%)/ 72(49.0%)	4 (13.3%)/ 4 (2.7%)	10(33.3%)/27 (18.4%)	0 (0.0%)/ 0 (0.0%)	0(0.0%) /0 (0%)	0 (0.0%)/ 0 (0.0%)
Dizziness, Fainting, Lightheadedness	30/ 80	18 (60.0%)/ 51 (63.8%)	6 (20.0%)/ 10 (12.5%)	1 (3.3%)1 (1.3%)	0 (0.0%)/ 0(0.0%)	0(0.0%) 0 (00%)	0 (0.0%)/ 0 (0.0%)

Table 4

Odds of Having Diabetes and Using of Therapy in Response to Symptoms

Symptoms	Prayer		Ignore		Rest		Cutback		Food or Beverage		Herbs		Home Remedy	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Weakness, Feeling Tired, Low Energy	1.61	(0.95–2.74)	1.11	(0.68–1.80)	1.08	(0.66–1.78)	1.57	(1.01–2.44)	.		0.68	(0.25–1.87)	.	
Constipation	1.02	(0.41–2.53)	1.94	(0.97–3.86)	.		8.36	(1.57–44.41)	.		1.59	(0.27–9.45)	.	
Numbness	2.67	(1.18–6.02)	1.18	(0.59–2.36)	0.76	(0.33–1.76)	1.2	(0.42–3.4)	.		.		.	
Dizziness, Fainting, Lightheadedness	0.83	(0.34–2.06)	0.88	(0.39–1.97)	0.8	(0.3–2.12)	0.8	(0.33–1.93)	.		.		.	
Feeling Sad/ Depressed	1.54	(0.71–3.33)	0.85	(0.4–1.82)	0.8	(0.34–1.86)	2.04	(0.84–4.92)	.		.		.	