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Comparing Two Questionnaires for Eliciting CAM Use in a Multi-Ethnic US Population of Older Adults

Sara A. Quandt, PhD,
Dept. of Epidemiology and Prevention, Division of Public Health Sciences, Wake Forest School of Medicine, Medical Center Boulevard, Winston-Salem, NC 27157, Phone: (336)716-6015, Fax: 336-716-6063, squandt@wakehealth.edu

Edward H. Ip, PhD, **Santiago Saldana, MS**, and **Thomas A. Arcury, PhD**

Abstract

Introduction—The NAFKAM International CAM Questionnaire (I-CAM-Q) was designed to facilitate cross-study comparisons of CAM usage. This research presents the first empirical study of the I-CAM-Q's performance.

Materials and Methods—Data were collected in two studies in a multi-ethnic (African American, American Indian, and white) population of older adults in the US. In 2010, 564 adults 60+ years were recruited. The I-CAM-Q was interviewer-administered. Data were compared to those collected in 2002 from a random sample of 701 Medicare recipients 65+ years. The 2002 survey included an extensive inventory of specific CAM therapies derived from local ethnographic research. Comparisons of the responses for 14 CAM modalities common to the two studies used logistic regression adjusted for demographics.

Results—There were no significant differences between the 2002 and 2010 surveys in the proportions reporting 10 modalities, including use of chiropractors, homeopaths, acupuncturists, herbalists, spiritual healers, vitamins, minerals, homeopathic remedies, Qigong, visualization, and prayer for health. Significantly less use of physicians and more use of relaxation techniques were reported in 2010. Herb use and garlic, as a specific herb, were reported significantly less in 2010.

Conclusions—Overall, the I-CAM-Q obtained results similar to those produced by a population-specific questionnaire. Those differences observed appear to reflect differences in the studies' inclusion criteria or secular trends in CAM. This study supports the intention of the I-CAM-Q to substitute for local and regional surveys in order to allow cross-study comparisons of CAM use. Further tests, preferably through contemporaneous data collection are needed in other populations.

Keywords

Complementary Medicine; Alternative Medicine; Diabetes; Elderly; African American; American Indian

All research was done by the authors.

Conflict of Interest
The authors have no conflicts of interest to declare.

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Introduction

A large literature documents the widespread use of diverse forms of complementary and alternative medicine (CAM) across many countries, including those in Europe and North America. In the United States (US), for example, studies suggest CAM use has increased dramatically in recent decades [1–5]. In other countries, CAM use is similarly high, and has been incorporated into national medical systems [6–11].

Despite the research interest in CAM, there are no established conventions for recording its use. Therefore, different studies use different definitions and different time frames for CAM in surveying use. The difficulty these measurement issues present for cross-study and cross-national comparisons was recognized and made the subject of an international conference held in Sommarøy, Norway, in 2006, to design a survey instrument that could be used across different populations. The workshop, sponsored by the National Research Center in Complementary and Alternative Medicine (NAFKAM) of the University of Tromsø, Norway, and the Norwegian Research Council, included researchers from a range of backgrounds (including anthropology, sociology, nursing, health services, medicine, public health, pharmacy) and expertise (survey design, questionnaire construction, cross-cultural research). Some participants also had clinical experience with conventional or alternative/traditional medicine (e.g., homeopathy, acupuncture, herbal medicine, energy healing, traditional Chinese medicine) or both (e.g., physicians practicing integrative medicine). Researchers represented English-speaking countries of the US, Canada, Great Britain, and Australia, as well as Norway, Germany, Sweden and Denmark. They included persons experienced in CAM research in non-western societies. Observers from the World Health Organization also attended the workshop. The workshop developed a survey instrument, the International Complementary and Alternative Medicine Questionnaire (I-CAM-Q).

The I-CAM-Q has been published and described in detail elsewhere [12]. Developers decided to keep the instrument brief, as greater length would likely discourage its inclusion in broader studies of health behaviors and health services. Briefly, the I-CAM-Q provides a core set of items that are intended to be asked of all respondents whenever it is used. These include items about consulting with medical practitioners from different medical traditions (e.g., biomedical physicians, chiropractors, acupuncturists, herbalists, and spiritual healers), receiving complementary treatments (e.g., manipulation, spiritual healing) from physicians, use of herbal medicines and dietary supplements, and self-help practices (e.g., meditation, Tai Chi). In all categories, researchers can add local CAM modalities of interest, and there are additional spaces for the respondent to add specific items not queried.

The I-CAM-Q was developed with input from a substantial number of experts. However, its use has not been reported in any population, nor have the results obtained been compared with those from longer inventories of CAM. Therefore, the analyses described here are designed to explore the strengths and weaknesses of the I-CAM-Q at eliciting CAM use. The analyses draw on an opportunity to use the I-CAM-Q to collect data in 2010 in a multi-ethnic population of older adults with diabetes that had been surveyed earlier with a more specific and detailed, ethnographically-grounded CAM data collection instrument. The purpose of these analyses is to compare those items that were common to both data collection processes in order to ascertain whether the I-CAM-Q was able to obtain results comparable to those obtained in the previous more detailed survey, and to explore any discrepancies in the results obtained.

Materials and Methods

Study Site

This study compares samples or older adults drawn as part of the ELDER (Evaluating Long-term Diabetes Self-management among Elder Rural Adults) Study in 2002 (ELDER1) and 2010 (ELDER2) from rural counties in southeastern North Carolina. The counties were selected because they have large numbers of minority residents, including those who are African American and American Indian. The counties represent variability in rurality [13]. All have large areas of low population density rural land, but they vary in their proximity to metropolitan areas and in the size of the urban areas within the counties.

Samples

The ELDER1 study recruited a random sample of community-dwelling adults. The sampling frame was Medicare claims records. Inclusion criteria were residence in the study counties, age 65 or older, and at least two outpatient claims for diabetes (ICD-9 250) in 1998–2000. Random samples of men and women were selected. Recruitment has been described in detail elsewhere [14]. Briefly, an interviewer contacted each participant to confirm diabetes status and ethnicity, and assess eligibility (resident of study counties, age ≥65, English speaking, physically and mentally able to participate in survey), and willingness to participate in the study. Less than 1% of adults 65 and older in the study area are Hispanic, and there are no other non-English-speaking groups of any size.

Of the 1,222 persons contacted for ELDER1, 313 were disqualified when initially contacted for recruitment because they reported that they did not have diabetes (n=118), lived out of study counties (n=51), lived in a nursing home (n=84), were less than 65 years of age (n=2), did not speak English (n=1), failed a Mini-Mental State Exam (n=5), or were deceased (n=52). The eligibility of an additional 122 persons could not be assessed because a surrogate refused their participation in the study (n=48), or reported they were physically (n=8) or mentally (n=14) unable to respond to eligibility questions; the remainder could not be located (n=52). For those who met the eligibility criteria at initial recruitment, 86 were not interviewed because they refused participation (n=74), or study staff determined that the participant was physically (n=6) or mentally (n=6) unable to participate at the time the interview was attempted. The final sample included 701 individuals. The overall response rate for eligible participants was 89% (701/787). Three participants were excluded from this analysis because they did not fit the three ethnic categories. The sample sizes for analyses varied due to missing data among interview items.

The ELDER2 sample consisted of 564 individuals 60 years of age and older who had had a diagnosis of diabetes for at least two years. The goal of the recruitment strategy was to recruit up to 100 in each of six gender/ethnic (African American, American Indian, white) cells. Site-based recruitment [15] was conducted in which participants were drawn from multiple sites, organizations, and networks in the community (e.g., senior clubs, churches, civic organizations). Formal and informal community leaders were contacted and enlisted to help with study recruitment, either by referring participants or providing access to community sites. Study staff members had spent time in these sites over the previous 14 years as part of ongoing mixed methods research projects with similar recruitment strategies and were therefore familiar with both community organizations and sites [16–19].

The number of participants from each type of recruitment location included: 118 from community-based organizations (veteran, civic groups, senior clubs, etc.), 40 from health-related community events, 42 from churches, 13 from flyer postings and public recruitment, 79 from senior housing, and 104 from congregate meal sites. An additional 170 were

recruited through social networks of participants (93), community leaders (35), interviewers (21), and lists of past participants in studies that had used site-based sampling (21).

Data Collection

For ELDER1, respondents participated in a single in-home interview of approximately 1.5 hours that collected information on personal and health characteristics and diabetes self-care behaviors, including CAM use. At the end of the interview they were given a totebag of gift items valued at approximately $15 as a thank you. For ELDER2, respondents completed two interviews of about 1.5 hours at least one month apart. Interviews obtained data on personal and health characteristics, diabetes self-care behaviors, and beliefs about diabetes. The I-CAM-Q was included in only the second of the two interviews. At the end of each interview, they were given a small cash payment ($10) as a thank-you. In both studies, all procedures were approved by the Wake Forest University School of Medicine Institutional Review Board. Participants gave informed consent before any data were collected.

Measurement of CAM in the ELDER1 interviews is described in detail elsewhere [2]. Briefly, an extensive set of questionnaire items addressed CAM use, including food home remedies and “other” home remedies [20], vitamins, minerals, herbs, popular manufactured products [21], CAM therapies, and CAM practitioners. A total of 64 specific CAM uses were included, plus opportunity for the respondent to add others. The food home remedy, other home remedy and popular manufactured product items were compiled based on earlier analyses of CAM use among rural adults in the study area [22–24]. These analyses used qualitative and quantitative ethnographic methods to exhaustively document the range of products and therapies used in the population. For vitamins, respondents were asked whether they took a multivitamin and if they took any other vitamins. If they responded positively to the latter question, they were asked about a series of specific vitamins. For minerals, the respondents were first queried for any use, with questions that listed a number of common minerals; those with a positive response were asked about the use of specific minerals. A similar pattern of questions was used for herbs. Participants were asked if they had used each item for any purpose in the past year. Because earlier research in this population had indicated near universal inclusion of religious participation and prayer in the health self-management in this population [22,25], it was not included in the CAM questions. However, it was collected as part of a measure of private religious practices [26] from Levin [27].

In the ELDER2 interviews, the NAFKAM International Complementary and Alternative Medicine Questionnaire (I-CAM-Q) [12] was used to provide a comprehensive assessment of the use of health care providers, use of herbal medicine and dietary supplements, and self-help practices in the past twelve months. The I-CAM-Q includes 18 items, with the opportunity for the respondent to add others. For each modality used in the past twelve months, respondents also indicated number of uses in the past three months, the main reason for use (acute condition, chronic condition, to improve well-being) and helpfulness of the CAM use. The herbal medicine and dietary supplements questions were open-ended, so respondents stated the name of particular herbal medicines or dietary supplements used rather than being queried from an inventory of specific substances.

Measures

Fourteen CAM measures for the ELDER1 data were created by summarizing data that overlap the items in the I-CAM-Q questionnaire used in ELDER2. These fourteen include representative items from all of the categories on the I-CAM-Q except the provision of CAM therapies by conventional physicians; such practices are uncommon in the US. The items include representative items from the CAM groups as summarized by the National

Center for Complementary and Alternative Medicine and other groups (natural products, mind-body medicine, manipulative and body-based practices, and other practices).

Six dichotomous measures of visits to practitioners in the 12 months prior to the interviews were created for physician, chiropractor, homeopath, acupuncturist, herbalist, and spiritual healer. For ELDER1, the measure for physician came from a question asking respondents whether they had seen their regular doctor for any reason in the past year [28].

Four measures of supplement use were created. Common herbal medicine and dietary supplement measures created were any herbs, any vitamins or minerals, and any homeopathic remedies in the past 12 months. In addition, measures of the use of garlic as a remedy in the past 12 months were created from one of the food remedies in ELDER1 and from open ended responses in the I-CAM-Q for common herbal medicines and dietary supplements for ELDER2.

Four measures of self-help practices were constructed from the data on the two surveys. Use of relaxation was asked on both surveys. A measure of Qigong was constructed from Qigong on the I-CAM-Q and energy healing on the ELDER1 survey. A measure of visualization was created from visualization on the I-CAM-Q and guided imagery on ELDER1. A measure of prayer for own health was created from this item on the I-CAM-Q. For ELDER1, a single item [27] was used in the current analyses: How often do you pray privately in places other than at church or synagogue? Response options ranged from (1) several times a day, to (8) never. They were collapsed to (1) at least once a week, vs. (2) a few times a month or less.

Statistical Analysis

Descriptive statistics were used to compare survey items that were common to both ELDER1 and ELDER2 and to ascertain whether the I-CAM-Q results were comparable to those obtained in the previous survey. First, the characteristics of the participants in the respective samples were compared. Chi-squared tests were used to test the hypotheses that the two samples had the same distribution. CAM use in the two samples was also compared. Descriptive statistics of prevalence were reported. Both unadjusted and adjusted comparisons were also conducted. To facilitate interpretation, the unadjusted (percentage of reported use of CAM) and the adjusted analyses both used logistic regression. The unadjusted analyses only used the indicator of the sample (Group) as predictor, whereas adjusted analyses included as predictors the Group variable, sex, ethnicity, age category, marital status, and educational level. The p-values for the unadjusted and adjusted analyses were reported.

Results

Comparing ELDER1 and ELDER2 samples (Table 1), the samples were similar in ethnic composition and marital status. ELDER2 had significantly more women ($p<0.001$), was younger ($p<0.001$), had lower educational attainment ($p<0.001$), and had more people with incomes below the poverty line ($p<.001$).

In bivariate comparisons, ELDER1 and ELDER2 samples did not differ in visits to chiropractors, homeopaths, and herbalists (Table 2). A smaller proportion of ELDER2 respondents (91.5% vs. 99.3%) reported seeing a physician and a spiritual healer (0.7% vs. 2.7%) in the past 12 months. The samples did not differ in their reports of vitamin and mineral usage. ELDER2 respondents reported less use of herbs (10.1% vs. 17.8%). No respondents in either survey reported using homeopathic remedies. The specific herb garlic was reported by fewer respondents in ELDER2 than ELDER1 (1.4% vs. 13.9%). The two

samples did not differ in Qigong and prayer for own health. More ELDER2 respondents reported relaxation (12.4% vs. 4.5%).

In multivariate analyses adjusting for sex, race, age category, marital status, and education, differences in use of spiritual healers were no longer significant (p=0.079). Other comparisons between ELDER1 and ELDER2 were unchanged from the bivariate analyses.

Discussion

It is important to explore the way research participants respond to any data collection instrument, including the I-CAM-Q. Initial development of the I-CAM-Q assessed face validity [12], but no comparisons of its performance were made with existing instruments. The present study provides an opportunity to do so. Because the two instruments—the I-CAM-Q and the detailed survey questionnaire—were administered at different times to different subsets of the same population, the study reported here is not a validation study by a strict definition of validation. However, it can start to shed light on possible strengths and weaknesses of the I-CAM-Q, as well as describe its performance in an ethnically diverse group of respondents. CAM use in this population has been studied over the interval between the two surveys using both qualitative and quantitative techniques. An overview of these results indicates that the population has been relatively conservative in its adoption of new CAM therapies. Hence, the time interval between surveys is not likely to be as much a factor as it would be in other populations (2,19,20,22,23,25). In fact, it is a strength of this study, making it possible to compare the two surveys with less secular trend in CAM use than might be found in the general population.

Despite having quite different numbers of items (64 vs. 18), the two instruments present very similar pictures of CAM use in the population. This is a population that was and continues to be heavily reliant on physicians for medical care, with chiropractors as the most common alternative practicioner. There is considerable use of vitamins and minerals, and prayer for health is nearly universal. The I-CAM-Q detected somewhat less use of physicians, any herbs, and garlic as a specific herb. The lower use of physicians is likely due to the inclusion of persons 60 to 64 in the ELDER2 sample. Most of these individuals do not qualify for government-sponsored healthcare (Medicare) and are therefore less likely to be seeing physicians. They are also younger, so may have fewer conditions that require medical care. Also, the sample for ELDER1 was based on Medicare records, so any non-use of physicians in the general population of the study counties was underestimated. The data presented here indicate that the I-CAM-Q may underestimate the use of some forms of CAM. Herb use remains significantly lower, even after adjusting for demographic differences in the sample. In ELDER1, 78% (97 of 124) of those who reported using any herbs reported using garlic as one of those herbs. In contrast, with the I-CAM-Q only 14% (8 of 57) reported garlic. This striking difference may be due to the construction of the instruments. In the ELDER1 survey, garlic was listed as a specific herb, so any respondent who claimed to consume any herb was asked specifically about garlic. In contrast, the I-CAM-Q required a respondent first to claim to use herbs and then to remember garlic and to name it as an herb.

The only item for which the I-CAM-Q detected significantly greater use was for relaxation, which was reported by almost three times more respondents on the I-CAM-Q. Further investigation is needed to understand this. It seems likely that the findings represent a secular trend as the scientific evidence for the contribution of distress to impaired glycemic control [28,29] and the role of relaxation in improving glycemic control [31,32] have spread through both the popular press and diabetes self-management education [33,34].

One of the issues that arose in analyzing data from the I-CAM-Q involved the section designed to elicit use of herbal medicine and dietary supplements. Respondents were asked to list products used in categories of herbs, vitamins and minerals, homeopathic remedies, and other supplements. This presumes that respondents will know what supplements they take should be assigned to each category. Investigators found that considerable data cleaning was necessary to move reported supplements to the correct category. For categories such as homeopathic remedies, those not familiar with homeopathy may have little idea of what such remedies are and therefore assign other non-homeopathic remedies to the category. Likewise, products such as omega 3 fatty acids that are often recommended for disease prevention in the same manner as vitamins and minerals were reported by respondents in the vitamin and mineral category rather than as an “other supplement”. This suggests that, while the provision of supplement categories may cue the respondent to remember products taken, the researcher needs to devote effort to reassigning responses to the correct category during data analysis.

The I-CAM-Q provides no definition of items queried to the respondent. Therefore, respondent must know what a CAM modality is to give an answer that is valid. Although most respondents would be expected to declare themselves a non-user of a modality if they did not know what it was, some modalities have names that might seem similar enough to a layperson (e.g., homeopathy and naturopathy) to be confused.

The results of this study should be interpreted in light of its limitations. It examines responses to CAM data collection instruments in a tri-ethnic population of older adults in the US, so findings might be different in other populations. It was restricted to persons with diabetes, a condition for which national studies show CAM is low relative to other chronic diseases [35]. The two data collections were separated in time, so secular trends in use may account for some of the differences. The I-CAM-Q was designed to be self-administered. However, because of low literacy and educational attainment in the study population, it was orally administered by interviewers who had been specifically trained for the task. Thus, any problems with reading the items or following instructions that might arise with self-administeration could not be detected. Nevertheless, for ten of fourteen items the I-CAM-Q results showed no significant differences from that of the more detailed survey questionnaire. In fact, patterns of results are remarkably similar, with very high proportions of the samples reporting prayer for health and vitamin and mineral use, and very low proportions reporting homeopath, acupuncturist, herbalist, and Qigong/energy healing. One of the four significant differences (physician use) was likely due to differences between the two studies in inclusion criteria, and another (relaxation), due to actual changes over time in the use of CAM. These results support the intention of the I-CAM-Q to substitute for local and regional surveys in order to allow cross-study comparisons of CAM use. Further testing of the instrument in other populations, including more standard validation tests with contemporaneous data collection, is needed to confirm these findings.

A short instrument is needed for allowing cross-national and cross-study comparisons of CAM use. This study suggests that the I-CAM-Q is a good candidate for such an instrument. Further studies to investigate whether the I-CAM-Q performs well in different international settings and in self-administered questionnaires are needed to fully establish its utility.

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Table 1

Comparison of respondent characteristics, ELDER1 and ELDER2 samples

Characteristic	ELDER2 - (I-CAM-Q) (N=564)		ELDER1 (N=698)		P value
	N	%	N	%	
Sex					<0.001
Female	349	61.9	343	49.1	
Male	215	38.1	355	50.9	
Ethnicity					0.073
African American	205	36.4	297	42.6	
American Indian	191	33.9	220	31.5	
White	168	29.8	181	25.9	
Age					<0.001
60–69 years	291	51.6	159	22.8	
70–79 years	212	37.6	428	61.3	
80+ years	61	10.8	111	15.9	
Marital status					0.144
Currently married	259	46.0	350	50.1	
Not currently married	304	53.0	348	49.9	
Education					<0.001
<high school	205	36.5	453	65.0	
High school	189	33.6	145	20.8	
>High school	168	29.9	99	14.2	
Income					<0.001
<poverty	156	29.2	410	64.1	
≥poverty	378	70.8	230	35.9	

Table 2

Comparison of CAM use reported, ELDER1 and ELDER2 (I-CAM-Q)

	ELDER2 (I-CAM-Q) (N=564)		ELDER1 (N=698)			
Characteristic [ELDER1 term]	**N**	**%**	**N**	**%**	**P value**	**P value (Adjusted)**
Providers, past 12 months						
Physician	516	91.5	693	99.3	<0.0001	<0.001
Chiropractor	37	6.6	34	4.9	0.193	0.191
Homeopath	1	0.2	0	0	-	-
Acupuncturist	0	0.0	3	0.4	-	-
Herbalist	1	0.2	3	0.4	0.443	0.409
Spiritual Healer	4	0.7	19	2.7	0.014	0.079
Herbal medicine, dietary supplements, past 12 months						
Any herbs	57	10.1	124	17.8	<0.001	<0.001
Any vitamins or minerals	250	44.3	319	45.9	0.577	0.115
Homeopathic remedies	0	0.0	0	0	-	-
Garlic	8	1.4	97	13.9	<0.001	<0.001
Self-help practices, past 12 months						
Qigong [Energy healing]	2	0.4	2	0.3	0.832	0.621
Relaxation	70	12.4	31	4.5	<0.001	<0.001
Visualization [Imagery]	16	2.8	9	1.3	0.056	0.056
Prayer for own health	533	94.5	647	92.7	0.196	0.491