BMC Complementary and Alternative Medicine

BioMed Central

Research article

Complementary and conventional medicine: a concept map

Carol M Baldwin*[1,2], Kendall Kroesen[1], William M Trochim[3] and Iris R Bell[1,4]

Address: [1]Southern Arizona VA Health Care System, Research Service Line, Tucson, AZ, USA, [2]University of Arizona Departments of Medicine and Psychology, Arizona Respiratory Center, Mel and Enid Zuckerman Arizona College of Public Health, Tucson, AZ, USA, [3]Cornell University, Policy Analysis and Management, Ithaca, NY, USA and [4]University of Arizona Departments of Medicine, Psychiatry, Psychology, Surgery, Program in Integrative Medicine, Mel and Enid Zuckerman Arizona College of Public Health, Tucson, AZ, USA

Email: Carol M Baldwin* - carolb@resp-sci.arizona.edu; Kendall Kroesen - kkroesen@qwest.net; William M Trochim - wmt1@cornell.edu; Iris R Bell - ibell@u.arizona.edu

* Corresponding author

Published: 03 February 2004

BMC Complementary and Alternative Medicine 2004, **4**:2

Received: 19 August 2003
Accepted: 03 February 2004

This article is available from: http://www.biomedcentral.com/1472-6882/4/2

Abstract

Background: Despite the substantive literature from survey research that has accumulated on complementary and alternative medicine (CAM) in the United States and elsewhere, very little research has been done to assess conceptual domains that CAM and conventional providers would emphasize in CAM survey studies. The objective of this study is to describe and interpret the results of concept mapping with conventional and CAM practitioners from a variety of backgrounds on the topic of CAM.

Methods: Concept mapping, including free sorts, ratings, and multidimensional scaling was used to organize conceptual domains relevant to CAM into a visual "cluster map." The panel consisted of CAM providers, conventional providers, and university faculty, and was convened to help formulate conceptual domains to guide the development of a CAM survey for use with United States military veterans.

Results: Eight conceptual clusters were identified: 1) Self-assessment, Self-care, and Quality of Life; 2) Health Status, Health Behaviors; 3) Self-assessment of Health; 4) Practical/Economic/Environmental Concerns; 5) Needs Assessment; 6) CAM vs. Conventional Medicine; 7) Knowledge of CAM; and 8) Experience with CAM. The clusters suggest panelists saw interactions between CAM and conventional medicine as a critical component of the current medical landscape.

Conclusions: Concept mapping provided insight into how CAM and conventional providers view the domain of health care, and was shown to be a useful tool in the formulation of CAM-related conceptual domains.

Background

There is an increasing amount of research on the use of complementary and alternative medicine (CAM) in the United States [1-7], Canada [8-10], and Europe [11-14]. In general, these studies employ survey research approaches to determine aspects of CAM use, such as prevalence rates, costs, patterns of and trends in use [2,4,6,9,10,14], reasons for CAM use [1,7], social-psychological factors and attitudes associated with CAM use [11,12], as well as comparisons of CAM users and non-users [3,5,8].

Wootton and Sparber [15] provided an extensive overview of trends and demographic groups relevant to CAM survey research. In addition to several of the above-cited studies, information on CAM use in special groups, such as children and ethnic minorities, have also been described [15]. Despite the substantive literature from survey research that has accumulated on CAM in the United States and elsewhere, however, very little research has been done on conventional and CAM providers' perspectives on CAM, or the inclusion of these perspectives in the development of CAM surveys.

Development of survey questionnaires is often based on data gathered through inductive qualitative methods [16-19], and involves such procedures as items and scoring [20,21]. One qualitative approach for use in the development of surveys is that of focus groups [19]. Focus groups can elucidate points of view, provide unique insights regarding preferences for health care, quality of care, or other factors in the delivery of health care. For example, twelve focus groups were conducted with veterans and their significant others, who used or were interested in CAM, during Phase 1 of the current study. Thematic analysis of the focus groups oriented researchers to veterans' understanding of the relationship between CAM and conventional medicine [7]. Phase 2 of the study consists of the concept mapping process and interpretation presented in this paper. Phase 3 will result in the construction of a CAM survey instrument containing items from the focus groups and concept mapping process that will be validated for use with United States military veterans.

Concept mapping, another qualitative method, gathers input from panel members in the form of list sorting and rating tasks, which produces a multidimensional scaling and cluster analysis that is then interpreted by the group [22-24]. The resulting map shows individual statements in two-dimensional (x, y) space with similar statements located nearer each other, and displays the ways in which statements are grouped into clusters that partition the space on the map. Participants are led through a structured interpretation session to assist them in understanding the maps, and labeling them in a meaningful way.

Traditionally, the concept mapping process has been utilized by businesses, organizations, and research teams to build, from the ground up, a visual image, or map, of important concepts that can be used to give direction to an undertaking [23,25,26]. Concept mapping is seeing more widespread use, and has been applied to diverse aspects of health care, such as assessing chronic low back pain sufferers [27], quality of life among persons with chronic mental health problems [28], and the health care preferences of elderly patients [29]. The intent of this study is to apply the concept mapping process in addressing substantive issues in CAM from conventional and CAM provider perspectives, and provide an analysis and interpretation of the data produced. The conceptual domains derived from the map will be used to provide direction for the construction of a CAM survey to be used with U.S. military veterans.

Methods

Panelists

Panelists for the concept mapping process were chosen based on the need to sample a wide variety of backgrounds rather than demographics. Three groups were represented: SAVAHCS conventional providers (n = 11); community-based CAM providers (n = 11); and University of Arizona faculty with expertise in CAM and/or CAM research (n = 4). Panelists reflected expertise from a broad variety of health care backgrounds. The study was based at the Southern Arizona Veterans Affairs Health Care Service (SAVAHCS) in Tucson, Arizona, and was reviewed and approved by the SAVAHCS Research and Development Committee, and the University of Arizona Institutional Review Board. Subjects gave written informed consent for their participation.

SAVAHCS panelists

An effort was made to provide for diversity *within* as well as *between* the groups of panelists. Panelists recruited from SAVAHCS providers came from a range of sub-specialties, including geriatrics, hospice, pharmacy, clinical dietetics, and internal medicine. A variety of qualifications were represented, including 3 physicians (MD), 4 nurse practitioners (NP), 1 registered nurse (RN), 1 registered pharmacist (RPh), 1 registered dietitian (RD), and 1 doctor of pharmacy (PharmD). A few of the SAVAHCS providers were familiar with some CAM modalities, such as nutritional and herbal supplements, reflexology, and guided imagery. In general, however, the SAVAHCS providers practiced conventional medicine within a conventional medical institution. All of the providers had worked at the SAVAHCS for at least three years.

CAM panelists

Panelists recruited from CAM practitioners included 2 licensed acupuncturists (LiAC), 1 physician (MD) specializing in functional medicine, 1 RN Tai Chi Master and coordinator of a Dean Ornish Cardiac Reversal program, 1 Arizona licensed osteopath and homeopath (DO, MD(H)), who practiced classical homeopathic prescribing, 1 chiropractor/naturopath (DC/ND), 1 dietitian (RD/MA in Psychology) who was a Jon Kabat-Zinn trained Mindfulness Meditation group leader, 1 naturopath (ND), 1 psychologist (Ph.D.) with expertise in neurotherapy, 1 licensed massage therapist (LMT), and 1 yoga master. All CAM practitioners were in private practice and

each one had at least five years of experience in their area(s) of expertise.

University faculty panelists

Panelists recruited from University of Arizona faculty consisted of a professor of Pharmacy Sciences (Ph.D) versed in pharmaco-economics, an RN/MSN in the College of Nursing with a Ph.D. in anthropology, a psychologist (Ph.D.) with expertise in energy medicine, and an administrator for the Program in Integrative Medicine (MD).

Concept mapping process

Trochim [30] first described the concept mapping process used in this study. Concept mapping consists of three-stages: brainstorming; rating and card sorting; and interpretation of the map. While all three stages may be done in person, in this study the first two stages were done by mail due to participants' busy schedules. All concept mapping analyses were accomplished using The Concept System© (Version 1.75, Concept Systems Incorporated, Ithaca, NY).

Brainstorming

Participants were instructed to give as many endings as possible to the "brainstorming" prompt, "One thing we should ask in a survey of SAVAHCS patients regarding complementary and alternative medicine is…". This phrasing functioned to elicit well-defined and grammatically consistent answers. Ample blank lines were provided for responses. Twenty-four of 26 participants returned this portion of the exercise, with responses numbering from 5 to 31 (average 15.2). The two participants who did not return this part of the exercise were from the academic group. Duplicate statements were eliminated and the final master list consisted of 121 statements.

During the brainstorming component of concept mapping, steps were taken to ensure validity and reliability of data [19]. In order to assure saturation of issues among the brainstormed ideas, additional responses to the prompt were generated based on concerns expressed by focus group members in Phase 1 of this study. Two of the authors (CMB, KWK), who co-facilitated the focus groups, acted as proxies for focus group members. The statements generated from focus group transcripts were checked for redundancy with the practitioner-generated list. After eliminating redundant statements between focus group and provider lists, a total of 44 new statements were combined with the practitioner-generated statements for a total of 165 statements.

Rating and card sorting

Stage 2 of the concept mapping process allowed the panel to establish collectively a smaller number of more inclusive categories for the statements that were generated. To do this, panel members were asked to rate the importance of each statement from the master list, then perform a "card sort" to provide "similarity data." Importance ratings used a five-point Likert scale (1 = "minimally important" to 5 = "extremely important"). If asked to define "important," panelists were told that it was the weight the research team should give that statement when considering what questions to ask on a CAM survey questionnaire. Twenty-five of 26 panelists returned the rating exercise (one SAVAHCS panelist did not return the rating sheet).

Each of the 165 statements was also printed on 2.25-inch × 4.25-inch cards. Panelists were asked to perform a card sort, sorting the statements into categories. Panelists were instructed to organize the cards into as many categories as they wanted (more than one and less than the total number of the cards), using any criteria they wished. Panelists then wrote a descriptive label for each pile. Twenty-five of 26 panelists returned the card sort task (one University of Arizona panelist did not return the card sort). These activities provided the research team with some insights into the way CAM and conventional providers think about CAM.

Data analysis

The initial analysis of the Concept System© software manipulation of this data was a similarity matrix that contained numerical representations of how similar the group judged any two statements to be. Briefly, a similarity matrix was constructed for each participant with 165 rows and 165 columns, one for each brainstorming statement. For any two statements, if that participant sorted them in separate piles, the cell for those two statements contained a "0." If sorted in the same pile, that cell contained a "1." Next it calculated a "group similarity table." This also has as many rows and columns as there are statements, and it contained a summation of the similarity data for all participants. In this table, the higher the number in a cell, the more times participants sorted together the two cards corresponding to that cell, thus the more similar the group as a whole judged those two statements.

The program used this similarity data to perform a multidimensional scaling (MDS), which created a two-dimensional (x, y) plot of the 165 points (for the 165 statements). The plot represented the similarity between each statement as a physical distance. The result was a two-dimensional "map" of the points that represents the best approximation of the similarity data. Theoretically, the output can be in any number of dimensions, but for ease of representation, the software uses two. Statements judged to be similar to each other were positioned closer to each other on the map (Figure 1). The usual statistic that is reported in MDS analyses to indicate the goodness

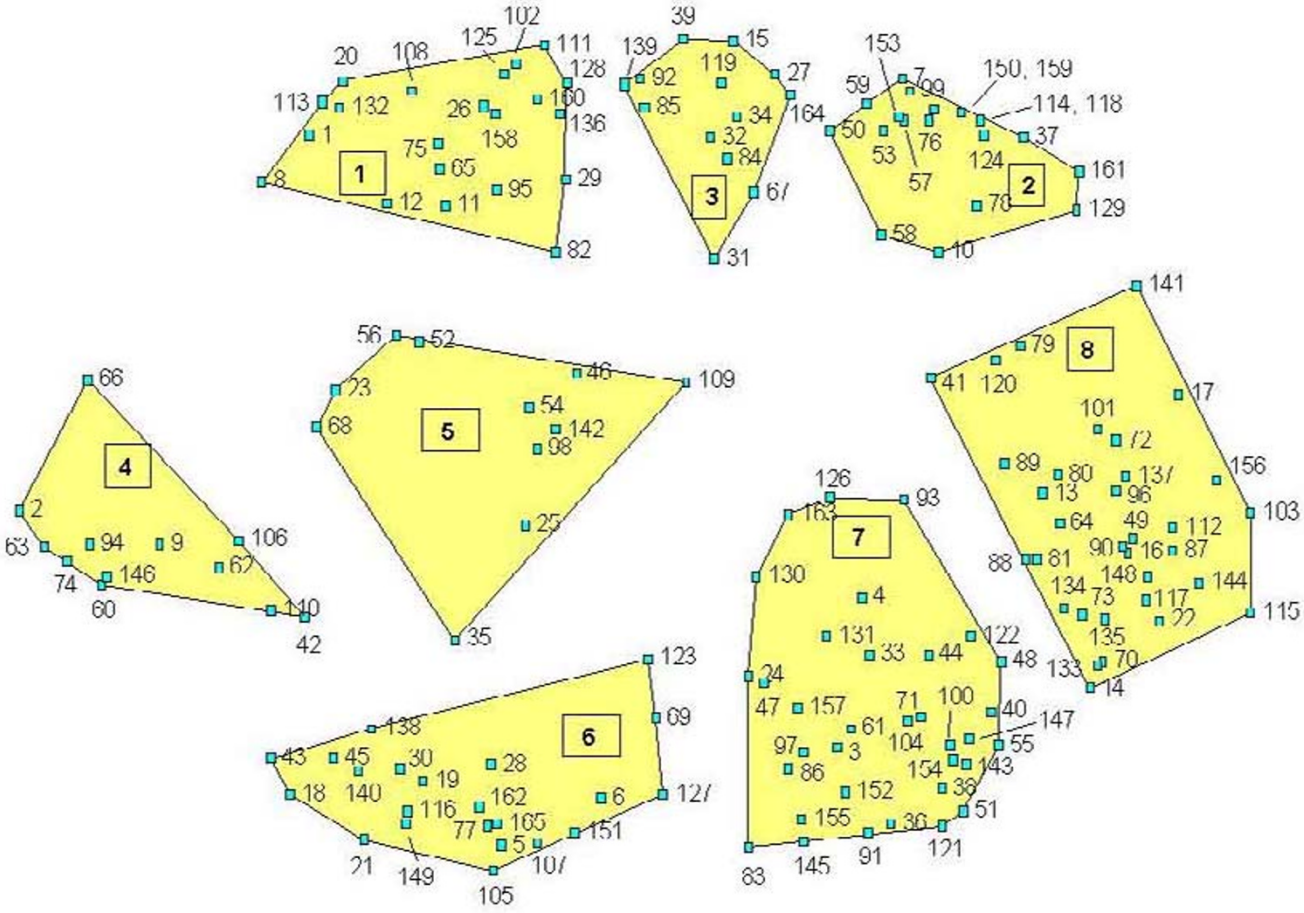

Figure 1
Point map derived from the concept mapping process.

of fit of the two-dimensional configuration to the original similarity matrix is called the Stress Value. A lower stress value indicates a better fit. In a study of the reliability of concept mapping [31], the average Stress Value across 33 projects was .285 with a range from .155 to .352. The Stress Value in this analysis was .268.

Statements often form clusters on the map that can be taken to have a common theme. Identification of these themes can help to categorize priorities – in this case, to arrive at broad categories of questions that should be included in the development of a CAM survey of military veterans. However, on a point map, it is difficult for participants to separate clusters visually. Therefore, a hierarchical cluster analysis was used to partition the 165 statements displayed in Figure 1. The result is a cluster map on which each statement is within a polygonal cluster of similar statements. The software calculates these clusters by considering each statement to be its own cluster. It then combines "nearby" clusters until the number of clusters remaining reaches a preset (but adjustable) number. Calculations are based on the X-Y coordinate data from the MDS rather than from the original similarity matrix. Figure 2 shows clusters with more "layers" containing statements that, on average, had been judged more "important" via the statement rating exercise. This is the "concept map" that was interpreted and labeled by the panelists.

Interpretation of the cluster map

The final stage of the concept mapping process was a panel meeting for the purpose of interpreting the cluster map. The meeting was held at a hotel conference room in Tucson, AZ and lasted approximately three hours. Twenty-two of the 26 panelists attended the meeting (9 of 11 SAVAHCS providers, 9 of 11 CAM providers, and the 4

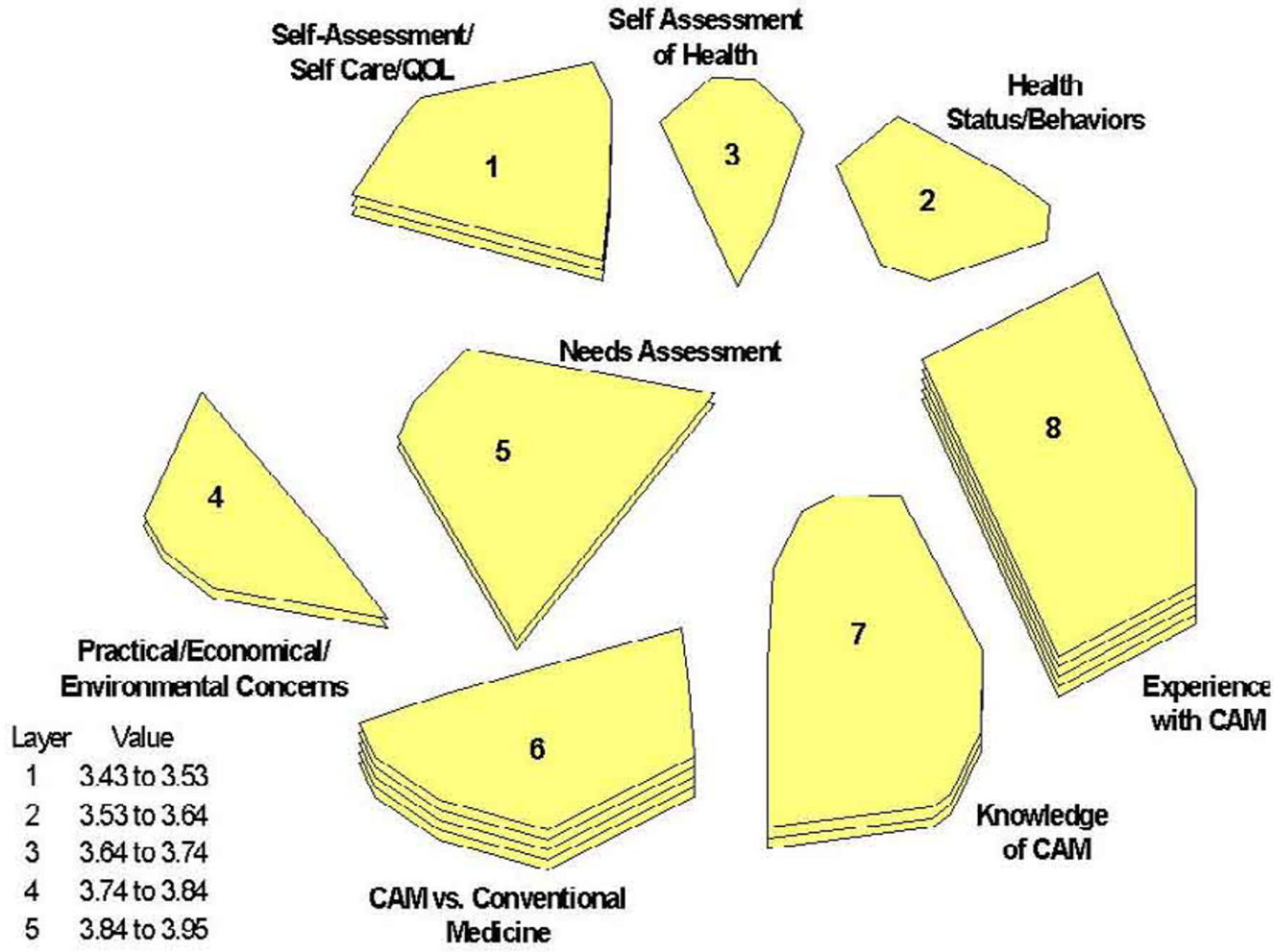

Figure 2
Cluster rating map derived from the concept mapping process.

University of Arizona faculty). Panelist attendees were provided with dinner and reimbursed $200 for their time. During dinner, panelists heard a short presentation on the rationale and method for the study. After dinner, panelists were presented with the cluster-rating map (Figure 2). Their task was to interpret and label the map clusters, and to discuss their meaning and importance with the research team. To facilitate this, the concept map was projected onto a screen using a computer image projector. The Concept System software allowed for the on-screen identification of the statement that corresponded to any particular point on the map. It also allowed panelists to see the card pile labels they had used that best corresponded with the clusters on the map.

Panel members were also given a printout of the statements contained in each cluster, with those statements listed first that were most representative of that cluster. Statements were ordered by "bridging value," which is an expression of how often statements were sorted together with statements in other clusters. Statements with lower bridging values were less often sorted with statements from outside that cluster; therefore, they are assumed to be more central to the interpretation of their own cluster.

Results

Number of clusters, cluster labels, and bridging values

The first activity was to determine the final number of clusters. The default number of clusters was eight. The panel tried reducing and enlarging the number of clusters. Reducing the number seemed to lump too many distinct concepts together, while increasing the number seemed to split clusters that seemed reasonably coherent. Panel consensus remained at eight clusters. Members of this large

Table 1: Cluster 1 "Self-assessment, self care, and quality of life" statements in descending order of average importance (n = 23 respondents).

#	Cluster 1 Statements	Mean	SD
82	whether they believe they have some control over their health	4.22	1.09
65	what is most important to them in improving their quality of life	4.09	1.08
29	what they think would help them feel better	4.09	1.00
75	what prevents them from doing the things they think would improve their quality of life right now	4.04	1.26
11	whether personal religion or spirituality (excluding spiritual healers) plays a part in healing for them	4.04	0.77
136	how motivated they are to make changes in their lifestyle or outlook on life	3.96	1.26
158	how much time they are willing to spend to improve their quality of life or change their lifestyle	3.91	1.16
160	what five goals they would set for themselves if they wished to attain better health and well-being	3.91	1.35
128	whether they meditate/pray	3.87	1.01
102	how would they rate their level of enthusiasm for living or enjoyment of life	3.87	1.06
26	what they care about most in their life	3.78	1.20
95	whether, and how, they believe military service has impacted their health or well-being	3.78	1.38
20	how would they rate their level of stress	3.61	0.94
111	what their emotional state is (e.g. worried, happy, sad, anxious, depressed)	3.52	1.08
1	whether stress management is important to them	3.52	1.08
113	how they cope with stress, worries, and concerns	3.48	1.08
108	how many people in their lives do they discuss their worries, concerns, problems or challenges with	3.48	1.31
8	whether they would be willing to practice a stress management technique such as relaxation, biofeedback or meditation for 15–20 minutes a day	3.43	0.73
12	what relaxation techniques they practice	3.35	0.93
132	how often do they talk to people about their worries, concerns, problems or challenges	3.22	0.90
125	whether they love their jobs	3.00	1.41
	Average Bridging Value = 0.22	**3.72**	**1.10**

and diverse a panel, however, may have thought that reaching consensus at eight clusters might be faster than doing so for nine or more. After some debate, the clusters were assigned the following eight labels: 1) Self-assessment, Self-care, and Quality of Life; 2) Health Status, Health Behaviors; 3) Self-assessment of Health; 4) Practical/ Economic/Environmental Concerns; 5) Needs Assessment; 6) CAM vs. Conventional Medicine; 7) Knowledge of CAM; and 8) Experience with CAM.

"Bridging values," ranging from 0 to 1, tell how often a statement was sorted with others that are close to or further away from it on the map. Lower bridging values indicate a "tighter" relationship with other statements in the cluster. Clusters 1,2,3,6,7, and 8 had low bridging values (.12–.24). Statements in Clusters 4 and 5 had high bridging values (.60 and .54 respectively), suggesting less agreement in terms of the way statements were sorted.

Description of clusters

Cluster 1: Self-assessment, self-care, and quality of life

Like all statements in the top portion of the map, Cluster 1 asked for information or attitudes that SAVAHCS patients could give about themselves (Table 1). These statements focused on patients' qualitative appraisals of mood, stress, and the role spirituality and relationships played in their lives. After lengthy discussion, the panel could not come to an agreement on a single label. Panelists settled on the composite "Self-assessment, Self-care, and Quality of life."

Conventional providers indicated that statements in this cluster referred to patient self-care or self-assessment, making a distinction between *provider* versus *patient* responsibility. Conventional providers seemed to see the areas covered in Cluster 1 as the pervue of patient responsibility (ergo, "self-care"). Alternatively, while the emphasis was on self-assessment, CAM providers seem to emphasize *what* was being evaluated (a holistic set of quality of life issues) rather than *who* was responsible for the evaluation. The importance ratings averaged across statements in Cluster 1 suggested that panel members rated this cluster as more important than some other clusters.

Cluster 2: Health status, health behaviors

The label for Cluster 2 resulted less from disagreement among group members than from the inability to find a single phrase that would encompass both a *status* questions, such as "whether they have had a recent blood test" (114) and a *behavior* question, such as "how much tobacco they use" (153). Similar to Cluster 1, the statements in Cluster 2 asked for information that patients could assess about themselves (Table 2). In contrast to

Table 2: Cluster 2 "Health status, health behaviors" statements in descending order of average importance (n = 23 respondents).

#	Cluster 2 Statements	Mean	SD
99	whether they have a terminal or life-threatening condition	4.17	0.83
37	what kind and how many prescription medications they are currently taking	4.13	0.81
10	how compliant they are with taking their medications	4.04	0.88
57	what their present diagnosis is	4.04	1.19
7	general demographic questions such as age, sex, marital status, income, education	4.00	1.13
78	whether they follow a specific diet or a nutritional lifestyle, and if so which (e.g. vegetarian)	3.91	0.79
59	how much alcohol they consume	3.78	1.00
50	whether they exercise regularly and, if so, what kind of exercise they do	3.78	0.95
150	the number and types of serious health complaints they have	3.70	1.22
161	whether they have any side-effects from their present medications	3.70	1.22
153	how much tobacco they use	3.57	1.12
53	how much caffeine they consume	3.57	1.08
58	whether they are seeing any health changes caused by their diet	3.39	1.20
159	whether they have any known allergies	3.30	1.52
114	whether they have had a recent blood test	2.74	1.25
118	whether they have had recent x-rays, MRI, or CT scans	2.57	1.12
76	how often they have a bowel movement	2.43	1.16
129	whether they own a juicer or blender	2.35	1.19
124	whether they know their blood type	2.00	1.04
	Average Bridging Value = 0.16	**3.43**	**1.09**

Cluster 1, Cluster 2 seemed to focus on more quantitative or factual appraisals of risk factors, medical conditions, demography, preventive factors, medications, adherence, and some markers of health. Several statements also referred to topics some participants believed patients should know about themselves, including bowel regularity and the results of medical evaluations such as imaging, blood type, and other blood tests. Some participants asked about risky behaviors (tobacco and alcohol use) while others asked about preventive measures that might reduce risk (exercise, good nutrition).

As with most of the other clusters, Cluster 2 contained statements regarding knowledge and behavior (Clusters 7 and 8 were exceptions). In its concern with health (over institutional, or other personal concerns), Cluster 2 shared a general affinity with the entire right side of the map. Statements in Clusters 2, 3, 7, and 8 tended to refer to actual health conditions, health care and, in particular, decisions about using CAM for medical conditions.

Cluster 3: Self-assessment of health

Cluster 3 contained a relatively small number of statements and showed a low bridging value, suggesting it was a tight cluster with a potentially concise interpretation. The panel labeled Cluster 3 "Self-assessment of Health." Like adjacent clusters at the top of the map, it contained statements that elicited personal information about patients (Table 3). While Cluster 1 dealt with more general characteristics of patients' lives, such as goals or stress, and Cluster 2 focused on positive health behaviors and negative risk factors, Cluster 3 statements referred to knowledge about patients' actual mental and physical health status.

As with other items positioned toward the right side of the map, Cluster 3 statements assessed actual health related issues. Statements addressed subjective health ratings, mood, self-care, and coping skills. Like Cluster 2, behavior and knowledge-related questions were represented. Cluster 3 statements related to care for health conditions whereas behavior-related statements in Cluster 2 centered on risk and risk-diminishment.

Cluster 4: Practical/economic/environmental concerns

Cluster 4 had a high bridging value, suggesting that the statements may cover a broader and more heterogeneous range of conceptual territory. Panelists labeled Cluster 4 "Practical/ Economic/Environmental Concerns," reflecting this broad range of statements (Table 4). Cluster 4 primarily consisted of statements regarding the health care costs (especially CAM) and experience with the SAVAHCS. One statement had to do with health insurance, while all other finance-related statements were specifically about paying for CAM treatments. Some statements combined financing of CAM treatments and SAVAHCS-related issues. Several statements in Cluster 4 addressed satisfaction with SAVAHCS care. The "environmental" concern in the label came from statement 62,

Table 3: Cluster 3 "Self-assessment of health care" statements in descending order of average importance (n = 23 respondents).

#	Cluster 3 Statements	Mean	SD
85	how they currently take care of themselves physically, mentally, and spiritually	4.13	0.87
84	what are they doing to treat or cope with their current condition	4.04	0.98
164	how they would rate their general health	3.83	1.07
67	how much they know about their own health problems	3.83	1.07
139	how well they are able to take care of themselves	3.65	0.98
39	whether they are currently depressed	3.61	0.89
92	how they feel about their health	3.57	1.20
27	whether they are currently in psychological therapy	3.43	0.95
15	whether there was a time in their lives when their health declined seriously	3.30	1.11
34	whether they are a combat veteran	3.17	0.83
31	if they had to change their diet, what foods would be hardest to give up	3.09	1.24
119	whether they have somebody who helps take care of them at home	3.09	0.95
32	what activities they do for fun (e.g. hobbies)	2.83	1.15
	Average Bridging Value = 0.17	**3.51**	**1.02**

which asked what environmental changes the SAVAHCS could make to enhance healing.

Interestingly, some statements in Cluster 4 made direct reference to CAM. The vast majority of CAM statements were located on the bottom, bottom right, and right extremes of the map (Clusters 6–8). Statements about access to CAM (e.g., how much was paid out of pocket, and whether CAM should be available through the SAVAHCS) were deemed to be distinct from CAM statements in Clusters 6–8, which focused on CAM modalities, CAM provider issues, and interaction between CAM and conventional care. The presence of non-contiguous, CAM-related statements in Cluster 4 suggests that panel members considered CAM *access* to be distinct from other CAM issues. It may suggest that both SAVAHCS and CAM providers saw CAM access as an administrative or policy issue rather than a provider issue.

Cluster 5: Needs assessment

Cluster 5 was perhaps the least definable on the map, and was simply labeled "Needs Assessment" (Table 5). In a sense, this label was a common background for many of the clusters, as well as a major goal of the resultant questionnaire. The central position of Cluster 5 on the map (see Figure 2) made it subject to overlap with several other clusters. A number of statements (109, 142, 52), for example, shared the reflexive nature of the clusters at the top of the map. These statements addressed factors that would encourage veterans to try new things, whether veterans treated themselves as long as possible before seeking medical care, and whether they believed family problems could be discussed as part of their health care. Statement 35 was about the SAVAHCS, and was positioned near other SAVAHCS-related statements in Clusters 4, 6 and 7. Statements 25 and 98 addressed massage therapy, which could be interpreted as similar to CAM statements in adjacent Clusters 6–8. The practical and economic aspects of medications purchased in Mexico (Statement 68) bordered Cluster 4.

Cluster 6: CAM vs. conventional medicine

The most noticeable theme in Cluster 6 was the relationship between CAM and conventional medicine (Table 6). The vast majority of statements referencing conventional medical care as a system (independent of individual provider concerns) were contained in this cluster, and several statements suggested the perceived shortcomings of conventional care that CAM might address. Statements referenced CAM in the context of its interaction with conventional care, such as whether conventional doctors knew about the CAM treatments being used (5), conventional doctors' comments about CAM use (165, 107), and whether a physician provided CAM education (6).

Panelists named this cluster "CAM vs. Conventional Medicine." There was some debate about "versus" in the title. Some conventional providers perceived the relationship as *antagonistic*. Some of the statements (e.g., 21, 165, 107, and 151) appeared to have antagonistic undertones. Other statements intimated tension between patients and conventional care without mentioning CAM explicitly (e.g., 149, 116, 77). However, several CAM providers suggested that Cluster 6 should reflect "integration," and that the label should have read, "CAM *and* Conventional Medicine."

While there were many statements about CAM in other clusters, particularly Clusters 7 and 8, it is notable that statements mentioning conventional medicine and its relationship to CAM segregated into Cluster 6. This rela-

Table 4: Cluster 4 "Practical/economical/environmental concerns" statements in descending order of average importance (n = 23 respondents).

#	Cluster 4 Statements	Mean	SD
62	what changes in the environment at the SAVAHCS they believe would enhance their healing experience	4.30	0.82
146	how much they spend per month out-of-pocket on CAM	4.09	0.75
110	whether they are satisfied with the health care they are currently receiving at the SAVAHCS	3.96	1.07
9	whether they would like the SAVAHCS to provide herbals or supplements through the pharmacy	3.83	0.83
106	what their specific suggestions for the VA health care system are	3.61	1.27
74	how much they would be willing to spend out-of-pocket on CAM	3.61	0.94
60	whether they can afford all the CAM treatments they would desire	3.57	1.24
63	whether they believe they would have to pay for CAM out of their pockets	3.43	1.24
94	whether vets in outlying areas would prefer to see private CAM providers and have the SAVAHCS pay for it	3.43	1.20
2	how much they would be willing to pay for herbals or supplements through the SAVAHCS pharmacy	3.09	1.12
42	whether in spite of the veteran's English proficiency, if English-only providers do not completely understand them because of a language or cultural divide	3.09	1.16
66	what kind of health insurance coverage they have	2.91	1.12
	Average Bridging Value = 0.60	**3.58**	**1.06**

tionship seems to be a crucial topic to panelists from both medical traditions, whether they are striving to better define their differences, or hoping to find a more integrative approach to patient care.

Cluster 7: Knowledge of CAM

Notably, Clusters 7 and 8 together contained over 40% of the master list statements (34 and 33 statements respectively). These clusters contained questions about CAM, a topic of obvious importance for the development of a CAM survey. Clusters 7 and 8 were roughly divided along the knowledge vs. behavior dimension that was seen earlier *within* some of the clusters.

Panelists labeled Cluster 7 "Knowledge of CAM." Several statements in this cluster, particularly statements having the lowest bridging values, appeared to be asking if veterans were well versed in CAM (Table 7). Statements addressed general familiarity with CAM (100, 40, 71), understanding of its origins (143), and how veterans had sought out information about CAM (48, 61). There were more specific questions regarding side effects of herbal medicine (121), factors that influenced CAM use (3), interest in group CAM classes (24), and beliefs that would prevent the use of CAM (155).

There were relatively few statements about providers in Clusters 7 and 8, where most of the statements about CAM were located. Statements about providers tended to be associated with conventional care reported in Cluster 6. It may be that providers realize that many veterans' experiences with CAM circumvent providers of any kind, allowing for direct access to healing modalities, such as herbal remedies. The few statements referring to CAM providers in Cluster 7 dealt with credibility and training, and veterans' recruitment of CAM providers. Cluster 8 statements related to the kind of CAM provider used (148), the use of spiritualists and shamans (120), and how a CAM provider was chosen (81). The vast majority of statements in these clusters, however, did not mention providers.

Since there were both pro-CAM and anti-CAM panel members (and since panelists were the originators of most of the statements), there were statements in Cluster 7 with different "spins" regarding CAM. Some of these statements really asked more for attitudes about, rather than familiarity with, CAM. For example, statements reflected the skepticism of some conventional providers, such as scientific evidence for CAM (154), adequate training and experience of CAM providers, and application of CAM to "minor" health complaints (147).

Cluster 8: Experience with CAM

Because the statements in this cluster dealt heavily with actual CAM experience, panelists labeled cluster 8 "Experience with CAM." Statements asked about types of CAM use (16), length of use (49), reasons for using CAM (134, 135), and successes with CAM (22) (Table 8). Cluster 8 also asked pragmatic questions about decisions and choices regarding CAM modalities, such as how long a CAM therapy was used before judging its success, self-treatment with CAM (73), CAM use when conventional biomedicine is perceived to have failed (133), and the kinds of CAM providers used (148).

Table 5: Cluster 5 "Needs assessment" statements in descending order of average importance (n = 23 respondents).

#	Cluster 5 Statements	Mean	SD
54	what their reasons are for non-compliance with their medical regimen	4.26	0.75
35	what kinds of information they would like available from the SAVAHCS	4.13	0.81
56	whether they believe the body can heal itself	4.13	0.92
46	whether they are interested in preventative health measures	4.09	0.85
142	whether they tend to treat themselves as long as possible before seeking medical care	3.74	0.86
109	what would encourage them to try things that are very different from what they have done before	3.65	1.03
23	whether they would attend a monthly therapeutic support group related to their problems	3.39	0.89
25	whether they would be interested in receiving deep therapeutic massages to reduce chronic muscular pain	3.35	0.88
52	whether they believe that family problems can legitimately be discussed as part of their health problems	3.35	1.23
68	whether they buy medications from pharmacies in Mexico	3.09	1.12
98	whether they would be willing to learn to give massages to family members regularly	2.52	1.20
	Average Bridging Value = 0.54	**3.61**	**0.96**

Discussion

Concept mapping with panelists comprised of conventional and CAM providers, and academicians with expertise in CAM and/or conventional care yielded interesting information in both the CAM and conventional health care domains. A common strategy used to discuss concept map findings is to look at variation across each of the dimensions (see Figures 1 and 2). Moving from top to bottom along the Y-axis, for example, statements are oriented toward characteristics of health care consumers, and especially their own assessment of their attitudes, internal states, and health. Moving through the middle of the map, statements tend to assess individuals' decisions and practices regarding health and treatment. Near the bottom, statements are about treatments and providers. The Y-axis might be termed the "locus of treatment and healing," with individual attitudes and actions emphasized at the top, and medical institutions and providers emphasized at the bottom.

Moving left to right along the X-axis, statements at first are about expenses for health care and patients' evaluation of SAVAHCS services. Through the middle of the map, issues are eclectic, seeming to deal with attitudes and decision making regarding the SAVAHCS, CAM, and conventional medicine. Toward the right side of the map, issues have much more to do with health status and health-related practices (both CAM and conventional). The X-axis represents, in a sense, "locus of control." Psychologists generally use this phrase to describe an individual's internal appraisal of interior versus exterior control. In this case, however, it is used more objectively to describe factors that are out of consumers' control, such as the treatment setting at the SAVAHCS, the cost of care, insurance coverage (all on the left side), and the actual health-related actions that consumers might take (on the right).

With regard to the X-axis, it is interesting to note that statements referring to both conventional and CAM modalities are clustered along the bottom and bottom-right portion of the map. Moving from left to right along the bottom of the map, statements change from referring to conventional medicine to CAM. Statements referring to CAM, therefore, tend to be closer to the "individual action" side of the map. Notably, statements that mentioned a health care provider (whether conventional or CAM) are generally found in Cluster 6 and the left side of Cluster 7. As one moves to the right and encounters more statements about CAM, there are fewer statements referring to providers. This observation suggests that panelists perceive CAM to be more accessible to individuals, without using providers as "gatekeepers." Another possibility is that they perceive people to be more empowered in a CAM setting, whereas in the conventional setting empowerment for treatment decisions lies mostly with the provider.

Non-clustering themes

There are brainstorming statements containing certain themes that do not cluster together. Apparently, these themes were not seen as salient enough during the card sort task to get sorted together. Non-clustering themes include military service shared by SAVAHCS patients, and the role of relationships in patients' lives. For example, statements referring to military service, or veteran status, are found in Cluster 1 (whether they believed their military service impacted their health), Cluster 3 (whether they were a combat veteran) and Cluster 8 (whether overseas experience exposed them to CAM modalities). Statements referring to important relationships are found in

Table 6: Cluster 6 "CAM vs. conventional medicine" statements in descending order of average importance (n = 23 respondents).

#	Cluster 6 Statements	Mean	SD
162	why they don't tell their health care professional about the herbals/ supplements they use	4.39	0.66
5	whether their health care professional knows the CAM modalities they are using	4.39	0.94
77	whether they feel they are getting the best possible relief of symptoms from conventional care	4.39	0.58
28	whether they are dissatisfied with conventional medicine	4.35	0.78
123	which CAM modalities they would most like to see adopted by the SAVAHCS, if any	4.26	1.01
165	whether they would listen to their primary care provider if he/she said to avoid CAM	4.17	0.98
105	whether they would listen to their primary care provider if he/she said to try CAM	4.17	0.83
107	whether they would stop using a CAM treatment if their primary care provider told them to	4.13	0.97
69	whether they would like to see a sub-specialty provider with knowledge of CAM	4.00	0.80
140	whether they tend to mistrust doctors	3.96	1.02
19	whether they would accept help from health care providers who are not physicians	3.96	1.15
127	whether they make fewer visits to conventional doctors when they are using CAM	3.96	1.15
138	whether they talk to their health care provider about possible drug/drug interactions	3.96	1.02
149	whether they think doctors often over-prescribe medications and/or tests	3.83	0.83
6	whether their primary care provider has educated them on the use of CAM	3.61	1.27
45	what expectations they have of their doctor in regards to spending time with them	3.61	1.20
21	whether they expect their conventional doctors to be knowledgeable about alternative health care practices	3.52	1.24
18	whether they want their conventional doctors to tell them more about nutrition and exercise	3.52	1.04
43	whether is it important to them that their doctor cares about their welfare	3.43	1.38
116	whether they have had arguments with their conventional medical provider(s)	3.39	1.23
151	whether they think most conventional doctors disapprove of CAM	3.39	1.16
30	whether it is important to them that their doctor accepts a chronic health care problem and still wants to treat them and provide supportive service	3.17	1.23
	Average Bridging Value = 0.24	**3.89**	**1.02**

Cluster 1 (to whom, and how often, they could talk about important things), Cluster 3 (in-home caregiver), Cluster 5 (support groups; family problems as part of health problems), and Cluster 7 (family support for CAM use). There are relatively few statements on these themes, and it is important to remember that the same panel members whose pile sorts determined the cluster map also created the majority of the brainstorming statements. Hence, it should not be surprising that these themes failed to cluster on the map.

There are other themes that only partly clustered. One could be termed "health maintenance behaviors and preventive medicine." Many statements that touch on this theme are incorporated into Cluster 2; although related themes are found in other clusters. Seen across clusters are statements that mention the SAVAHCS. These statements are clustered primarily in the middle of the bottom half of the map. Participants probably had some notion of the coherence of these items, but not enough to cause them to all fall in one cluster.

CAM and conventional providers alike believe that it is necessary to ask patients a variety of questions about their health and health-related activities. Standard demographic and "wellness" questions are mixed with more holistic questions regarding stress, mood, spirituality, and willingness to experiment with new modalities. During their card sorts, panelists recognized the likeness of these "patient data" questions, which converged at the top of the map in Clusters 1–3. Access to medical care (CAM or conventional) is seen as an issue clearly separate (in Cluster 4) from other concepts on the map.

CAM-related statements grouped primarily in Clusters 6–8. Cluster 6 housed statements having to do with availability of CAM through conventional medical institutions and conventional provider's advice about CAM. This particular grouping makes it clear that panelists see interaction between CAM and conventional medicine as a critical part of today's medical landscape. The grouping of other CAM-related issues in Clusters 7 and 8 suggest that panelists distinguish between provider-mediated care and the tendency, good or bad, for much CAM decision-making and use not to be provider-mediated. The array of CAM-related issues in Clusters 7 and 8 suggest the complex nature of this topic and the efficacy of using data-gathering efforts, such as focus groups and concept mapping, to expose and sort through these issues.

Table 7: Cluster 7 "Knowledge of CAM" statements in descending order of average importance (n = 23 respondents).

#	Cluster 7 Statements	Mean	SD
157	whether they would be interested in seeing a CAM provider	4.48	0.67
47	whether they are interested in receiving any CAM treatments	4.39	0.66
104	what the reasons are they might not seek CAM (e.g. doesn't work, harmful)	4.39	0.72
48	whether they are investigating any CAM treatments on their own (e.g. internet, books)	4.35	0.71
3	what factors influence the decision of non-CAM users whether or not to try CAM in the future	4.26	0.81
163	whether they would like to participate in an alternative medicine study	4.22	1.09
86	what would help them to be comfortable seeking a CAM modality for the first time	4.17	0.78
155	whether they have any beliefs that would prevent them from accepting any CAM modalities	4.17	0.89
33	whether non-users would consider using CAM in the future	4.17	0.58
61	what assistance would be of most help to them in their effort to seek out a CAM treatment or provider	4.13	0.87
93	whether they would prefer to take drugs or herbs	4.13	0.76
55	whether they believe that herbals and other CAM modalities are safe, with few side effects	4.13	0.87
97	who they would like to receive CAM education from	3.91	0.95
24	whether they would be interested in attending a group class that studies and tries a variety of CAM practices for the specific problem they have	3.91	0.60
100	how they would rate their level of understanding of CAM	3.87	1.18
121	whether they know about the side effects of herbal medicines	3.83	1.11
51	whether they believe herbal products can interact with prescription medicines	3.74	1.10
145	whether they think CAM is offered by people with insufficient training and experience	3.74	0.86
83	whether they believe they would have to stop their conventional medical care if they went to a CAM provider	3.70	1.15
44	whether they are familiar with holistic healing	3.65	0.98
131	whether they see CAM as more holistic (addressing mind, body, and spirit)	3.65	0.93
147	whether they think CAM is only for minor health problems	3.61	1.08
152	whether they think providers of some kinds of CAM therapies are more credible than others	3.61	1.03
38	whether they are concerned that their CAM treatments will negatively affect their other diseases	3.57	1.16
122	whether they know somebody who has used CAM	3.52	1.08
71	whether they can define/describe CAM	3.48	1.27
130	whether they previously tried to obtain an appointment at the SAVAHCS CAM clinic.	3.35	1.07
4	whether their family members support their use of CAM	3.30	1.29
154	whether they think there is any scientific evidence that any CAM modalities works	3.26	1.25
36	whether they are aware that alternative medicine has not been studied as much as conventional medicine	3.22	1.41
126	what the best location is for them to do modalities such as yoga, Tai Chi, stretching, etc. (in home, small group, friends and peers, anonymous group)	3.09	0.95
143	whether they think all CAM modalities have been in existence for hundreds and thousands of years	2.78	1.09
40	how many specific types of CAM they can name	2.74	1.39
91	why they think CAM is not generally accepted or taught in American medical schools	2.57	1.20
	Average Bridging Value = 0.12	**3.74**	**0.99**

Application of findings to CAM survey development

This study illustrates the need for researchers to obtain diverse perspectives on CAM that includes CAM and conventional providers. The concept mapping process is a salient procedure for doing so. For example, if the concept mapping panel had consisted of conventional providers only, little emphasis would have been placed on Cluster 1, particularly quality of life and spirituality issues. On the other hand, if the panel had been comprised of CAM providers only, issues relevant to herbal remedy and drug interactions might have been underplayed or overlooked.

The 44 additional "proxy" statements on behalf of the CAM using military veteran focus group participants enriched the process and contributed to the reliability of the conceptual domains through triangulation across focus group and concept mapping methods. Focus group statements oftentimes supported both conventional (e.g., the need for more evidence-based studies) and CAM (e.g., the importance of looking at the whole person) approaches, and expanded knowledge within the conceptual domains (e.g., crossing the border into Mexico to purchase less expensive herbs, or to seek the help of native healers).

The creation of a SAVAHCS CAM survey will be guided by the eight concepts delineated by the panelists, and serve as guidelines for the research team. Statements within each of the eight categories (Tables 1, 2, 3, 4, 5, 6, 7, 8) will be selected for inclusion in the survey knowing that input came from SAVAHCS users of CAM (focus group participants), as well as SAVAHCS conventional and commu-

Table 8: Cluster 8 "Experience with CAM" statements in descending order of average importance (n = 23 respondents).

#	Cluster 8 Statements	Mean	SD
16	how many and what types of CAM modalities they have used	4.52	0.67
13	what symptoms they have sought CAM therapy for	4.39	0.72
88	where they get their alternative medicine information	4.35	0.83
134	whether they sought CAM care because of intolerable side-effects of conventional care	4.30	0.70
49	how many years they have been using CAM treatments	4.30	0.76
22	the positive experiences they may have had with CAM providers/treatments	4.30	0.70
64	what conditions they sought help for from a CAM provider	4.26	0.75
112	whether they have discontinued their use of any prescription medicine due to CAM use	4.22	0.52
148	what kind of CAM provider they use (e.g. homeopath, naturopath, acupuncturist)	4.22	0.74
133	whether they sought CAM care after conventional biomedicine failed to alleviate their symptoms	4.22	0.67
144	which CAM treatments have helped them the most	4.17	0.94
137	whether they sought CAM care in order to have someone address them as a whole person (pull together mind, body, and spirit)	4.13	0.92
73	whether they do CAM treatments on their own or under supervision	4.09	0.85
89	whether they are more compliant with their alternative medicine regimen	4.09	0.90
156	who recommended the herbal medicines and other CAM modalities they use	4.09	1.08
117	how they decide how long to use a CAM therapy before judging whether it works	4.04	0.98
120	whether they have used spiritual healers, curanderos, shamans	4.04	0.77
103	how they have responded to the herbal medicines they take	4.00	0.90
81	how they chose their CAM provider(s) in the past	4.00	0.85
141	what are they taking vitamin or mineral supplements for	4.00	0.90
90	how they determine the dosage of their botanicals	3.96	1.07
135	whether they sought CAM care because they believe in going "natural" and don't like or can't tolerate strong medicines or treatments	3.96	0.98
41	whether family tradition or cultural background has led them to certain alternative healing practices	3.96	0.88
70	how long they try a CAM therapy to judge whether it works	3.91	1.08
87	when they start a new herbal treatment or supplement do they replace one they are already taking or do they just add the new one	3.83	1.15
115	whether they have had an herbal remedy conflict with a prescription medicine	3.78	1.09
96	what they will do if their CAM treatment does not give them	3.65	0.88
79	whether they frequently go to health food stores	3.61	0.94
101	where they purchase herbal preparations	3.52	1.16
72	whether they carry a list of the herbal preparations they take	3.43	1.31
80	whether they had overseas experiences that influenced CAM use (e.g. homeopathy in Germany, herbs in Asia)	3.39	1.31
14	whether there are CAM treatments they would recommend to family or friends	3.22	1.13
17	whether they use or have used marijuana for medicinal	2.26	1.18
	Average Bridging Value = 0.19	**3.95**	**0.92**

nity-based CAM providers. The framework of the survey will be guided by the dimensions of the map to ensure that locus of treatment and healing, locus of control, individual action, and such non-clustering themes as health maintenance, preventive medicine, and general patient data issues are not overlooked in the construction of the survey.

Limitations

A disadvantage of using a diverse panel of conventional and CAM providers is the difficulty of seeking agreement on the meaning of cluster contents, and the somewhat contentious nature of the meeting itself. Many members of the group are strong individual thinkers with their own medical worldview and well-formed hypotheses regarding CAM, conventional medicine, their relationship, and the behavior of health care consumers. Perspectives of panelists include the attitude that CAM should be, but is not, evidence-based, as well as the belief the conventional medicine is fatally flawed by its failure to treat the whole person and its inability to take a wider perspective on healing.

It should not have been surprising that there was some difficulty in coming to agreement. The concept mapping process is, in part, a consensus-building process. Panelists were asked to agree on a conceptualization for each cluster, notwithstanding that the statements in a given cluster might suggest somewhat different things to diverse panelists. Some panel members were not as flexible in their views in order to agree on labels for the clusters which

contributed to the need for composite labels for several clusters.

Even without labels, however, the clusters formed by the analysis of participants' card sorts would have been valuable. They helped the research team think about categories of questions to be included in the questionnaire, and suggested some new priorities in the formulation of the questionnaire. Had the panel been less diverse, it may have come to conclusions that were not representative of all the people ultimately interested in the CAM phenomenon. It was more valuable to have diversity on the panel than to have the panel come to a clear consensus.

It could also be argued that there was not adequate representation of military veteran CAM user statements represented within the conceptual domains. However, when focus group statements were compared with the brainstormed statements provided by the conventional and CAM panelists, overlap was noted among all of the groups. The 44 statements (approximately 27% of all the statements used in the concept mapping process) were distinct from those of the panelists and academicians, and reflected concerns regarding CAM-using military veterans. Furthermore, while saturation of categories is not relevant to concept mapping per se, the degree of overlap in the statements generated between the focus groups and the panelists, and between the conventional and CAM providers, indicated sufficient statement samples to assure saturation [32]. Finally, the triangulated design in which different qualitative methods are combined (focus group statements to the brainstorming component of the concept mapping process) contributes to the construct validity and reliability of the CAM survey tool that will be constructed.

Conclusions

The findings from the concept mapping process described in this study stand on their own as a contribution to understanding the field of CAM. In order to study a topic as multifaceted as CAM, it is critical that panelists are as broadly based as possible. It is important to remember, however, that a mixed group of panelists often have well-constructed and stable schemas about their fields, and a consensus-seeking exercise like concept mapping will have unique challenges. Despite these challenges, the eight conceptual domains, with their respective statements, as well as the structure of the map domains will serve as heuristic devices in the construction of a quantitative survey tool. Contributions from all stakeholders (SAVAHCS conventional and community-based CAM providers, academicians, and CAM-using military veteran focus group participants) will also serve to enhance the generalizability of the instrument's findings in VA health care facilities across the United States.

Competing interests

None declared.

Authors' contributions

CMB participated in the study design, carried out the study, participated in writing the paper, submitting it for publication, editing, and approving the final manuscript.

KK participated in writing the paper and interpretation of the data.

WMT participated in writing the paper and data interpretation.

IRB participated in writing the paper and overall coordination of the study.

Acknowledgements

We wish to gratefully acknowledge the research staff for their tremendous efforts in organizing the expert panel, the panelists who gave so generously of their time and talent, and the SAVAHCS Health Services Research and Development Office, Research Office Staff, and SAVAHCS librarians for their support and efforts in carrying out this project. This research was funded by the Department of Veterans Affairs, Veterans Health Administration, Health Services Research and Development Service Project number PCC-98033-1 (PI IR Bell) and, in part, by NIH K24 AT00057-01 (IR Bell) and NIH cooperative agreement supplement U01HL53938-07S1 (CM Baldwin).

References

1. Astin JA: **Why patients use alternative medicine.** *JAMA* 1998, **279:**1548-1553.
2. Astin JA, Pelletier KR, Marie A, Haskell WL: **Complementary and alternative medicine use among elderly persons: one-year analysis of a Blue Shield Medicare supplement.** *J Gerontol* 2000, **55A:**M4-M9.
3. Baldwin CM, Long K, Kroesen K, Brooks AJ, Bell IR: **A profile of military veterans in the southwestern United States who use complementary and alternative medicine.** *Arch Intern Med* 2002, **162:**1697-1704.
4. Eisenberg DM, Davis RB, Ettner SL, Appel S, Wilkey S, Van Rompay M, Kessler RC: **Trends in alternative medicine use in the United States, 1990–1997: results of a follow-up national survey.** *JAMA* 1998, **280:**1569-1575.
5. Eisenberg DM, Kessler RC, Van Rompay MI, Kaptchuk TJ, Wilkey SA, Appel S, Davis RB: **Perceptions about complementary therapies relative to conventional therapies among adults who use both: results from a national survey.** *Ann Intern Med* 2001, **135:**344-351.
6. Kessler RC, Davis RB, Foster DF, Van Rompay MI, Walters EE, Wilkey SA, Kaptchuk TJ, Eisenberg DM: **Long-term trends in the use of complementary and alternative medical therapies in the United States.** *Ann Intern Med* 2001, **135:**262-268.
7. Kroesen K, Baldwin CM, Brooks AJ, Bell IR: **US military veterans' perceptions of the conventional medical care system and their use of complementary and alternative medicine.** *Fam Prac* 2002, **19:**57-64.
8. Blaise R, Maiga A, Aboubacar A: **How different are users and non-users of alternative medicine?** *Can J Pub Health* 1997, **88:**159-162.
9. Millar WJ: **Use of alternative health care practitioners by Canadians.** *Can J Pub Health* 1997, **88:**154-158.
10. Verhoef MJ, Russel ML, Love EG: **Alternative medicine use in rural Alberta.** *Can J Public Health* 1994, **85:**308-309.
11. Bernstein JH, Shuval JT: **Nonconventional medicine in Israel: consultation patterns of the Israeli population and attitudes of primary care physicians.** *Soc Sci Med* 1997, **44:**1341-1348.

12. Furnham A, Forey J: **The attitudes, behaviors and beliefs of patients of conventional vs. complementary (alternative) medicine.** *J Clin Psychol* 1994, **50:**458-469.
13. Moore J, Phipps K, Marcer D: **Why do people seek treatment by alternative medicine?** *BMJ* 1985, **290:**28-29.
14. Thomas KT, Carr J, Westlake L, Williams BT: **Use of non-orthodox and conventional health care in Great Britain.** *BMJ* 1991, **302:**207-210.
15. Wootton JC, Sparber A: **Surveys of complementary and alternative medicine: part I. General trends and demographic groups.** *J Alt Comp Med* 2001, **7:**195-208.
16. Bauman LJ, Adair EG: **The use of ethnographic interviewing to inform questionnaire construction.** *Health Ed Quar* 1992, **19:**9-23.
17. Hughes D, DuMont K: **Using focus groups to facilitate culturally anchored research.** *Am J Com Psychol* 1993, **21:**775-806.
18. O'Brian K: **Improving survey questionnaires through focus groups.** In *Successful Focus Groups: Advancing the State of the Art Volume 156*. Edited by: *Morgan DL. Thousand Oaks, CA: Sage*; 1993:105-117.
19. Pope C, Mays N: *Qualitative Research in Health Care London: BMJ Books*; 2000.
20. Dillman D: *Mail and Telephone Surveys: The Total Design Method New York: John Wiley and Sons*; 1978.
21. Oppenheim AN: *Questionnaire Design and Attitude Measurement New York: Basic Books*; 1966.
22. Southern DM, Batterham RW, Appleby NH, Young D, Dunt K, Guibert R: **The concept mapping method: an alternative to focus group inquiry in general practice.** *Aust Fam Phys* 1999, **28:**S35-S40.
23. Trochim WMK: **An introduction to concept mapping for planning and evaluation.** *Eval Prog Plan* 1989, **12:**1-16.
24. Wiener RL, Wiley D, Huelsman T, Hilgemann A: **Combining qualitative interviews and concept mapping methodology.** *Eval Rev* 1994, **18:**227-240.
25. Eitel F, Kanz KG, Hortig E, Tesche A: **Do we face a fourth paradigm shift in medicine – algorithms in education?** *J Eval Clin Prac* 2000, **6:**321-333.
26. Watson GR: **What is…concept mapping?** *Med Teach* 1989, **11:**265-269.
27. Knish S, Calder P: **Beliefs of chronic low back pain sufferers: a concept map.** *Can J Rehab* 1999, **12:**165-177.
28. Wolf J, Boevink W: **Mapping the quality of life of people with severe and enduring mental health problems.** *Ment Health Care* 1999, **2:**228-231.
29. Carpenter BD, Van Haitsma K, Ruckdeschel K, Lawton MP: **The psychosocial preferences of older adults: a pilot examination of content and structure.** *Gerontologist* 2000, **40:**335-348.
30. Trochim WMK, Linton R: **Conceptualization for evaluation and planning.** *Eval Prog Plan* 1986, **9:**289-308.
31. Trochim WMK: *Reliability of Concept Mapping Paper presented at the Annual Conference of the American Evaluation Association Association, Dallas, Texas*; 1993.
32. Glaser B, Strauss AL: *The Discovery of Grounded Theory: Strategies for Qualitative Research Chicago, IL: Aldine*; 1967.

Pre-publication history

The pre-publication history for this paper can be accessed here:

http://www.biomedcentral.com/1472-6882/4/2/prepub