

Design and Testing of the Use of a Complementary and Alternative Therapies Survey in Women With Breast Cancer

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Purpose/Objectives: To design and test a reliable and valid instrument to determine the frequency of use of complementary and alternative medicine (CAM) therapies among women diagnosed with breast cancer.

Design: A descriptive cross-sectional survey.

Setting: Women were recruited from the southeastern area and a rural midwestern area of the United States.

Sample: 105 predominantly Caucasian women ($\bar{X}$ = 59 years of age) with a diagnosis of breast cancer.

Methods: The Use of Complementary and Alternative Therapies Survey was designed with a content validity index, and reliability was determined with the coefficient alpha. Exploratory factor analysis using a principal components analysis identified primary components (factors) embedded within the survey. Frequency of CAM therapy use was calculated for 33 individual therapies listed on the survey and among three survey-defined subscales of CAM therapies (i.e., diet and nutritional supplements, stress-reducing techniques, and traditional and ethnic medicines).

Main Research Variables: Psychometric properties of an instrument to assess frequency of use of CAM among women with breast cancer.

Findings: The reported prevalence of use of the individual CAM therapies varied considerably. The coefficient alpha estimate for the total survey was 0.86. Estimates for the individual hypothesized subscales were 0.67 for diet and nutritional supplements, 0.79 for stress-reducing techniques, and 0.80 for traditional and ethnic medicines. The principal components analysis resulted in a two-factor solution with nine items that loaded heavily and uniquely on a factor conceptualized as stress and anxiety reduction and six items that loaded heavily and uniquely on a factor conceptualized as dietary and physical manipulation. The remaining five items (vitamins and minerals, prayer and spiritual healing, massage, reflexology, and aromatherapy) indicated moderate loadings on factors one and two and, thus, were interpreted as equivocal items.

Conclusions: Preliminary data indicated that the instrument is reliable and valid. Additional work is needed to improve the range of items and to test the instrument with other populations.

Implications for Nursing: Use of CAM by women with breast cancer is believed to be increasing. However, limited data exist on the frequency and predictors of its use in this patient population; therefore, reliable and valid instruments are needed to determine use. If nurses can determine which CAM therapies women are employing, nurses can educate patients with breast cancer on the safe use of these therapies.

Key Points . . .

- Complementary and alternative medicine (CAM) use is increasing among women with breast cancer.
- Few reliable CAM assessment instruments are available for research purposes.
- After determining which CAM therapies women with breast cancer are using, nurses can provide educational interventions to assist women in achieving optimal outcomes of care.

Many individuals with cancer are seeking complementary and alternative medicine (CAM), and use by women with breast cancer is believed to be increasing. CAM is defined as the methods used in the diagnosis, treatment, and prevention of disease that complement mainstream medicine, as opposed to alternative therapies that are used as a direct substitute for mainstream medicine (Ernst, 1995; Ernst & Cassileth, 1998). Unfortunately, research regarding the patterns and prevalence of CAM use and published, reliable, valid instruments that assess the use of CAM therapies are limited.

Breast cancer increasingly is viewed as a chronic disease rather than an acute illness with predictable mortality. Fears

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related to potential disease recurrence have led women to explore a variety of CAM treatments (VandeCreek, Rogers, & Lester, 1999; Whitman, 2001). In fact, the literature reports that women are the highest users of CAM (Eisenberg et al., 1998). Breast cancer will account for 32% of all new cancer cases among women in 2003; in other words, 211,300 women will be diagnosed with breast cancer in 2003 (Jemal et al., 2003). According to estimates, one in every eight women will develop breast cancer in her lifetime. Women with breast cancer are using CAM therapies to promote wellness, prevent malignant processes, and control symptoms (Whitman). Estimating the frequency and prevalence of CAM therapy use among women with breast cancer is of scientific and public health importance because of the potential physical, emotional, and financial consequences of CAM use by this population.

People with cancer have many reasons for using CAM therapies, such as the urgency to do everything possible to survive, improve quality of life, and increase their hope (Sollner et al., 2000; Sparber et al., 2000). Although CAM use in patients with or without cancer is believed to be high, a paucity of scientific support exists for CAM's role in health care (Eisenberg et al., 1998; Lerner & Kennedy, 1992; Murray & Rubel, 1992; Risberg, Lund, Wist, Kaasa, & Wilsgaard, 1998; Verhoef, Russell, & Love, 1994). For example, conventional medicine justifiably has criticized most CAM therapies for the relative lack of scientific testing through randomized, controlled clinical trials or other appropriate research designs. Nevertheless, the use of these therapies has increased to the extent that the National Center for Complementary and Alternative Medicine (NCCAM) was established to provide funding for testing of complementary and alternative therapies. Documented use of alternative therapies has increased in the general population from 34% in 1990 to 42% in 1997 (Eisenberg et al., 1998). CAM reportedly has been used by 25%–50% of the general population in industrialized nations (Ernst, 1995; Fisher & Ward, 1994; Gray, Tan, Pronk, & O'Connor, 2002). Use of CAM therapies has become a multimillion-dollar business, receiving increasing attention from the public, media, and medical community (Eisenberg et al., 1993). One study determined that 40% of Americans used some form of alternative health care within the prior 12 months (Astin, 1998). In a survey of members of a managed care organization, 42% reported using at least one CAM therapy in the past 12 months (Gray et al.). Up to 64% of individuals use CAM in addition to their prescribed cancer treatments (Ernst & Cassileth, 1998).

Although several studies of CAM use in patients with cancer have been conducted in North America and Europe, information is limited about instruments that survey CAM use. In addition, reliable information is sparse regarding the specific types of CAM therapies being used, how patients are referred to these therapies, and the reasons that patients choose specific therapies. Critical to the validity of these studies is the development of reliable and valid instruments to measure CAM use. However, research regarding CAM use by patients with breast cancer has the same limitations of prevalence as research about CAM use in general: lack or improper evaluation of CAM use, small sample sizes, and the inability to link preferences for CAM use with detailed medical history, treatment data, and predisposing psychological variables. The purpose of this study was to design and test a reliable and valid instrument to determine the frequency of CAM use among women diagnosed with breast cancer.

A variety of methods have been used in an attempt to assess CAM use among patients with breast cancer. The following is a review of studies that have assessed CAM prevalence in women with breast cancer. From this review, two methods of assessment regarding CAM use in patients with breast cancer were identified: the interview approach and self-developed instruments or questionnaires.

Complementary and Alternative Medicine Prevalence

Twelve studies were found that examined the prevalence or correlates of CAM use in women with breast cancer (Adler & Fosket, 1999; Alferi, Antoni, Ironson, Kilbourn, & Carver, 2001; Balneaves, Kristjanson, & Tataryn, 1999; Boon, Brown, Gavin, Kennard, & Stewart, 1999; Boon et al., 2000; Burstein, Gelber, Guadagnoli, & Weeks, 1999; Crocetti et al., 1998; Lee, Lin, Wrensch, Adler, & Eisenberg, 2000; Morris, Johnson, Homer, & Walts, 2000; Moschen et al., 2001; Rees et al., 2000; VandeCreek et al., 1999). An analysis revealed that few well-controlled studies with adequate end points have been conducted (Jacobson, Workman, & Kronenberg, 2000). Table 1 provides a critique of each study, describing the authors, target population, and sample; research design, methods, and instruments; sample size; response rate; selected findings; and assessment of the instrument or methods used.

Interview approach: Five studies employed an interview method to assess CAM use.

A prospective, five-year qualitative study was conducted to determine CAM use among 86 women at four intervals after diagnosis (i.e., at 2–4 months, 6 months, 18 months, and 30 months after diagnosis) (Adler & Fosket, 1999). Results of the initial interview and secondary interview indicated that 72% of women with breast cancer used at least one form of CAM, and six months later, 65% used some form of CAM. Sixty-nine percent of the participants used one CAM therapy prior to diagnosis, based on recall at the two-to-four-month interval. Specific types of CAM therapies were not identified; only use was reported.

A study of factors that predicted use of CAM in a multi-ethnic sample of 231 women with early-stage breast cancer was conducted in Miami, FL (Alferi et al., 2001). Ten percent of the participants were African American, 26% were Hispanic, and 64% were Caucasian. CAM prevalence was assessed by asking patients if they used acupuncture, herbal medication, meditation and guided imagery, massage and body therapy, or spiritual healing. Use of any CAM was reported by 56% of the participants; meditation or imagery (29%), support groups (23%), psychotherapy (22%), spiritual healing (21%), and acupuncture (1%) were used. African American women used more herbal therapies and spiritual healing than Caucasian and Hispanic women. Women who reported using psychotherapy had more distress and higher depression levels. General categories of use of seven CAM therapies were identified. Patients were not followed over time, and the time periods for recruitment differed for all patients.

In another qualitative study of 36 women, focus groups were conducted to assess CAM use in women with breast cancer (Boon et al., 1999). CAM prevalence or frequency was not identified, and types of CAM were reported individually through the interview process.

Table 1. Prevalence of Complementary and Alternative Medicine Use in Patients With Breast Cancer: Literature Review and Instrument Critique

Study	Sample	Research Design, Methods, and Instruments	N	Response Rate (%)	Prevalence and Selected Findings	Assessment of Instrument Reliability and Validity
Adler & Fosket, 1999	This recently diagnosed, multi-ethnic sample (6% African American, 15% Chinese American, 69% Caucasian) was aged 35–74 years and recruited from a hospital clinic in San Francisco, CA.	In this longitudinal study, four interviews were conducted over a five-year period. Qualitative analysis of transcribed data from a semistructured interview guide was performed.	86	87	Seventy-two percent of the sample reported using at least one complementary and alternative medicine (CAM) at the first interview; at the second interview, 65% reported use. Younger women (35–49 years) had a higher prevalence of use at the first interview (84%) and the second interview (74%) compared to older women (60–74 years), who had a prevalence of 58% at the first interview and 54% at the second.	Specific types of CAM therapies were not reported or identified; no reliability or validity was identified for the interview guide or questions.
Alferi et al., 2001	Early-stage patients (26% Hispanic, 10% African American, 64% Caucasian) who lived in Miami, FL, participated.	A cross-sectional survey of patients 2, 6, and 12 months postdiagnosis was performed. Patients were interviewed if they used the following specific CAM treatments: herbal medication, meditation and imagery, massage and body therapy, and spiritual healing. They were able to identify other CAM treatments used.	231	–	CAM use was reported by 56% of the participants. Meditation and imagery (29%), support groups (23%), psychotherapy (22%), spiritual healing (21%), and acupuncture (1%) reportedly were used.	Specific treatment items were asked in an interview, but patients also identified other categories of treatments. Researchers only asked about five categories, and no reliability or validity was cited.
Balneaves et al., 1999	The majority of the sample was 41–65 years of age. They were recruited from three hospital clinics in central Canada.	A descriptive survey design was used. A questionnaire (Belief and Treatment Practices Survey–Breast Cancer [BTPS-BCI]) was administered once.	52	81	Sixty-seven percent of women reported using at least one CAM therapy during their illness. The most frequently used CAM therapies were meditation and relaxation (63%), vitamins (57%), and spiritual healing (53%). The majority of women who used CAM (68%) were educated beyond high school.	Items on the BTPS-BCI were not identified related to specific types of CAM therapies; in fact, only use was assessed. Respondents were asked to identify alternative therapies and did not have a list from which to choose. Broad categories of use were identified. No reliability or validity was cited for the CAM component of the questionnaire.
Boon et al., 1999	The majority was diagnosed for five years (range = 8 months to 15 years), was Caucasian, was middle to upper-middle class, and was 41–73 years of age. They were recruited from the community in Ontario, Canada.	A qualitative design was used. Interviews were held at two-hour focus groups. An interview guide was used; perceptions, feelings, ideas, and experiences regarding use or nonuse of CAM were explored.	36	–	Of the 36 participants, 25 were CAM users and 11 were nonusers. Although prevalence of use was not systematically identified, a wide range of CAM use was reported for vitamins and supplements, herbal products, meditation, visualization, special diets, Reiki, acupuncture, traditional Chinese medicine, homeopathic medicine, and massage therapy.	Specific types of CAM therapies were not systematically identified through a questionnaire. Reliability and validity were not cited.
Boon et al., 2000	Patients were diagnosed in 1994 and 1995 and were, on average, aged 58 years. Fifty-two percent were North American, 30% were European, and 18% were from a wide range of ethnic and cultural groups.	A descriptive survey design (retrospective analysis) was used. A 22-item questionnaire was adapted from the BTPS-BCI. After focus group input, bovine cartilage, essiac, herbal mixtures, green tea, hydrazine sulphate, iscad or, ozone therapy, injectable	422	76	Vitamins and minerals were the most commonly used therapies (13%), with 50% of patients reporting use at least once. Herbal remedies and green tea were used at least once by 25% and 17%, respectively. CAM use may affect benefits associated with support groups.	Specific CAM therapies were limited and not consistent with other therapies identified by other researchers. No reliability or validity was cited for the survey questionnaire.

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Table 1. Prevalence of Complementary and Alternative Medicine Use in Patients With Breast Cancer: Literature Review and Instrument Critique (Continued)

Study	Sample	Research Design, Methods, and Instruments	N	Response Rate (%)	Prevalence and Selected Findings	Assessment of Instrument Reliability and Validity
Burstein et al., 1999	Patients were recruited from a cancer registry in Ontario, Canada.	therapy, shark cartilage, taheebo tea, and 714-x (a camphor compound) were added.				
	Newly diagnosed patients were recruited in Boston, MA. No ethnicity was reported. The majority was aged 41–70 years, was educated beyond high school, and had an income greater than \$20,000.	A descriptive survey was used. Eisenberg et al.'s (1993) alternative therapies were listed, including nine healing therapies (i.e., megavitamins and herbal medicine, massage, chiropractic, lifestyle, diet, acupuncture, energy healing, homeopathy, and folk remedies) and six psychological therapies (i.e., relaxation, self-help groups, spiritual healing, imagery, biofeedback, and hypnosis).	480	73	After surgery, new CAM use was reported to be 28%. Thirty-nine percent of the women used CAM before diagnosis. The most frequently used therapies after surgery were self-help groups (60%), relaxation techniques (59%), herbal therapies (43%), and megavitamins (39%).	Specific CAM therapies were limited to 15 as identified by Eisenberg et al. (1993). No reliability and validity was cited for the instrument. A retrospective analysis was completed on prior use.
Crocetti et al., 1998	Patients who received surgical intervention with an average age of 58.9 years were recruited from a Tuscan cancer registry in Florence, Italy.	A descriptive survey was used; the instrument was mailed to patients' homes. Fourteen therapies were identified: acupuncture, homeopathy, manual healing methods (massage), therapeutic touch, herb use, diets, naturopathy, energy healing, psychotherapy, iridology, mind-body therapies, relaxation techniques, folk remedies, and spiritual healing.	242	51	Use of complementary therapy before diagnosis was 9% and, after diagnosis, it was 17%. The most commonly used CAM therapies were homeopathy (24%), massage (16%), herbal preparations (14%), and acupuncture (6%). The main reasons identified for use were physical distress (62%), psychological distress (21%), and pressure of relatives (5%).	Specific CAM therapies were limited to 14 categories. No reliability or validity was cited for the instrument. Retrospective analysis was based on recall of prior use.
Lee et al., 2000	Patients were from four ethnic groups (i.e., Latino, Caucasian, African American, and Chinese) and had a mean age of 56 years. Patients were recruited from a regional tumor registry in San Francisco, CA; 26% were African American, 22% were Chinese, 26% were Latino, and 26% were Caucasian.	A descriptive survey was used, and telephone interviews were conducted in patients' preferred language. Patients asked about a macrobiotic diet, megavitamin therapy and other dietary methods, such as low-fat and vegetarian diets; homeopathy; herbal remedies; psychological methods; meditation and imagery; faith and spiritual healing; physical methods; massage relaxation; and acupuncture.	379	89	The use of alternative therapies was examined by ethnicity. African Americans most often used spiritual healing (36%), the Chinese used herbal remedies (22%). Latinos used dietary therapy (30%) and spiritual healing (26%), and Caucasians used dietary methods (35%) and physical methods (21%) such as massage and acupuncture. Younger, more educated women were more likely to use CAM.	Categories assessed were limited to 15. No reliability or validity was given for the instrument. A retrospective analysis of use three to six years after diagnosis was conducted.

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Table 1. Prevalence of Complementary and Alternative Medicine Use in Patients With Breast Cancer: Literature Review and Instrument Critique (Continued)

Study	Sample	Research Design, Methods, and Instruments	N	Response Rate (%)	Prevalence and Selected Findings	Assessment of Instrument Reliability and Validity
Morris et al., 2000	The majority was aged 45–54 years. No ethnicity was cited. Patients were recruited from a tumor registry of a community hospital in Portland, OR.	A descriptive survey was used; the instrument was mailed to participants and included nine therapies: massage, acupuncture, chiropractic, healing herbs, homeopathy, naturopathic therapy, nutrition, stress management and relaxation, and music or art therapy.	288	–	Patients reported using CAM at a rate of 84%; specifically, nutrition was used by 65%, massage by 57%, herbs by 49%, relaxation by 41%, chiropractic by 43%, and acupuncture by 31%.	Specific types of CAM use were limited to the nine categories. No reliability or validity was cited for the instrument. A retrospective analysis was given.
Moschen et al., 2001	Patients were receiving conventional treatment in this Austrian study.	A descriptive survey was used; instruments were given to all participants. Treatments considered were homeopathy, special diets, acupuncture, ozone treatment, and spiritual healing.	117	93	The most frequently used CAM therapies were nutrition-related measures (50%), mistletoe preparations (49%), trace elements (47%), and homeopathy (31%).	Five specific categories were identified, but patients could add other categories. No reliability or validity was given for the instrument.
Rees et al., 2000	The majority was aged 35–65+ years. No ethnicity was cited. Patients were recruited through the Thames Cancer Registry in Southeast England over a six-year period.	A descriptive survey was used. A questionnaire was mailed to participants that listed 12 categories of alternative therapies: chiropractic or osteopathy; healing; herbal medicine; homeopathy; hypnotherapy; massage and aromatherapy; nutrition; reflexology; relaxation, yoga, and meditation; over-the-counter products; counseling psychology; and support groups.	714	74	Twenty-two percent of patients used CAM in the previous 12 months. The highest reported CAM use was for massage and aromatherapy (9%); chiropractic and osteopathy (6%); relaxation, yoga, and meditation (6%); and healing (5%).	The instrument listed 12 categories. No reliability or validity was cited. Retrospective reporting of CAM use was given.
VandeCreek et al., 1999	Mean age was 56 years; no ethnicity was cited. Outpatients were recruited from a suburban cancer clinic at Midwestern University Medical Center.	A descriptive survey was used. Interviews were held, and a list of 18 therapies was given to identify interest in each category. Categories were developed from 18 therapies identified by Eisenberg et al. (1993): prayer, exercise, spiritual healing, relaxation, megavitamins, herbal medicine, mental imagery, self-help groups, lifestyle diet, massage, homeopathy, commercial weight loss programs, folk medicine, biofeedback, chiropractic, energy healing, hypnosis, and acupuncture.	112	90	CAM therapies with the highest reported use were prayer (84%), exercise (76%), spiritual healing (48%), relaxation (47%), megavitamins (47%), herbal medicine (37%), and mental imagery (33%).	Only 18 categories were listed. No reliability or validity was cited.

CAM use in four ethnic groups was assessed through phone interviews conducted in the subjects' native languages. Types and prevalence of CAM use by women with early-stage breast cancer were reported simultaneously in four ethnic groups (N = 379) (Lee et al., 2000). Nine of the 15 alternative therapies listed in the interview guide reportedly were used. The most commonly reported alternative therapies were dietary therapies (27%), spiritual healing (24%), herbal remedies (13%), physical methods (14%), and psychological methods (9%). Differences in CAM use were identified among ethnic groups. This was the first study that examined the prevalence of CAM use by ethnicity.

In their study, VandeCreek et al. (1999) reviewed CAM use by interviewing a cohort of 112 female outpatients with breast cancer. Participants were asked to identify interest in the use of CAM therapies listed on an interview guide form. The interview guide included 18 categories specified by Eisenberg et al. (1993). When compared to a general population sample, patients with breast cancer used a wider range of alternative therapies.

Investigator-developed questionnaire studies: Seven studies reported the use of investigator-developed questionnaires. One study examined use of CAM with 52 patients with breast cancer (35 users and 17 nonusers of CAM) in Canada and reported broad categories of use (Balneaves et al., 1999). Although the Belief and Treatment Practices Survey–Breast Cancer (Yates et al., 1993) reportedly was used, participants were encouraged not to rely solely on the list presented in the survey when asked to identify their use of alternative therapies (Balneaves et al.). Participants identified their use of nine therapies.

Boon et al. (2000) examined prevalence of CAM use by 422 breast cancer survivors and compared the characteristics of users with nonusers. CAM therapy items were added to selected items taken from the Belief and Treatment Practices Survey–Breast Cancer. These additional items were identified through focus groups with women with breast cancer. Only the 10 most prevalent CAM therapies used were reported: vitamins or minerals (50%), herbal remedies (25%), green tea (17%), special foods (15%), essiac (15%), body work (e.g., Reiki, massage, therapeutic touch) (14%), meditation (10%), shark cartilage (5%), homeopathy (4%), and faith healing (3%).

In a study of 480 newly diagnosed patients with breast cancer, patients were asked to identify retrospectively alternative therapies that were used (Burstein et al., 1999). Fifteen alternative therapies identified by Eisenberg et al. (1993) were utilized to assess CAM use in the previous 12 months. Retrospective analysis revealed that, prior to surgery, use of CAM was 39% and, after breast surgery, new use was 29%. Differences in use were identified in types of CAM prior to and after surgery.

A European study examined CAM use among 242 patients with breast cancer receiving conventional treatment (Crocetti et al., 1998). A questionnaire that included a list of 14 alternative therapies was mailed to participants. Retrospective analysis of CAM use was identified. Data analysis revealed that, after one year, 17% of patients used CAM after diagnosis compared to 9% before diagnosis. Participants reported that their main reason for using CAM was physical distress. The most common CAM therapies were homeopathy, manual healing, herbal preparations, and acupuncture.

In their study, Morris et al. (2000) mailed an instrument that measured the use of nine alternative therapies to 288 patients with breast cancer. The researchers compared patients with breast cancer to those with other primary tumor sites. CAM use among patients with breast cancer was high (n = 117, 84%) compared to other malignancies (n = 132, 66%). This analysis was retrospective; therefore, only broad categories were reported.

An Austrian study examined the use of CAM therapy in 117 patients with breast cancer who were receiving conventional treatment (Moschen et al., 2001). CAM use was assessed with a self-developed questionnaire that asked which CAM therapies and procedures were being used, time of first use and duration, intensity of use, and motives for use. The most frequently used therapies were nutrition-related measures, special vegetable drinks, and megavitamins reported by 50% of users, followed by mistletoe preparations (49%), trace elements (47%), and homeopathy (31%). Specific types of CAM therapies reported were limited.

In an English study of 714 patients with breast cancer, CAM use was measured with a mailed survey that included 12 categories of CAM (Rees et al., 2000). This retrospective analysis included women diagnosed with breast cancer in the previous six years. Results indicated that 22% of the participants had used CAM in the prior 12 months.

Summary

The studies described employed a variety of methodologies to assess CAM use in women with breast cancer. In the first five studies reviewed, researchers interviewed participants with interview guides and open-ended questions to assess CAM prevalence. However, Begbie, Kerestes, and Bell (1996) reported that 40% of patients with cancer had not discussed use of alternative cancer therapies with their physicians, indicating that the direct interview method may result in underreporting of CAM use.

Investigator-developed questionnaires are a relatively cost- and time-efficient method, with the caveat being that the quality of the data is limited by the quality of the instrument itself. However, closed-ended questions on questionnaires may not elicit the rich data that can be obtained by using interview methods. The researchers developed or used items from other questionnaires. Very little documentation on development processes was available, and no reported reliability and validity for the survey instruments reviewed were reported. Therefore, development and testing of a reliable and valid survey to assess CAM use in patients with breast cancer are warranted.

Methods

Instrument Development Process

The Use of Complementary and Alternative Therapies Survey (UCATS) was developed to measure types of CAM used and is based on the Complementary Therapy Rating Scale (Bennett & Lengacher, 1999). Development and validation of this survey included initial item generation and review and determination of content validity for the items. UCATS uses classifications of CAM therapies identified by the Office of Alternative Medicine (OAM) Advisory Panel (1994), including diet, nutritional, and lifestyle changes; mind and body control; traditional and ethnomedicine; structural and energetic

therapies; pharmacologic and biologic treatments; and bioelectric applications.

Thirty-nine items were grouped by the OAM categories. This content was assessed by a panel of three experts with clinical and research experience in the use of CAM therapies. Each expert judged the content of each item by indicating +1 if the content was relevant to CAM, -1 if not relevant to CAM, and 0 if unsure. The expert ratings then were summated and averaged, resulting in a content validity index (CVI) for each item. The total CVI (average of all 39 items) was 0.89. Thirty-two of 39 items (82%) had a CVI of 1.0, and six items had a CVI of 0.33; these six items were deleted. In addition, the panel identified an additional item not represented (i.e., aromatherapy). Thus, the final pilot survey instrument consisted of 33 items that were conceptually divided into three hypothesized subscales: diet and nutritional supplements (6 items), stress-reducing techniques (11 items), and traditional and ethnic medicines (16 items).

In addition to measuring the frequency of use of each CAM therapy since cancer diagnosis, additional sections of the survey ascertained (a) whether respondents felt that the use of CAM was or is helpful in their fight against cancer, (b) whether they discussed use of the therapy with their doctor, (c) general reason(s) for choosing the therapy, (d) symptoms presumably managed by use of the therapy, (e) whether the therapy was used prior to cancer diagnosis, and (f) who provided the therapy. The frequency of use of each CAM therapy was measured on a four-point Likert scale consisting of 0 (never), 1 (once), 2 (several times), or 3 (use on a regular basis). The remaining sections of the survey, designed to measure characteristics related to CAM use, were scored with a combination of yes or no responses and Likert-scaled items. The psychometric properties were presented for only the first part of the survey (i.e., prevalence of CAM use).

Study Design and Sample

The pilot study used a cross-sectional design to determine the frequency and characteristics of the use of CAM therapies among women with breast cancer. A convenience sample of 125 women was recruited from an urban area in the southeastern United States and a rural midwestern area of the United States. The final sample of 105 women (84%) gave informed consent and completed the survey. Inclusion criteria were women with a diagnosis of breast cancer who were able to read and speak English and give informed consent. Women with breast cancer were recruited from community support groups in the midwestern and southeastern areas, including a National Cancer Institute-designated cancer center and research institute. Participants could complete the survey when the nurse coordinator explained it or return the completed survey by mail. Regardless, the survey was completed anonymously, and the principal investigator maintained the data confidentially in a locked file.

Data Analysis

The prevalence of use for each CAM therapy was determined with two dichotomous definitions: the therapy had been used previously at least once or the therapy had been used on a regular basis. Total scores for the three hypothesized subscales of the survey and for the total survey were tabulated by summing the binary responses across respective items. Pearson correlations were computed for each individual item

and its respective hypothesized subscale score, as well as for the total survey score.

To determine internal consistency reliability of the survey items, the coefficient alpha was computed for the three hypothesized subscales and the entire survey instrument. Estimates were computed using all survey items and after removing 13 of 33 items (39%) with a reported prevalence of use less than 5%.

A principal components analysis was conducted to identify the primary components (factors) embedded within the survey and determine whether the factors extracted approximated the three hypothesized subscales. This analysis was conducted among the 20 CAM therapies with a reported prevalence of 5% or more. Because the survey instrument does not assume an underlying causal structure, this variable reduction approach is a principal components analysis rather than an exploratory or confirmatory factor analysis. To determine the number of meaningful factors to retain, Eigen values of 1.0 or higher were identified first, along with inspection of scree plots for meaningful breaks among Eigen values. Results (i.e., the number of factors retained) were identical using both approaches. Finally, orthogonal and oblique rotation solutions were obtained because no a priori assumption was made regarding the degree of correlation among extracted factors. Analyses were conducted using SAS Version 8.0 (SAS Institute, Cary, NC).

Results

Sample

Sociodemographic and clinical characteristics: The sample consisted of 105 participants ($\bar{X}$ = 59 years of age) who were primarily Caucasian (95%), were college educated (72%), and had annual incomes of \$50,000–\$100,000. Sixty-one percent lived in an urban or suburban area, and 39% lived in a small town or rural area. Forty-four percent worked part-time or full-time, and 39% were retired. Self-reported clinical data indicated that 57% had ductal carcinoma and 17% had lobular carcinoma. Fifty-four percent of the respondents reported that they previously had received chemotherapy, and 10% were receiving chemotherapy; 52% reported having received radiation previously, and 5% were being treated with radiation.

Frequency of CAM therapy use: The reported prevalence of CAM use ranged from 73% for vitamins or minerals to 0% for colored light treatments, which are used to assess energy fields or individuals' auras and correct disharmonies (see Table 2). Overall, the CAM therapies represented in the traditional or ethnic medicines subscale had the lowest reported frequency of use, with 10 of 16 items (62%) having a prevalence of less than 5%. The mean total survey score and standard deviation, based on the sum of the binary prevalence scores for the 33 items (any prior use), were 13.7 ± 10.9 .

Reliability and Validity

Correlations between survey items and hypothesized subscales: Among the six items represented in the diet and nutritional supplements subscale, all demonstrated moderate to high correlations with the overall subscale score and generally moderate correlations with the total survey score (see Table 2). Similar results were observed for all 11 items represented in the stress-reducing techniques subscale, with the exception of hypnosis, which was not correlated with the

Table 2. Frequencies and Item Correlations of Complementary and Alternative Therapies^a

Therapies by Subscale	Use Since Breast Cancer Diagnosis		Item Correlations	
	At Least Once (%)	Regular Basis (%)	With Subscale	With Total Score
Diet and nutritional supplements				
Special diets (e.g., macrobiotic)	13	10	0.63***	0.48***
Vitamins and minerals (e.g., selenium)	73	63	0.68***	0.50***
Cleansing and “detox” regimens	2	1	0.40***	0.28***
Health foods (e.g., barley grass)	15	10	0.55***	0.49***
Herbs (e.g., ginkgo biloba)	20	13	0.63***	0.44***
Antioxidants	39	33	0.72***	0.44***
Stress-reducing techniques				
Art therapy	12	3	0.45***	0.34***
Relaxation techniques	41	15	0.78***	0.68***
Music therapy	30	11	0.70***	0.69***
Humor and laughter therapy	43	21	0.72***	0.69***
Guided imagery	26	6	0.66***	0.55***
Counseling	19	4	0.64***	0.48***
Support group	51	37	0.59***	0.47***
Prayer and spiritual healing	59	49	0.60***	0.55***
Biofeedback	3	2	0.42***	0.31**
Hypnosis	1	—	0.04	0.04
Yoga and meditation	18	6	0.54***	0.46***
Traditional and ethnic medicines				
Acupuncture	2	—	0.54***	0.33***
Homeopathic remedies	2	1	0.52***	0.37***
Ethnic medicines (e.g., Chinese, Native American)	3	1	0.43***	0.43***
Acupressure	2	1	0.53***	0.40***
Massage	27	6	0.68***	0.60***
Chiropractic	10	2	0.63***	0.34***
Reflexology	6	2	0.65***	0.50***
Therapeutic touch	7	2	0.35***	0.31**
Aromatherapy	10	—	0.52***	0.46***
Ozone or hydrogen peroxide therapy	1	—	0.43***	0.29**
Metabolic therapy	1	—	0.43***	0.29**
Chelation therapy	1	—	0.43***	0.29**
Naturopathy	3	1	0.28**	0.19*
Magnetic therapy	4	1	0.30**	0.11
Electrostimulation	5	—	0.62***	0.37***
Colored light treatments	—	—	—	—

N = 105

^a A maximum of two missing cases exists for some items.

* p < 0.05

** p < 0.01

*** p < 0.001

overall subscale score or total survey score. Finally, the majority of the 16 items represented in the traditional or ethnic medicines subscale demonstrated moderate correlations with the overall subscale score and total survey score. However, use of colored light treatments was not reported by any participant and, thus, was removed from all remaining analyses, resulting in a total of 32 survey items.

Internal consistency reliability estimates: Using the total 32 items, the coefficient alpha estimate for the total survey was 0.86. Estimates for the individual subscales were 0.67 for diet and nutritional supplements, 0.79 for stress-reducing techniques, and 0.80 for traditional or ethnic medicines (see Table 3). Analyses conducted using the set of 20 items with a reported prevalence of 5% or more gave coefficient alpha estimates of 0.66 for the diet and nutritional supplements subscale, 0.82 for the stress-reducing tech-

niques subscale, 0.66 for the traditional and ethnic medicines subscale, and 0.84 for the total survey. Thus, the internal consistency of the survey was not appreciably altered when limiting the survey to the 20 of 32 items with a reported prevalence of 5% or more.

Principal components analysis: The principal components analysis resulted in a two-factor solution with nine items that loaded heavily and uniquely on a factor conceptualized as “stress and anxiety reduction” and six items that loaded heavily and uniquely on a factor conceptualized as “dietary and physical manipulation” (see Table 4). The remaining five items (vitamins and minerals, prayer and spiritual healing, massage, reflexology, and aromatherapy) indicated moderate loadings on factors one and two; thus, they were interpreted as equivocal items. Similar results were observed for the orthogonal and oblique rotation solutions.

Table 3. Descriptive and Internal Consistency Estimates of Three Hypothesized Subscales

Scale	Reliability Using All Items				Reliability Excluding Items With Prevalence Less Than 5%			
	Number of Items	Coefficient Alpha	$\bar{X}$	SD	Number of Items	Coefficient Alpha	$\bar{X}$	SD
Diet and nutritional supplements	6	0.67	4.5	3.8	5	0.66	4.5	3.7
Stress-reducing techniques	11	0.79	7.4	6.5	9	0.82	7.3	6.3
Traditional and ethnic medicines	15	0.80	1.7	3.3	6	0.66	1.3	2.3
Full questionnaire	32	0.86	13.7	10.9	20	0.84	13.2	9.9

Eight of the nine items that loaded heavily on the first factor, stress and anxiety reduction (art therapy, relaxation techniques, music therapy, humor and laughter therapy, guided imagery, counseling, support group, yoga and meditation), are contained within the stress-reducing techniques subscale of the survey. The ninth item (therapeutic touch) that loaded heavily on stress and anxiety reduction is contained under the traditional and ethnic medicines subscale. Four of the six items that loaded heavily on the second factor, dietary and physical manipulation (special diets, health foods, herbs, antioxidants), are contained under the diet and nutritional supplements subscale. The remaining two items (chiropractic and electrical stimulation) are contained in the traditional and ethnic medicines subscale.

Overall, a strong degree of correspondence was found between items from the empirically derived factor, stress and anxiety reduction, and items from the stress-reducing techniques subscale and from the empirically derived factor, dietary and physical manipulation, and the diet and nutritional

supplements subscale. However, items from the traditional and ethnic medicines subscale did not consistently load on either of the two factors extracted.

Discussion

This study presents the results of an initial pilot evaluation of UCATS, an instrument designed to measure the prevalence and characteristics of use of CAM therapies among women diagnosed with breast cancer. Overall, the reported prevalence of use of individual CAM therapies among this patient population varied greatly. The thirty-two items that were analyzed demonstrated adequate internal consistency reliability; this performance does not appear to be compromised appreciably by reducing the survey to 20 items with a reported prevalence of at least 5%. Thus, further testing of this survey instrument in other study populations is warranted. External validity could be increased by recruiting more ethnic minorities and low-income women to future studies.

Table 4. Factor Loadings of Complementary and Alternative Medicine Therapies on Factors Identified Through Exploratory Factor Analysis

Therapies and Exploratory Factors	Orthogonal Rotation		Oblique Rotation ^a	
	Loading on Factor 1	Loading on Factor 2	Loading on Factor 1	Loading on Factor 2
Factor 1 (stress and anxiety reduction)				
Art therapy	0.46	-0.04	0.49	-0.12
Relaxation techniques	0.77	0.17	0.78	0.04
Music therapy	0.64	0.35	0.61	0.24
Humor and laughter therapy	0.63	0.33	0.61	0.23
Guided imagery	0.66	0.11	0.67	-0.01
Counseling	0.71	-0.09	0.76	-0.22
Support group	0.50	0.08	0.51	-0.01
Yoga and meditation	0.64	-0.03	0.67	-0.15
Therapeutic touch	0.41	0.05	0.42	-0.02
Factor 2 (dietary and physical manipulation)				
Special diets (e.g., macrobiotic)	0.13	0.56	0.05	0.56
Health foods (e.g., barley grass)	0.14	0.57	0.06	0.56
Herbs (e.g., ginkgo biloba)	0.03	0.61	-0.06	0.63
Antioxidants	0.09	0.50	0.02	0.51
Chiropractic	-0.09	0.62	-0.19	0.66
Electrostimulation	-0.09	0.65	-0.20	0.70
Equivocal: Factors 1 and 2				
Vitamins and minerals (e.g., selenium)	0.27	0.39	0.22	0.35
Prayer and spiritual healing	0.41	0.33	0.38	0.27
Massage	0.44	0.50	0.38	0.44
Reflexology	0.36	0.40	0.32	0.35
Aromatherapy	0.43	0.33	0.39	0.26

^a The correlation between Factor 1 and Factor 2 was 0.32.

Underlying Dimensions of the Survey

Using principal components analysis, four of the six survey items from the diet and nutritional supplements subscale loaded heavily and uniquely on dietary and physical manipulation. The fact that vitamins and minerals did not load uniquely on this factor probably represents the high reported use of this therapy (73%) and its correlation with dietary and physical manipulation and stress and anxiety reduction. The remaining therapy, cleansing and “detox” regimens, was not assessed in the principal components analysis because of its overall low prevalence of use.

A similar discrete concordance was found among 8 of the 11 items from the stress-reducing techniques subscale and stress and anxiety reduction. Two of the three remaining items (biofeedback and hypnosis) were not assessed in the principal components analysis because of their overall low prevalence of use. The remaining item, prayer and spiritual healing, was similar to vitamins and minerals in that its reported prevalence of use was high and it correlated with the extracted factors of dietary and physical manipulation and stress and anxiety reduction.

The majority of CAM therapies from the traditional and ethnic medicines subscale reportedly were used infrequently; therefore, they were not assessed in the principal components analysis. Of the six items assessed (massage, chiropractic, reflexology, therapeutic touch, aromatherapy, and electrostimulation), only two items (chiropractic and therapeutic touch) loaded uniquely on the two factors extracted. In essence, the remaining four items also had a relatively low prevalence of use that limited their unique classification to a specific factor.

Overall, the current study’s results suggest that the intensity of use of different types of CAM therapies varies considerably and that these therapies are used primarily for dietary and physical manipulation and anxiety and stress reduction. In addition, the alternative therapies in these two categories are used frequently by women with breast cancer and are consistent with the content areas identified by NCCAM. Some of the more universal CAM therapies (i.e., vitamins and minerals, and prayer and spiritual healing) appear to be used for multiple purposes. Perhaps further delineation of the specific types of

vitamins and minerals and prayer and spiritual healing being used would be helpful in classifying their primary purpose. In particular, many new types of supplements, herbs, and immune enhancers are being researched and could be used by women with breast cancer, such as coenzyme Q-10, beta glucan, and essiac tea. UCATS could assess additional CAM therapies that patients are using that may facilitate assessment of the interaction of supplements or herbs with adjuvant cancer treatments. In addition, this survey could be adapted to assess CAM prevalence in other cancer populations.

Limitations

UCATS was tested only in women with breast cancer; therefore, the prevalence of use of individual CAM therapies and their underlying factor structure cannot be generalized to other populations. Further research is needed to evaluate this instrument in more ethnically and socially diverse populations. Also, as new CAM therapies become more prevalent, they should be added to the instrument to be validated and tested.

Conclusions and Implications for Nursing Practice

Effective provision of and assistance with CAM therapies for women diagnosed with breast cancer requires knowledge of what patients are using and frequency of use. A reliable survey to assess CAM use would allow for an approach in providing education to patients. Variations in CAM use related to demographic and clinical factors may occur and need to be considered. Further investigation is needed to identify whether CAM use varies with specific clinical factors, such as for symptom management related to surgery or treatments. Concern has been expressed whether use of CAM can affect conventional breast cancer treatment regimens. Reliable and valid surveys that determine use of CAM therapies would be beneficial to treatment outcomes.

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