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Improving Patient-Centered Care: A Cross-Sectional Survey of Prior Use and Interest in Complementary and Integrative Health Approaches Among Hospitalized Oncology Patients

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Abstract

Objectives: To describe cancer inpatients' prior-year use of complementary and integrative health (CIH) therapies and interest in receiving CIH therapies while in the hospital.

Design: Observational, cross-sectional survey of prior-year use of 12 different CIH approaches and interest in receiving any of 7 CIH services in the hospital.

Setting: Surgical oncology ward of an academic medical center.

Participants: 166 hospitalized oncology patients, with an average age of 54 years.

Results: The most commonly used CIH approach was vitamins/nutritional supplements (67%), followed by use of a special diet (42%) and manual therapies (39%). More than 40% of patients expressed interest in each of the therapies if it was offered during their hospital stay, and 95% of patients were interested in at least one. More than 75% expressed interest in nutritional counseling and in massage. CIH use and interest varied somewhat by demographic and clinical characteristics.

Conclusion: Rates of CIH use among patients with cancer were high, as were their preferences to have these services available in the inpatient setting. Hospitals have the opportunity to provide patient-centered care by developing capacity to provide inpatient CIH services.

Introduction

AN INCREASINGLY LARGE PERCENTAGE of patients with cancer use complementary and integrative health (CIH) approaches to manage unresolved symptoms of their disease or the potentially debilitating adverse effects of conventional medical treatment.^{1,2} Recognizing patients' growing interest in these approaches, the Picker Institute and others have identified integrative medicine as a key component of delivering patient-centered care.³ Offering patients with cancer a choice of CIH therapies can increase their sense of empowerment and ownership over their treatment.⁴ Although most CIH approaches remain available only in the outpatient setting,⁵ several recent studies have demonstrated the feasibility and efficacy of certain therapies for treating symptoms such as pain or anxiety in the inpatient context.⁶ More knowledge is needed, however, regarding which specific CIH approaches patients with cancer are most interested in receiving while hospitalized. As part of a broad initiative to

improve patient-centered care with integrative medicine, oncology inpatients at an academic medical center were surveyed. The objective was to describe their prior use of CIH approaches and current interest in receiving CIH treatments during their inpatient stay.

Materials and Methods

Study population

This study used data from a study of symptom management among inpatients, which collected participants' CIH use and interest at baseline. Eligible study participants were hospitalized on a participating surgical oncology unit at an academic medical center with an anticipated length of stay of at least 48 hours; they spoke English and were at least 18 years old. Exclusion criteria included an unstable medical condition. The University of California, San Francisco, Committee on Human Research (institutional review board) reviewed and approved all of the study's procedures.

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Measures

Prior-year use of CIH was determined by using an adapted version of a survey developed for a national study of complementary medicine use.⁷ Participants were asked about use of 12 CIH approaches for health reasons: vitamins and nutritional supplements (excluding daily multivitamins); a special diet, such as the macrobiotic, Ornish, or Atkins diet; herbal remedies that are not homeopathic; remedies or practices associated with a particular culture (e.g., Chinese medicine, Ayurveda, or curanderismo); homeopathic remedies; movement therapies, such as yoga, *t'ai chi*, or *qigong*; meditation, guided imagery, or progressive relaxation; chiropractic treatments or osteopathic manipulation; manual therapies, such as massage or acupressure; energy therapies, such as Reiki or healing touch; or acupuncture. Spirituality, religion, or prayer for health reasons was included in the survey but was excluded from analysis to be consistent with prior studies of complementary medicine.

To gauge interest in hospital-based CIH, participants were asked: "How interested would you be in receiving the following during your hospital stay?" and prompted about massage, Reiki, healing touch, acupuncture, mindfulness meditation, guided imagery, biofeedback, and nutritional counseling. Respondents answered on a 5-point Likert scale from "not at all interested" to "very interested" or "don't know," indicating lack of familiarity with the therapy. The CIH approaches included in this survey were based on three criteria of having low risk, high potential benefit, and feasibility as an inpatient service option as determined by study investigators. Dichotomous variables were created for each CIH approach, not interested (not at all interested, not very interested, or neutral) versus interested (somewhat interested

and very interested), with "don't know" responses defined as missing.

Patients self-reported sociodemographic factors, such as age, sex, and race/ethnicity. Data on common symptoms experienced by inpatients were collected, including level of pain intensity according to a 0–10 numeric rating scale and presence of nausea or vomiting. Clinical factors, including patient type (surgical versus nonsurgical), primary team (the hospital service primarily responsible for overall inpatient care of the patient), and length of stay, were extracted from medical records.

Analyses

All analyses were performed by using Stata version 13.1 (Stata Corp., College Station, TX). Descriptive statistics, including means, standard deviations, and percentages, were calculated for CIH use and CIH interest. On the basis of clinical input and prior research,² this study examined sociodemographic and clinical variables hypothesized to be associated with CIH use and interest. Bivariate associations were assessed by using *t*-tests for continuous variables and chi-squared tests for categorical variables (significance level of $p \leq 0.05$). For CIH interest, analogous bivariate analysis and multivariable logistic regression models of descriptive characteristics and symptom data were performed.

Results

Demographic and clinical characteristics

Demographic and clinical characteristics of the study sample are presented in Table 1. Data on CIH use were collected from 166 participants who had an average age of

TABLE 1. SAMPLE CHARACTERISTICS AND PRIOR-YEAR USE OF COMPLEMENTARY AND INTEGRATIVE HEALTH APPROACHES

Characteristic	Full sample (n = 166)	Any CIH (n = 148)	Vitamins (n = 111)	Special diet (n = 70)	Manual therapies (n = 65)
Sociodemographic characteristics					
Age (y) ^a	54.0 ± 13.6	53.9 ± 13.6	54.3 ± 13.4	53.7 ± 12.7	52.1 ± 13.3
Women	90 (56)	84 (59) ^b	66 (62) ^b	41 (61)	41 (64)
Race/ethnicity					
Non-Hispanic white	101 (63)	92 (64)	74 (69)	47 (69)	45 (70)
Hispanic/Latino	31 (19)	28 (19)	17 (16)	11 (16)	9 (14)
Other race/ethnicity	28 (18)	24 (17)	17 (16)	10 (15)	10 (16)
Clinical characteristics					
Patient type					
Surgical	146 (88)	131 (89)	100 (90)	145 (88)	59 (91)
Nonsurgical	20 (12)	17 (11)	11 (10)	20 (12)	6 (9)
Primary teams					
Colorectal	55 (33)	50 (34)	42 (38)	29 (41) ^b	22 (34)
General surgery/surgical oncology	39 (23)	36 (24)	22 (20)	19 (27)	19 (29)
Gynecologic oncology	34 (20)	32 (22)	25 (23)	14 (20)	12 (18)
Urologic	27 (16)	21 (14)	17 (15)	6 (9)	5 (7.7)
Other ^c	11 (7)	9 (6)	5 (5)	2 (3)	7 (11)
Length of stay (d) ^a	8.0 ± 8.6	8.1 ± 9.0	7.3 ± 6.9	7.5 ± 5.7	7.2 ± 5.4

Unless otherwise noted, values are the number (percentage) of participants.

^aData in these rows presented as mean ± standard deviation.

^bSignificant at $p \leq 0.05$ by descriptive characteristic.

^cCategory of "other" includes breast plastics, gynecology, medicine, otolaryngology, head and neck surgery. CIH, complementary and integrative health.

54.0 years; 56% were female, 61% were non-Hispanic white, 88% were surgical patients, and 12% were nonsurgical patients. The most common type of surgery was colorectal (33%), followed by general surgery/surgical oncology (23%), gynecologic oncology (20%), and urologic (16%). The average length of stay was 8.0 days. At baseline, patients' average level of current pain was 3.3; 9% of patients reported vomiting and 37% reported experiencing nausea.

CIH use

The most commonly reported CIH approach used in the prior year was vitamins/nutritional supplements (67%), followed by a special diet (42%) and manual therapies such as massage or acupressure (39%) (Table 1). The CIH approaches used by less than 15% of participants were remedies associated with a particular culture, energy therapies, and acupuncture (data available on request). Consistent with prior studies, being non-Hispanic white and being female were associated with use of various CIH therapies in bivariate analysis (Table 1). Primary team was associated with using a special diet, which was highest among patients of the colorectal and surgical oncology teams.

CIH interest

Patient-reported interest in various CIH services is presented in Table 2. For each of seven CIH approaches listed, more than 40% of patients reported that they would be interested in that service if available, and 95% of

patients expressed interest in at least one CIH approach. Notably, 77% of patients reported they would be interested in nutritional counseling, and 76% were interested in massage. About half of participants reported interest in acupuncture, biofeedback, and mindfulness meditation (47%–53%). Reiki or healing touch was unfamiliar to 22% of patients (data available on request). Non-Hispanic whites were more likely to be interested in biofeedback compared with patients of other races/ethnicities, and women were more interested in Reiki and meditation (Table 2). In multivariable logistic regression analysis controlling for sociodemographic, clinical, and symptom data, female sex remained a significant factor for interest in Reiki or healing touch, mindfulness meditation, and biofeedback (Table 3).

Discussion

In this sample of oncology inpatients, most (89%) had used at least one CIH approach within the past year. This is higher than estimates among cancer survivors in prior studies, which ranged from 40% to 67%.^{1,8} Most patients expressed a desire to receive various CIH services in the hospital. The 2010 Complementary and Alternative Medicine Survey of Hospitals found that, in nearly 300 responding hospitals that offered one or more CIH therapy, 85% cited patient demand as the reason for offering that service.⁵ The current study contributes to the knowledge base with empirical patient-reported data. Inpatients with cancer expressed substantial interest in CIH, particularly in nutritional

TABLE 2. INTEREST IN HOSPITAL-BASED CIH APPROACHES BY PARTICIPANT CHARACTERISTICS

Variable	Massage (n=122)	Reiki or healing touch (n=67)	Acupuncture (n=86)	Mindfulness meditation (n=74)	Guided imagery (n=64)	Biofeedback (n=82)	Nutritional counseling (n=124)
Sociodemographic characteristics							
Age (y) ^a	53.4 ± 13.9	55.7 ± 13.0	53.5 ± 12.3	53.9 ± 13.4	55.1 ± 13.2	54.7 ± 14.5	53.6 ± 13.0
Women	72 (59)	50 (74) ^b	53 (62)	48 (65) ^b	40 (63)	50 (61)	69 (56)
Race/ethnicity							
Non-Hispanic white	74 (62)	38 (56)	54 (64)	49 (64)	43 (65)	59 (72) ^b	75 (61)
Hispanic/Latino	27 (22)	18 (26)	17 (20)	16 (21)	12 (18)	10 (12)	28 (23)
Other race/ethnicity	20 (17)	12 (18)	14 (16)	11 (14)	11 (17)	13 (16)	20 (16)
Clinical characteristics							
Patient type							
Surgical	111 (88)	61 (87)	77 (88)	68 (88)	58 (87)	74 (88)	109 (86)
Nonsurgical	15 (12)	9 (13)	11 (13)	9 (12)	9 (13)	10 (12)	18 (14)
Primary teams							
Colorectal	44 (34)	20 (29)	33 (38)	26 (34)	23 (34)	29 (35)	45 (35)
General surgery/surgical oncology	30 (24)	17 (24)	20 (23)	20 (26)	12 (18)	18 (21)	30 (24)
Gynecologic oncology	26 (21)	20 (29)	21 (24)	21 (27)	18 (27)	17 (20)	26 (20)
Urologic	19 (15)	9 (13)	10 (11)	7 (9)	11 (16)	16 (19)	6 (5)
Other ^c	7 (6)	4 (6)	4 (5)	3 (4)	3 (5)	4 (5)	20 (16)
Length of stay (d) ^a	7.6 ± 7.0	7.4 ± 5.8	7.5 ± 6.2	7.3 ± 5.8	8.1 ± 10.6	7.6 ± 9.6	7.4 ± 7.0
Symptoms							
Level of pain ^a	3.4 ± 2.4	3.7 ± 2.4	3.5 ± 2.4	3.4 ± 2.3	3.2 ± 2.4	3.2 ± 2.4	3.3 ± 2.2
Nausea/vomiting	51 (40)	30 (43)	39 (44)	32 (42)	26 (39)	32 (38)	52 (41)

Unless otherwise noted, values are the number (percentage) of participants.

^aData in these rows presented as mean ± standard deviation.

^bSignificant at $p \leq 0.05$ by descriptive characteristic.

^cCategory of "other" includes breast plastics, gynecology, medicine, otolaryngology, head and neck surgery.

TABLE 3. ADJUSTED ODDS RATIOS OF INTEREST IN HOSPITAL-BASED CIH APPROACHES FOR SOCIODEMOGRAPHIC AND CLINICAL CHARACTERISTICS

Variable	Adjusted odds ratio (95% confidence interval)						
	Massage	Reiki or healing touch	Acupuncture	Mindfulness meditation	Guided imagery	Biofeedback	Nutritional counseling
Sociodemographic characteristics							
Age (y)	0.99 (0.96–1.02)	1.06 (1.02–1.10) ^a	1.00 (0.97–1.03)	1.00 (0.98–1.03)	1.01 (0.98–1.03)	1.00 (0.98–1.03)	0.99 (0.96–1.02)
Women	1.47 (0.68–3.22)	6.72 (2.75–16.47) ^a	1.83 (0.92–3.65)	2.16 (1.08–4.31) ^a	1.56 (0.76–3.21)	2.46 (1.16–5.22) ^a	0.71 (0.30–1.64)
Race/ethnicity	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Non-Hispanic white	1.03 (0.37–2.88)	1.03 (0.33–3.20)	1.01 (0.40–2.58)	1.25 (0.47–3.30)	1.39 (0.53–3.62)	1.58 (0.59–4.23)	0.95 (0.31–2.87)
Hispanic/Latino	2.31 (0.56–9.51)	2.46 (0.58–10.33)	0.92 (0.30–2.84)	1.09 (0.35–3.43)	0.86 (0.27–2.76)	0.37 (0.11–1.23)	3.26 (0.67–15.85)
Other race/ethnicity							
Clinical characteristics							
Patient type							
Surgical	1.03 (0.30–3.54)	1.54 (0.41–5.80)	0.81 (0.28–2.30)	0.94 (0.33–2.63)	0.75 (0.26–2.11)	0.76 (0.24–2.40)	0.39 (0.08–1.94)
Nonsurgical	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Primary teams							
Colorectal	1.62 (0.63–4.17)	1.35 (0.45–3.99)	2.29 (1.00–5.25) ^a	1.18 (0.52–2.65)	0.86 (0.37–1.95)	1.37 (0.56–3.31)	1.53 (0.54–4.29)
General surgery/surgical oncology	1.04 (0.38–2.84)	1.30 (0.38–4.46)	1.27 (0.52–3.06)	1.48 (0.59–3.68)	0.48 (0.19–1.26)	1.03 (0.39–2.75)	0.85 (0.29–2.46)
Other ^b	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Symptoms							
Level of pain	0.98 (0.82–1.17)	1.20 (0.98–1.46)	1.05 (0.90–1.23)	0.98 (0.84–1.15)	0.91 (0.78–1.07)	0.94 (0.79–1.11)	0.92 (0.76–1.11)
Nausea/vomiting	1.43 (0.64–3.20)	1.16 (0.47–2.85)	1.71 (0.86–3.41)	1.17 (0.59–2.32)	1.04 (0.50–2.14)	0.77 (0.36–1.62)	2.45 (0.98–6.11)

Odds ratios are adjusted for all other characteristics in the table.

^a $p \leq 0.05$.

^bCategory of “other” includes urology, gynecologic oncology, breast plastics, gynecology, medicine, otolaryngology, head and neck surgery.

counseling and massage, and to a slightly lesser degree in acupuncture, biofeedback, and mindfulness meditation.

Availability of CIH approaches in large hospital networks is increasing, including at academic medical centers, and expertise in administration, education, and research is growing.^{5,9} Inpatient integrative medicine is well established in Germany, where patients admitted to specialized hospitals for “naturopathic and anthroposophic medical complex therapy” are treated by interdisciplinary medical teams with a range of CIH approaches along with conventional medical care.¹⁰ In the United States, studies have found that integrative medicine as part of inpatient oncology services can significantly decrease patients’ pain and anxiety;¹¹ can decrease use of antiemetic, anxiolytic, and hypnotic medications compared with usual care; and may be cost saving.¹² Although this current cross-sectional study did not observe an association between patient symptoms and the use of CIH approaches, it was not designed to measure temporal associations between patient-reported use of CIH in the past year and current presence of symptoms during hospitalization. Some risks of CIH approaches to cancer include possible interactions with chemotherapy or radiation or that patients may choose to forgo beneficial therapies.¹³ However, integrative oncology clinical practice guidelines are now available, rating the evidence for use and safety of various CIH approaches.¹⁴ Most CIH services are still provided in the outpatient setting,⁵ but evidence is mounting for the feasibility and benefit of inpatient delivery.

In addition, CIH is increasingly being recognized as a powerful means of improving patient-centered care. Evidence from this study and others indicate that a large proportion of patients seek to manage their own healthcare needs through CIH approaches. Integrative medicine emphasizes patient empowerment by broadening treatment and self-care options and increasing a sense of control over the disease process.⁴ It focuses on the therapeutic relationship and is recommended by the Picker Institute as one of its “Practical Approaches for Building a Patient-Centered Culture.”³ CIH initiatives in the German inpatient setting define goals such as “supporting self-healing” and “improving quality of life” and have been shown to support health-related behavioral change.^{10,15} Bolstering patient choice through inpatient access to CIH services has the potential to greatly enhance a hospital’s culture of healing.³

This study has several limitations. It was conducted in the San Francisco Bay Area at a hospital with an integrative medicine outpatient clinic, where patients may be more inclined toward CIH approaches than patients at other sites. However, some evidence suggests that patients and hospitals nationwide are using CIH.^{1,5} The sample consisted of patients on a surgical oncology ward at a university hospital; however, because of overflow and hospital space needs, a small percentage of patients (<5%) on the ward did not have cancer. The small proportion of patients reporting use of culturally specific remedies may be due to the fact that our sample was largely non-Hispanic white. Finally, how CIH is defined and inclusion or exclusion of certain approaches greatly affects estimates of usage prevalence. For instance, by some definitions, vitamins or nutritional approaches may not be considered part of CIH. These approaches were included to maintain consistency with categories used by the National Center for Complementary and Integrative Health.

In conclusion, despite its limitations, this study provides preliminary evidence of prevalent past-year CIH use among inpatients with cancer before hospitalization, and of their great interest in receiving integrative services in the hospital. Further research to evaluate how to bring safe and effective integrative healthcare into the wards is warranted. An important area of consideration is that of access; insurance coverage and provider reimbursement for many of these therapies remain a challenge.⁹ Ultimately, incorporating evidence-based CIH treatments into inpatient care could broaden therapeutic options in a way that is feasible for hospitals, acceptable to providers, and responsive to patient preference.

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Author Disclosure Statement

No competing financial interests exist.

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