RESEARCH ARTICLE

Factors Associated with Discontinuation of Complementary and Alternative Medicine among Korean Cancer Patients

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Abstract

   Objectives: The purpose of this study was to determine patient characteristics and other factors associated with discontinuation of complementary and alternative medicine (CAM) among cancer patients in Korea. **Methods**: A national, multicenter, cross-sectional survey of cancer patients was performed in which 674 of 2,661 patients were analyzed for their use of CAM after cancer diagnosis. Multiple logistic regression was used to identify the factors related to CAM discontinuation. **Results**: Among the surveyed cancer patients, 25.3% (674 of 2,661) had used CAM, whereas 38.3% (258 of 674) of those with CAM experience had discontinued CAM therapy. The most frequently used form of CAM was herbs (43.5%). The major reasons for the discontinuation of CAM included absence of effects (23.9%), financial burden (22.9%), and physician opposition (13.7%). Other factors associated with the discontinuation of CAM included metastatic cancer (OR = 2.06), a long duration of cancer treatment (OR = 3.34), dissatisfaction (OR = 4.34), and side effects (OR = 4.23) of CAM therapy. **Conclusions**: For cancer patients to correctly employ CAM therapy, increase their satisfaction, and reduce their side effects, efforts should be made to analyze the cost effectiveness of CAM, and valid information must be provided to physicians and cancer patients.

Key words: Cancer - complementary - alternative medicine - Korea

Introduction

   Despite the significant contribution of advances in modern medicine to the survival rates of cancer patients (Siegel et al., 2012), cancer remains the disease that instills the most fear (Donovan et al., 2003). Indeed, the term 'cancer' is often perceived as being associated with an unpleasant, painful death (Donovan et al., 2003; Takahasi et al., 2012). Accordingly, many cancer patients use CAM with a hope that it will assist in their treatment. Defined by the National Center for Complementary and Alternative Medicine (NCCAM) as "a group of diverse medical and health care systems, practices, and products that are not presently considered to be part of conventional medicine (National Center for Complementary and Alternative Medicine, 2012)," CAM is not a conventional means of treatment. Nonetheless, CAM is attracting a significant level of interest from cancer patients due to the psychological support it provides. According to previous studies, the most frequently used form of CAM is herbs (Samur et al.,

2001; Molassiotis et al., 2005; Er et al., 2008; Choi et al., 2012; Saibul et al., 2012; Nazik et al., 2012). Cancer patients are thought to employ CAM to increase physical strength, restrain cancer growth, enhance the immune system, and alleviate symptoms (Hyodo et al., 2005; Molassiotis et al., 2005; Molassiotis et al., 2006; Er et al., 2008; Shin et al., 2009; Saibul et al., 2012).

   Despite such anticipated gains, herbal remedies occasionally cause severe side effects, including high blood pressure, renal failure, and liver damage (Markman., 2002; Niggemann and Gruber, 2003; Stickel et al., 2005). Many cancer patients face such negative consequences as they utilize CAM based on the recommendation of their families and acquaintances and fail to consult their physicians. Therefore, it is important to maintain communication between cancer patients and their physicians on issues related to CAM. Whereas previous studies related to CAM have analyzed the prevalence of its use, patient motivation, and factors related to CAM use (Downer et al., 1994; Crocetti et al., 1998; Boon et al., 2000; Paltiel et al., 2001; Samur et al.,

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2001; Shumay et al., 2002; Harris et al., 2003; Hyodo et al., 2005; Molassiotis et al., 2005; Yates et al., 2005; Molassiotis et al., 2006; Swarup et al., 2006; Montazeri et al., 2007; Er et al., 2008; Shin et al., 2009; Choi et al., 2012; Saibul et al., 2012), there has been little research on the issues associated with discontinuation of CAM by cancer. Although recent reports have described the rates of CAM discontinuation among cancer patients (Hyodo et al., 2005; Kim et al., 2007; Porter et al., 2008), these studies have been limited by small sample sizes (Kim et al., 2007; Porter et al., 2008), a focus on a specific cancer type (Porter et al., 2008), or a limited geographical area (Kim et al., 2007).

In this nationwide multicenter study in Korea, we investigated the reasons for CAM discontinuation and identified the patient characteristics and other factors associated with the discontinuation of CAM among cancer patients.

Materials and Methods

Study Sample and Procedures

We performed a nationwide survey involving one National Cancer Center and nine regional cancer centers from July to August 2008. This study was performed as part of an annual national survey to investigate the experience of cancer survivors. Using a quota sampling method, patients older than 18 years of age who had received a cancer diagnosis at least 4 months earlier were recruited from one national and nine regional cancer centers in each of the nine Korean provinces, so that study subjects were as representative as possible in terms of cancer type, residence, age, and sex. This study was approved by the Institutional Review Board of the National Cancer Center in Korea. The survey was developed through a literature review and discussions with experts, and it was tested in pilot surveys. Pilot

Table 1. Characteristics of Cancer Patients and Prevalence of CAM Discontinuation

Characteristic		CAM use		CAM Discontinuation				p
		N	(%)	Yes	(%)	No	(%)	
Sex	Male	314	(46.6)	123	(39.2)	191	(60.8)	0.66
	Female	360	(53.4)	135	(37.5)	225	(65.5)	
Age (years)	<60	403	(59.8)	151	(37.5)	252	(62.5)	0.60
	≥60	271	(40.2)	107	(39.5)	164	(60.5)	
Education	≤High school	541	(80.8)	204	(37.7)	337	(62.3)	0.48
	>High school	129	(19.2)	53	(41.1)	76	(58.9)	
Household Income	<100 million won	153	(22.9)	58	(37.9)	95	(62.1)	0.99
	100-300 million won	298	(44.5)	113	(37.9)	185	(62.1)	
	>300 million won	218	(32.6)	82	(37.6)	136	(62.4)	
Spouse	Yes	573	(85.1)	214	(37.4)	359	(62.6)	0.28
	No	100	(14.9)	43	(43.0)	57	(57.0)	
Religion	Yes	213	(31.6)	78	(36.6)	135	(63.4)	0.55
	No	461	(68.4)	180	(39.1)	281	(60.9)	
Cancer sites	Stomach	101	(15.0)	30	(29.7)	71	(70.3)	0.20
	Lung	77	(11.4)	36	(46.7)	41	(53.3)	
	Liver	70	(10.4)	28	(40.0)	42	(60.0)	
	Colon/rectum	64	(9.5)	23	(35.9)	41	(64.1)	
	Breast	145	(21.5)	50	(34.5)	95	(65.5)	
	Cervix	31	(4.6)	11	(35.5)	20	(64.5)	
	Others	186	(27.6)	80	(43.0)	106	(57.0)	
Metastasis	Yes	200	(31.4)	100	(50.0)	100	(50.0)	<0.001
	No	436	(68.6)	143	(32.8)	293	(67.2)	
Time since diagnosis	≤12 months	203	(30.1)	59	(29.1)	144	(70.9)	0.004
	12-36 month	234	(34.7)	91	(38.9)	143	(61.1)	
	36-60 month	118	(17.5)	51	(43.2)	67	(56.8)	
	>60 month	119	(17.7)	57	(47.9)	62	(52.1)	
Surgery	Yes	506	(75.1)	189	(37.4)	317	(62.6)	0.39
	No	168	(24.9)	69	(41.1)	99	(58.9)	
Chemotherapy	Yes	450	(66.8)	175	(38.9)	275	(37.1)	0.64
	No	224	(33.2)	83	(61.1)	141	(62.9)	
Radiotherapy	Yes	230	(34.1)	103	(44.8)	127	(55.2)	0.01
	No	444	(65.9)	155	(34.9)	289	(65.1)	
CAM use before diagnosis	Yes	122	(18.1)	48	(39.3)	74	(60.7)	0.79
	No	552	(81.9)	210	(38.0)	342	(62.0)	
Discussed with doctor	Yes	220	(32.6)	77	(35.0)	143	(65.0)	0.22
	No	454	(67.4)	181	(39.9)	273	(60.1)	
Satisfaction with CAM use	Satisfied	550	(81.6)	177	(32.2)	373	(67.8)	<0.001
	Dissatisfied	124	(18.4)	81	(65.3)	43	(34.7)	
Side effects of CAM use	Yes	28	(4.2)	22	(78.6)	62	(1.4)	<0.001
	No	645	(95.8)	236	(36.6)	409	(63.4)	

Table 2. Reason for CAM Discontinuation

Reasons	CAM Use N	(%)
Side effects	16	(5.5)
Not effective	70	(23.9)
Doctor opposition	40	(13.7)
Financial burden	67	(22.9)
Patient did not want	44	(15.0)
Family did not want	2	(0.7)
Relief of symptoms/Treatment termination	14	(4.8)
Disease progression	9	(3.1)
Others	31	(10.6)
Total*	293	(100.0)

* Value allowed duplicate responses

surveys conducted in each cancer center showed that the patients experienced no problems with understanding the questions, participating in the face-to-face interview, or the content validity of the questionnaires. Patient information was obtained via semi-structured face-to-face interviews. Interviews were performed by trained interviewers, who approached the patients in the outpatient clinics and inpatient departments. In total, 2,661 patients were surveyed, all of whom signed a consent form after receiving complete information regarding the study. We defined CAM as any therapy that was not currently part of the conventional medical treatment of cancer patients and classified these according to NCCAM definitions, such as natural products (e.g., herbs, foods, probiotics, etc.), mind–body medicine (e.g., mediation, prayer, mental healing, etc.), manipulation- and body-based practices (e.g., massage, chiropractic, etc.), and whole-system medical approaches (e.g., traditional Chinese medicine, homeopathic medicine) (National Center for complementary and Alternative Medicine, 2012). The use of at least one of the above therapies after cancer diagnosis was defined as CAM use. Of the patients surveyed, 674 were analyzed as they utilized CAM after cancer diagnosis.

The survey included socio-demographic questions such as age, sex, education, household income, marital status, religion, insurance type, and private health insurance. Clinical questions addressed the cancer type, stage, duration of disease, and current treatment status. Information associated with CAM, including the types of CAM used, CAM use before cancer diagnosis, discussion with physicians, satisfaction, side effects of CAM, and the reasons for discontinuation was obtained. To determine the reasons for discontinuation of CAM, patients who had ever discontinued CAM were asked the survey question, "Why did you discontinue CAM use?" The response choices were: (a) "Experienced side effects"; (b) "Not as effective as expected"; (c) "Doctor was opposed to using CAM"; (d) "Imposed a financial burden"; (e) "Patient's opposition"; (f) "Family's opposition"; (g) "Treatment termination"; (h) "Aggravation of disease"; and (i) "Other." We additionally gathered the clinical characteristics of the patients from medical records including the site of the primary cancer and the stage at diagnosis.

Statistical Analyses

The chi-square test was used to examine differences in the discontinuation of CAM according to socio-demographic and clinical variables. Additionally, we performed a univariate analysis of factors predicting CAM discontinuation. Then, we entered variables found to be significantly associated with CAM discontinuation in the univariate analysis into a multiple logistic regression model. The criterion for variable entry was P = 0.05. Age, gender, education, monthly income, marital status, religion, metastasis, and treatment type such as surgery, chemotherapy, and radiotherapy were included in a basic predictive model. All statistical analyses were two-tailed with a P < 0.05, and data management was performed using Statistical Analysis Software version 9.2.

Results

Among the 2,661 cancer patients surveyed, this study was conducted with 674 (25.3%) who had used CAM. It was found that 258 (38.3%) of the 674 patients who used CAM discontinued its use. The average age of the study subjects was 55.9 years. The most frequently used forms of CAM were herbs (43.5%) and food (32.0%). Comparison of CAM discontinuation according to patients' clinical characteristics showed that CAM discontinuation rates were high among patients who had been diagnosed with cancer for 5 years or longer and those who had received radiotherapy (P < .05). A high rate of CAM discontinuation was observed among patients who expressed dissatisfaction with CAM or had experienced side effects (P < .001) (Table 1).

Regarding the reasons for CAM discontinuation, 23.9% of respondents claimed a lack of effectiveness, 22.9% identified a financial burden, 13.7% reported doctor opposition, and 5.5% of the respondents discontinued CAM due to side effects (Table 2).

The significant factors associated with the discontinuation of CAM included metastatic cancer (OR = 2.03, 95% CI 1.37-3.01), a long duration of cancer treatment (OR = 2.05, 2.53, 3.28 respectively), dissatisfaction with CAM use (OR = 4.33, 2.73-6.88), and side effects from CAM (OR = 4.05, 1.49-11.02) (Table 3).

Discussion

In this nationwide multicenter survey of 2,661 cancer patients in Korea, we found that 674 patients (25.3%) used CAM, and 258 (38.3%) of these discontinued CAM use. Previous studies reported that the majority of patients with CAM experience initiated CAM use following their diagnosis with cancer (Paltiel et al., 2001; Hyodo et al., 2005; Molassiotis et al., 2005; Yates et al., 2005; Molassiotis et al., 2006; Kim et al.,

Table 3. Factors Associated with CAM Discontinuation

Variables		Univariate analysis		Multivariate analysis	
		OR	95% CI	OR	95% CI
Sex	Male	1.00		1.00	
	Female	0.93	(0.68-1.27)	0.89	(0.59-1.35)
Age (years)	<60	1.00		1.00	
	≥60	1.09	(0.79-1.49)	1.04	(0.69-1.58)
Household	Low	1.00		1.00	
income	Middle	1.00	(0.67-1.49)	1.00	(0.61-1.64)
	High	0.99	(0.65-1.51)	1.08	(0.62-1.88)
Spouse	Yes	1.00		1.00	
	No	1.27	(0.82-1.95)	1.16	(0.70-1.93)
Religion	No	1.00		1.00	
	Yes	1.11	(0.79-1.55)	1.15	(0.78-1.70)
Metastasis	No	1.00		1.00	
	Yes	2.05	(1.46-2.89)	2.03	(1.37-3.01)
Time since diagnosis	≤12 months	1.00		1.00	
(month)	12-36 month	1.55	(1.04-2.32)	2.05	(1.28-3.28)
	36-60 month	1.86	(1.16-2.98)	2.53	(1.46-4.38)
	>60 month	2.24	(1.40-3.59)	3.28	(1.90-5.68)
Surgery	No	1.00		1.00	
	Yes	0.86	(0.60-1.22)	0.9	(0.58-1.39)
Chemotherapy	No	1.00		1.00	
	Yes	1.08	(0.77-1.51)	0.73	(0.49-1.10)
Radiotherapy	No	1.00		1.00	
	Yes	1.51	(1.09-2.09)	1.52	(1.03-2.23)
CAM use before diagnosis	No	1.00		1.00	
	Yes	1.06	(0.71-1.58)	1.13	(0.71-1.80)
Discuss CAM with doctor	No	1.00		1.00	
	Yes	0.81	(0.58-1.14)	0.89	(0.61-1.30)
Satisfaction with CAM Use	Yes	1.00		1.00	
	No	3.97	(2.63-5.99)	4.33	(2.73-6.88)
Side effects of CAM	No	1.00		1.00	
	Yes	6.36	(2.54-15.89)	4.05	(1.49-11.02)

2007; Shin et al., 2009). CAM use ranging from 32 to 67% among cancer patients has been reported (Boon et al., 2000; Paltiel et al., 2001; Samur et al., 2001; Harris et al., 2003; Molassiotis et al., 2005; Montazeri et al., 2007; Shin et al., 2009). One study indicated that 91% of cancer patients use one or more forms of CAM (Yates et al., 2005). Similar to the initiation rates of CAM use, CAM discontinuation rates were reported to range widely from 26 to 63% (Hyodo et al., 2005; Kim et al., 2007). Consistent with previous studies on CAM use (Harris et al., 2003; Hyodo et al., 2005; Chung et al., 2006; National Center for Complementary and Alternative Medicine, 2012), our results suggest that cancer patients experience high levels of satisfaction and relatively few side effects following CAM use. However, 32.2% of the cancer patients who were satisfied with CAM and 36.6% of those who did not experience side effects nevertheless discontinued CAM use. These figures suggest that despite the satisfactory experiences with CAM, CAM users frequently question its use due to its financial burden and unverified effectiveness. Additionally, considering that CAM discontinuation rates increased with the duration of cancer treatment, further studies should be conducted to explain the costs of CAM and its cost-effectiveness.

Previous studies reported that the majority of cancer patients obtain information concerning CAM from families and friends (Samur et al., 2001; Hyodo et al., 2005; Chung et al., 2006; Molassiotis et al., 2006; Er et al., 2008; Shin et al., 2009; Choi et al., 2012; Saibul et al., 2012). One such study surveyed the quality and reliability of internet sites related to CAM (Molassiotis and Xu, 2004; Schmidt and Ernst, 2004) and found that the majority of sites offered low-quality and inaccurate information that excessively focuses on positive aspects of CAM. It is therefore necessary to monitor the effectiveness of CAM on a regular basis and present accurate information to physicians and cancer patients.

Some studies suggest that the doctors' negative opinions regarding CAM may undermine communication between cancer patients and their physicians (Tasaki et al., 2002) Accordingly, it has been reported that only 20–57% of cancer patients consult their doctors regarding CAM use (Boon et al., 2000; Hyodo et al., 2005; Yates et al., 2005; Chung et al., 2006; Er et al., 2008; Shin et al., 2009; Choi et al., 2012). Similar results were observed in the present study, which found that only 33.8% of CAM users consulted their physicians, and 40.7% of those who had not sought a doctor's consultation discontinued CAM, indicating the importance of communication between cancer patients and their physicians on issues related to CAM. In the multivariate analysis, statistically significant factors associated with the discontinuation

of CAM included cancer progression stage, duration of cancer treatment, satisfaction regarding CAM use, and side effects from CAM. Compared with patients with regional or local disease, patients with advanced disease were more likely to discontinue CAM use. Advanced-stage cancer patients may have a short survival time and may therefore discontinue CAM more easily than those with regional or local disease. Considering that the reasons for discontinuation of CAM include longer disease duration, being less satisfied with CAM, and having CAM-induced side effects, it is important for doctors to verify the benefits of the various forms of CAM and to advise cancer patients accordingly so that they can choose effective measures.

Our study has several limitations. First, the cross-sectional nature of our study precluded the determination of a causal relationship between CAM discontinuation and associated factors. Second, the sample included only cancer patients being treated at ten major hospitals in Korea and selected using quota sampling, and the study thus does not represent the overall cancer population. However, with respect to cancer types, we obtained a similar distribution to the general Korean cancer population using quota sampling. Also, our sex and age group distributions were not biased. Therefore, we assert that these limitations do not pose serious impediments to the internal validity or patient representation of the study.

Despite the above-mentioned limitations, this study is one of the few studies to explore CAM discontinuation issues in cancer survivors. The results show that many cancer patients decide to discontinue CAM due to its lack of effectiveness; other major factors associated with the discontinuation of CAM include the duration of cancer treatment, the level of satisfaction with CAM use, and CAM-induced side effects. Therefore, efforts should be made to analyze the cost-effectiveness of CAM, and clinical studies should be conducted on the various forms of CAM to provide accurate assessment of their effectiveness. Furthermore, valid information must be provided to cancer patients based on active communication with physicians. In turn, cancer patients must be able to safely select appropriate forms of CAM to maximize its benefits.

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References

Boon H, Stewart M, Kennard MA, et al (2000). Use of complementary/ alternative medicine by breast cancer survivors in Ontario. Prevalence and perceptions. *J Clin Oncol*, **18**, 2515-21.

Choi JY, Chang YJ, Hong YS, et al (2012). Complementary and alternative medicine use among cancer patients at the end of life: Korea national study. *Asian Pac J Cancer Prev*, **13**, 1419-24.

Chung HJ, Kim MR, Bae JS, et al (2006). Complementary and alternative medicine in patients with breast cancer. *J Breast Cancer*, **9**, 361-6.

Crocetti E, Crotti N, Feltrin A, et al (1998). The use of complementary therapies by breast cancer patients attending conventional treatment. *Eur J Cancer*, **34**, 324-8.

Donovan RJ, Jalleh G, Jones SC (2003). The word 'cancer': reframing the context to reduce anxiety arousal. *Aust N Z Public Health*, **27**, 291–3.

Downer SM, Cody MM, McCluskey P, et al (1994). Pursuit and practice of complementary therapies by cancer patients receiving conventional treatment. *BMJ*, **309**, 86-9.

Er O, Mistik S, Ozkan M, et al(2008). Factors related to complementary/ alternative medicine use among cancer patients in central Anatolia. *Tumori*, **94**, 833-7.

Harris P, Finlay IG, Cook A, et al (2003). Complementary and alternative medicine use by patients with cancer in Wales: a cross sectional survey. *Complementary Therapies in Medicine*, **11**, 249-53.

Hyodo I, Amano N, Eguchi K, et al (2005). Nationwide survey on complementary and alternative medicine in cancer patients in Japan. *J Clin Oncol*, **23**, 2645-54.

Kim SG, Park EC, Park JH, et al (2007). Initiation and discontinuation of complementary therapy among cancer patients. *J Clin Oncol*, **25**, 5267-74.

Markman M (2003). Safety issues in using complementary and alternative medicine. *J Clin Oncol*, **20**(18suppl), 39-41.

Molassiotis A, Xu M (2004). Quality and safety issues of web-based information about herbal medicines in the treatment of cancer. *Complementary Therapies in Medicine*, **12**, 217-27.

Molassiotis A, Fernandez-Ortega P, Pud D, et al (2005). Complementary and alternative medicine use in colorectal cancer patients in seven European countries. *Complementary Therapies in Medicine*, **13**, 251-7.

Molassiotis A, Panteli V, Patiraki E, et al (2006). Complementary and alternative medicine use in lung cancer patients in eight European countries. *Complementary Therapies in Clinical Practice*, **12**, 34-9.

Montazeri A, Sajadian A, Ebrahimi M, et al (2007). Factors predicting the use of complementary and alternative therapies among cancer patients in Iran. *European Journal of Cancer Care*, **16**, 144-9.

National Center for Complementary and Alternative Medicine (NCCAM) (2012). What is complementary and alternative medicine?. http://nccam.nih.gov/health/whatiscam/ (24 Oct 2012, date last accessed).

Nazik E, Nazik H, Api M, et al (2012). Complementary and alternative medicine use by gynecologic oncology patients in Turkey. *Asian Pac J Cancer Prev*, **13**, 21-5.

Niggemann B, Gruber C (2003). Side-effects of complementary and alternative medicine. *Allergy*, **58**, 707-16.

Paltiel O, Avitzour M, Peretz T, et al (2001). Determinants of the use of complementary therapies by patients with cancer. *J Clin Oncol*, **19**, 2439-48.

Porter M, Kolva E, Ahl R, et al(2008). Changing patterns of CAM use among prostate cancer patients two years after diagnosis: reasons for maintenance or discontinuation. *Complementary Therapies in Medicine*, 16, 318-24.

Saibul N, Shariff ZM, Rahmat A, et al(2012). Use of complementary and alternative medicine use among breast cancer survivors. *Asian Pac J Cancer Prev*, **13**,

4081-6.

Samur M, Bozcuk HS, Kara A, et al (2001). Factors associated with utilization of nonproven cancer therapies in Turkey. *Support Care Cancer*, **9**, 452-8.

Schmidt K, Ernst E (2004). Assessing websites on complementary and alternative medicine for cancer. *Ann Oncol*, **15**, 733-42.

Shin V, Chiang JYL, Chan A (2009). Complementary and alternative medicine (CAM) usage in Singaporean adult cancer patients. *Ann Oncol*, **20**, 752-7.

Shumay DM, Maskarinec G, Gotay CC, et al(2002). Determinants of the degree of complementary and alternative medicine use among patients with cancer. *The Journal of Alternative and Complementary Medicine*, **8**, 661-71.

Siegel R, Naishadham D, Jemal A (2012). Cancer Statistics, 2012. *CA: A Cancer Journal for Clinicians*, **62**, 10-29.

Stickel F, Patsenker E, Schuppan D (2005). Herbal hepatotoxicity. *J Hepatology*, **43**, 901-10.

Swarup AB, Barrett W, Jazieh AR (2006). The use of complementary and alternative medicine by cancer patients undergoing radiation therapy. *Am J Clin Oncol*, **29**, 468-73.

Takahasi M, Kai I, Muto T (2012). Discrepancies Between Public Perceptions and Epidemiological Facts Regarding Cancer Prognosis and Incidence in Japan: An Internet Survey. *Jpn J Clin Oncol* doi:10.1093/jjco/hys125.

Tasaki K, Maskarinec G, Shumay DM, et al (2002). Communication between conventional medical doctors and cancer patients about complementary and alternative medicine: exploring patients' perspectives. *Psycho-Oncology*, **11**, 212–20.

Yates JS, Mustian KM, Morrow GR, et al (2005). Prevalence of complementary and alternative medicine use in cancer patients during treatment. *Support Care Cancer*, **13**, 806-11.