Use of complementary and alternative medicine by patients admitted to a surgical unit in Scotland

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ABSTRACT

INTRODUCTION Within the UK there are 50,000 practitioners of complementary medicine. Five million people have consulted such practitioners in one year. The aim of this study was to explore the use of complementary and alternative medicine (CAM) in patients attending general, vascular and cardiothoracic units at a regional Scottish centre.

PATIENTS AND METHODS A questionnaire was administered to 450 patients attending the units over an 8-week period. The questionnaire consisted of demographic sections, a listing of 48 herbal preparations and alternative therapies, reasons for use and opinions on efficacy.

RESULTS A total of 430 patients completed questionnaires (95%); age and sex were equally distributed over the sample. Of respondents, 68% (291 patients) had ever used CAM; 46% had used CAM in the preceding year. Half had used herbal preparations only, 13% non-herbal treatments and 35% both types of therapy. Only 10% were using CAM for the condition that led to their hospital admission. Two-thirds failed to inform their family physician about their use of CAM.

CONCLUSIONS Despite concerns regarding the efficacy, safety and cost-effectiveness of complementary medicine, use amongst surgical patients is common.

KEYWORDS

Complementary medicine – Alternative medicine – Surgery – Audit

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The term complementary and alternative medicine (CAM) encompasses a wide range of health-related therapies. The term complementary and alternative medicine (CAM) encompasses a wide range of health-related therapies, which are often considered outside mainstream biomedical practice.¹ There is ample evidence to suggest that CAM use in the Western society has increased steadily. A US study found that 43% of almost 500 ambulatory surgical patients had consumed some type of CAM during the 2 weeks prior to surgery.² Some products were known to have coagulation or cardiovascular effects. An Irish study reported that 12% of day-case surgery patients were using herbal medicine at the time of admission and most patients failed to report this to the surgical team.³

To date, no studies have investigated the use of CAM in surgical patients in the Scottish healthcare setting. The aim of this study was to identify the prevalence and pattern of CAM use in a consecutive sample of patients admitted to three surgical units, at a major regional hospital in North-East Scotland.

Patients and Methods

A total of 450 consecutive patients admitted to general,

cardiothoracic and vascular surgery wards in Aberdeen Royal Infirmary, Scotland during June and July 2005 were provided with a questionnaire along with an information sheet, and were invited to participate. Invitation was restricted to patients aged 16 years or older and help was provided to non-English speaking patients as needed.

The questionnaire included: a tick-list of 48 common herbal preparations and alternative therapies; items on age, sex, marital status, education, reason for use, opinion on CAM efficacy and whether their general practitioner (GP) had knowledge of their CAM use. The questionnaire was piloted and modified prior to distribution. Reason for admission was recorded from medical records. A sample size of 385 patients was calculated to detect a 20% prevalence ($\pm$ 95% confidence interval) of CAM use.

Statistical analysis

Data were entered into Microsoft Excel and analysed using SPSS v13.0. Descriptive statistics were used to explore ever versus never use of CAM by demographics, including age, sex, marital status and education. Education level was analysed as university or college, school qualification only

or none. Chi-square tests were used and a *P*-value of < 0.05 was considered statistically significant.

Results

Sample characteristics

A total of 450 patients were invited to participate over the 8-week period; 430 patients (95%) completed questionnaires and the remaining patients were too frail to complete the questionnaires. Age and sex were equally distributed over the sample, with 237 (55%) being male and half of patients aged over 60 years (*n* = 232; 54%; Table 1).

Use of CAM

A total of 291 (68%) patients had ever used CAM therapies. Of these, 196 had used CAM in the previous year and 95 had used therapies more than 12 months ago. The prevalence of 'ever' CAM use amongst patients admitted to general, cardiothoracic and vascular surgery wards was 55%, 6% and 7%, respectively. Respondents who reported using CAM use were significantly younger (< 60 years), higher educated and more likely to be female (OR 3.03; 95% CI 1.95–4.70; Table 1). Reason for admission is detailed in Table 2.

Type of therapy used

The types of CAM were broadly categorised as herbal or non-herbal treatments (Tables 3 and 4). Of those using

CAM, 52% (*n* = 150) used herbal preparations only, 13% (*n* = 39) used non-herbal treatments and 35% (*n* = 102) used both types of therapy (Table 5). Number of therapies used ranged from one to 18 (median 2; interquartile range, 1–5). Of CAM users, 40% used three or more CAM therapies. Females were significantly more likely to use three or more therapies (48% versus 31%; *P* < 0.001), as did younger patients (Table 5).

The most commonly used herbal preparations were cod liver oil (*n* = 150) and garlic (*n* = 47); the most commonly used non-herbal therapies were acupuncture (*n* = 39) and massage (*n* = 31).

Of the patients taking cod liver oil, the most commonly cited reason for consumption was for bones or joints (*n* = 69). Of patients taking cranberry, most (72%) cited urinary tract infection as the reason. Primrose oil was mostly taken for problems related to menstruation and menopause.

CAM users had learned about these therapies from a variety of sources, including family or friends (62%), healthcare professionals (26%), broadcast media (27%), from books and the Internet (5%).

More than half of patients thought CAM was effective (*n* = 174) and 200 (69%) patients would recommend CAM use to others although only 10% were using CAM for the medical problem that led to hospital admission. Over half (60%) stated that their GP was unaware they were using alternative treatment.

Table 1 Sample characteristics by use of CAM

	Ever user <i>n</i> = 291 (%)	Never user <i>n</i> = 139 (%)	Total <i>n</i> = 430	<i>P</i> -value
Sex				
Female	155 (80)	38 (20)	193	< 0.001
Male	136 (57)	101 (43)	237	
Age (years)				
< 40	41 (61)	26 (39)	67	0.003
40–60	104 (79)	27 (21)	131	
> 60	146 (63)	86 (37)	232	
Marital status				
Single	30 (63)	18 (37)	48	0.12
Married/co-habiting	190 (66)	99 (34)	289	
Divorced/separated/widowed	71 (76)	22 (24)	93	
Education				
University/college	107 (75)	35 (25)	142	0.001
School qualifications	150 (69)	69 (31)	219	
None	34 (49)	35 (51)	69	
Surgical specialty				
General	236 (71)	96 (29)	332	0.008
Cardiothoracic	26 (50)	26 (50)	52	
Vascular	29 (63)	17 (37)	46	

Table 2 Reason for surgical admission

	Diagnosis	n = 430 (%)
General surgery	Upper GI	78 (18)
	Colorectal	74 (17)
	Hepatobiliary	46 (11)
	Herniorrhaphy	16 (4)
	Abdominal pain	98 (23)
	Other	11 (3)
	Missing	9 (2)
	Total	332
Cardiothoracic	CABG	34 (8)
	Valve replacement	8 (2)
	Thoracotomy	3 (1)
	Video-assisted thoracoscopic surgery	6 (1)
	Missing	1 (0.2)
	Total	52
Vascular	Critical limb ischaemia	11 (3)
	Aneurysm repair	6 (1)
	Carotid endarterectomy	4 (1)
	Varicose veins	9 (2)
	Angiography	6 (1)
	Amputation	3 (1)
	Missing	7 (2)
	Total	46

Discussion

This is the first Scottish study to assess use of complementary and alternative medicines amongst patients admitted to surgical wards. We found that 69% of those admitted to a regional teaching hospital had used CAM and 46% had used it in the year before hospital admission. CAM users were more likely to be female, younger and highly educated. Studies of the general population suggest that older age groups and those with higher income are more likely to use CAM therapies.¹ However, a survey of 1523 patients attending general practice in North-East Scotland found a decreasing trend of CAM use with age, although female sex, higher income and education were associated with use.⁴

We asked about use in the previous year but did not assess CAM use on the day of admission or weeks before admission for surgery. However, our category of 'ever' CAM use is comparable with other studies assessing life-time use.^{4,5} While an interview technique would allow further exploration of beliefs regarding efficacy and discover reasons for consumption, this methodology is impractical for large-scale epidemiological surveys.

Table 3 Use of herbal products

Herbal products	n	Reason*
Cod liver oil	150	Bone and joint pain
Primrose oil	50	Skin/menstrual
Garlic	47	Heart/circulation
Cranberry	44	Urinary tract infection
Aloe vera	38	Skin
Herbal/vitamin supplement	36	General health
Senna	28	Constipation
Echinacea	22	Prevent and treat colds
Bach flower remedy	16	Relaxation
Ginseng	16	Energy
St John's Wort	15	Depression
Ginkgo biloba	10	Memory and energy
Valerian	9	Insomnia
Traditional Chinese medicine	9	Musculoskeletal pain
Comfrey	7	General health
Omega 3 fish oil	6	Energy
Soy	5	Constipation
Melatonin	2	Jet lag
Nutritional medicine	3	General health
Glucosamine	3	Joints

*Most commonly cited reason for use.

Table 4 Use of non-herbal therapies

Therapies	n	Reason*
Acupuncture	39	Musculoskeletal pain
Massage	31	Musculoskeletal pain
Aromatherapy	28	Relaxation
Chiropractor	27	Musculoskeletal pain
Reflexology	24	Relaxation
Osteopathy	20	Musculoskeletal pain
Homeopathy	17	Musculoskeletal pain
Yoga	14	Relaxation
Spiritual healing	14	Musculoskeletal pain
Counselling therapy	10	Stress
Hypnotherapy	9	Relaxation
Meditation	7	Stress
Reiki	6	Healing
Dowsing	2	General health
Kinesiology	2	Irritable bowel syndrome
Shiatsu	2	Relaxation

*Most commonly cited reason for use.

Table 5 Demographic characteristics by type of CAM

	Herbal only <i>n</i> = 150 (%)	Non-herbal therapies only <i>n</i> = 39 (%)	Both therapies <i>n</i> = 102 (%)	Total <i>n</i> = 291
Age (years)				
≤ 60	55 (38)	23 (16)	67 (46)	145
> 60	95 (65)	16 (11)	35 (24)	146
Sex				
Female	75 (48)	14 (9)	66 (43)	155
Male	75 (55)	25 (18)	36 (27)	136
Education				
Higher education	38 (36)	14 (13)	55 (52)	107
School/none	112 (61)	25 (14)	47 (26)	184
Surgical specialty				
General	120 (51)	30 (13)	86 (36)	236
Cardiothoracic	11 (42)	4 (15)	11 (42)	26
Vascular	19 (66)	5 (17)	5 (17)	29

Comparing prevalence estimates from Scotland, rates of life-time and current use of CAM therapy in the general population appear to be markedly lower (41%)⁶ than estimates from patients attending general practice (71%)⁴ and those admitted for surgery (69%). This may be partly explained by selection bias. Our CAM utility rates are higher than other reports of surgical populations, most of which have been conducted in North America.^{2,5,7}

Table 6 Demographic characteristics by number of therapies used

	< 3 therapies used <i>n</i> = 174 (%)	3 or more therapies used <i>n</i> = 117 (%)	<i>P</i> -value
Age (years)			
≤ 60	70 (48)	75 (52)	< 0.001
> 60	104 (71)	42 (29)	
Sex			
Female	80 (52)	75 (48)	0.002
Male	94 (69)	42 (31)	
Education			
Higher education	44 (41)	63 (59)	< 0.001
School/none	130 (71)	54 (29)	
Specialty			
General	140 (59)	96 (41)	0.79
Cardiothoracic	15 (58)	11 (42)	
Vascular	19 (65)	10 (35)	

The increase in use of CAM has significant implications for surgery. The risk of herbal medication use and interaction with synthetic drugs is well reported (Table 7), as is the importance of detailed history taking and advice for discontinuation for certain products to prevent adverse reactions.^{8–10} The true prevalence of interactions between herbal medications and allopathic drugs during anaesthesia and surgery is unknown.¹¹ Systematic reviews of the safety of herbal products have reported the serious clinical consequences arising from direct, pharmacodynamic and pharmacokinetic effects.^{9,10} Some herbal preparations, particularly garlic, ginseng, ginkgo and St John's Wort (*Hypericum perforatum*), are known to interact with synthetic drugs, such as digoxin and warfarin.⁹ Excessive use of garlic, ginkgo biloba, and ginseng can alter bleeding time and increase the risk of intra-operative haemorrhage. Ginkgo biloba, kava, and Echinacea can interact with barbiturates that are used freely in anaesthetics and may cause increased sedation. A recently published report comprehensively lists the major and minor side effects associated with acupuncture: death, acute hepatitis, septicaemia, pneumothorax, cardiac tamponade, spinal cord injury, retained or broken needle, peripheral nerve injuries and compartment syndrome.¹²

Many CAM products are believed to be natural and, therefore, to be inherently safe and less toxic than conventional medication.² Patients had mostly learned about CAM from family and friends, although others had been informed of remedies from healthcare professionals (26%). The key issues are safety, efficacy and interaction with conventional medication. A Canadian study assessed knowledge of commonly used herbal remedies amongst anaesthesiologists;

Table 7 Potential harmful effects of complementary and alternative medicine

CAM	Potential harmful effects and interactions
Fish oil ^{14,15}	Inhibits platelet aggregation and fibrinogen. Decreases plasma viscosity and increases bleeding time
Evening primrose ^{14,16}	Inhibits platelet aggregation. Decreases effect of phenytoin resulting in poor control of epilepsy
Garlic ^{14,17,18}	Inhibits platelet aggregation, decreases plasma viscosity and increases bleeding time. It is fibrinolytic and potentiates coumadin. Also, it interacts with hypoglycaemics and MAOI
Cranberry juice ¹⁹	Interacts with warfarin causing unstable INR
Aloe ^{14,20,21}	Potential of cardiac glycosides and anti-arrhythmics. It is cathartic, can cause electrolyte disturbances and predisposes to hypokalaemic cardiac dysrhythmias
Vitamin E ^{14,22}	Inhibits platelet aggregation
Echinacea ¹⁸	Inhibits cytochrome CYP3A4. Potentiates barbiturate toxicity and hepatotoxicity of amiodarone, steroids, methotrexate and halothane. Causes immunosuppression and decreases efficacy of cyclosporine and steroids
Ginseng ^{14,17,18}	Inhibits platelet aggregation and platelet activating factor. It has negative inotropic and anti-arrhythmic activity. Decreases warfarin effect. Interacts with MAOI and antidepressants. Can cause hypertension and has anxiolytic activity
St John's Wort ^{14,17,18,23-26}	Potent inducer of hepatic cytochrome P-450, CYP3A4 and P-glycoprotein: interacts with and reduces the activity of cyclosporine, indinavir, digoxin, amitriptyline and oral contraceptives. It binds to GABA and benzodiazepine receptors; has anxiolytic activity and may lead to prolonged postoperative sedation
Ginkgo biloba ^{14,17,18}	Inhibits platelet aggregation and platelet activating factor. Inhibits fibrinogen, decreases plasma viscosity and has anti-arrhythmic activity. Interacts with anticonvulsants, MAOI and barbiturate anaesthetics
Valerian ¹⁸	Binds with GABA and benzodiazepine receptors. It is anxiolytic, causes muscle relaxation and has potential for CNS depression
Ginger ^{14,18}	Inhibits platelet aggregation and thromboxane synthetase. Positive inotropic effect; can cause hyperglycaemia and interacts with warfarin
Kava ^{14,18}	Inhibits platelet aggregation, cyclooxygenase and arachidonic acid. Binds GABA receptors and has anxiolytic and muscle relaxing activity
Melatonin ¹⁴	Anxiolytic, risk of peri-operative excessive sedation
Ephedra ^{14,18,27}	It is sympathomimetic; can cause hypertension, cardiovascular and cerebrovascular accidents. Interacts with ephedrine, halothane, oxytocin, MAOI, cardiac glycosides
Saw palmetto ^{18,28}	Causes cyclooxygenase inhibition, platelet dysfunction, tachycardia and angina.

only one-third of questions were correctly answered and most respondents admitted to guessing at the correct answer.⁷

It is, therefore, essential that both patients and healthcare professionals have access to accurate and reliable information. In the US, this has already been implemented by launching the National Center for Complementary and Alternative Medicine (NCCAM).¹ Currently, there is no legislation to restrict the practice of CAM in the UK other than chiropractic and osteopathy. However, the UK Government has recognised the need for regulation to ensure quality of care and mechanisms to protect against unskilled practitioners.¹⁵

Conclusions

This Scottish survey found that half of patients admitted for general, cardiothoracic or vascular surgery had used CAM prior to admission. For most, there was little communication about CAM use between patients and healthcare providers. The surgical team and anaesthetist should specifically enquire about CAM use during the pre-operative assessment and be familiar with potential side effects. Furthermore, the impetus should be upon patients to take responsibility and inform physicians about their use.

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