

Assessing websites on complementary and alternative medicine for cancer

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Background: Many cancer patients search the World Wide Web for information on complementary and alternative medicine. The aim of this study was to evaluate the quality of such information and identify the treatments most frequently discussed.

Materials and methods: We used a pre-tested search strategy to identify the websites that are most likely to be used by cancer patients and assessed them according to pre-defined criteria.

Results: Thirty-two websites were included in this analysis. The quality of these sites was scored on a point system and varied between 8 and 14 points with a maximum of 14. Most sites issued recommendations for a plethora of treatments, which are typically not supported by sound scientific evidence. Three sites had the potential for harming patients through the advice issued. The most frequently discussed therapies were herbal medicines, diets and mind–body therapies.

Conclusion: The most popular websites on complementary and alternative medicine for cancer offer information of extremely variable quality. Many endorse unproven therapies and some are outright dangerous.

Key words: alternative medicine, cancer, complementary medicine, Internet

Introduction

Worldwide the Internet has over 600 million users [1]. Recent studies suggest that between 36% and 55% of Internet users access the Web to gather medical information, which is likely to affect their choice of treatment [2–5]. A US study, for instance, surveyed 139 lung cancer patients and found that 16% sought information on the Internet, whereas 60% expressed their interest in using the Internet to obtain medical information [6]. Another study involving 107 Canadian breast cancer patients found that 43% of women used the Internet, of which 90% intended to find information about their cancer and its treatment [7]. Similarly, 41.5% of US breast cancer women reported using the Internet as a source of health information [8]. This study also suggested that Internet users had a higher income and tended to be more educated, and that Internet use might be associated with psychological benefits. Finally, an Australian study collecting data on Internet use from breast cancer patients in 1999 found that <7% of their sample ($n = 266$) made use of the Internet [9]. This very low percentage compared to other, more recent surveys highlights the dramatic increase of Internet use during recent years [10].

The Internet has at the same time revolutionized the market regarding complementary and alternative medicine (CAM). The Pew Internet & American Life Project found in one of their

surveys from 2001 that 48% of health seekers have looked for information about CAM [11]. Ethnic differences in choices of health information were assessed in a 2003 postal survey among 140 Caucasian, Japanese and non-Japanese Asians and Pacific Islander cancer patients [12]. Caucasian cancer patients preferred objective, scientific and up-to-date information obtained through medical journals from institutions, telephone information services and the Internet. Japanese patients tended to rely on sources from the media, including TV, newspapers, books, magazines and CAM providers. Non-Japanese Asians and Pacific Islanders mostly used person-to-person communication with physicians, social groups and other cancer patients.

Many cancer patients desperately seek knowledge about their condition and thus can be very vulnerable to misleading information. CAM products can easily be purchased on the Internet without prescription. This has previously led to at least one known fatality of a cancer patient [13]. The quality of websites on CAM for specific conditions varies; thus there is a need to raise public awareness about the issue [14]. We found reasons for concern regarding Internet-based recommendations on CAM for patients suffering from HIV/AIDS, diabetes, cancer and depression [15–17]. Other studies have demonstrated poor content quality on websites about St John's wort [18] and poor quality of general practice websites [19]. A recent survey on websites promoting specific CAM treatments for cancer concluded that there is a staggering amount of misinformation regarding CAM for cancer on the Internet [20].

The present study had two aims. Firstly, to assess the quality of popular websites on CAM for cancer. Secondly, to identify the most popular forms of CAM currently discussed via the Internet.

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Table 1. Details of the Sandvik score [23]

Ownership	Authorship
2 = name and type of provider clearly stated	2 = author's name and qualification clearly stated
1 = all other indications of ownership	1 = all other indications of authorship
0 = no indication of ownership	0 = no indication of authorship
Source	Currency
2 = references given to scientific literature	2 = date of publication or update clearly stated on all pages
1 = all other indications of source	1 = all other indications of currency
0 = no indication of source	0 = no indication of currency
Interactivity	Navigability
2 = clear invitation to comment or ask questions by an e-mail address or link to a form	2 = information easily found by following links from homepage
1 = any other e-mail address on the site	1 = information found only with difficulty by following links search engine provided if information widely scattered on site
0 = no possibility for interactivity	0 = information scattered around, no search engine
Balance	
2 = balanced information	
1 = biased in favour of own products or services	
0 = only promoting own products or services	

Materials and methods

We have developed a search strategy to identify websites that are most likely to receive hits from people surfing the Internet for information on CAM for cancer. From December 2002 to January 2003 eight popular search engines [21] (about.com, altavista.com, ask.co.uk, search.msn.com, google.com, lycos.co.uk, searchaol.com and yahoo.com) were searched for the terms 'complementary' or 'alternative medicine' and 'cancer'. Only websites in the English language were explored. The first 50 websites that appeared on each search engine were included. These were the sites most visited for this specific search query, at that point in time, according to each search engine's ranking system. Every website that appeared on at least three of the eight search engines was included in our study. All links belonging to that website were explored further but links to other websites were not followed-up.

Each of these websites was evaluated according to the following criteria. First, the quality of the website based on the Sandvik score [22], which was developed based on the Health On the Net code (HON) [23] and validated in the field of urinary incontinence. The score ranges from 0 to 14 points where '14' stands for optimal quality. The authors defined a website with a total score of 0–5 points as 'poor', 6–10 points as 'medium' and 11–14 points as 'excellent' quality (Table 1). Second, the reliability of the website based on whether it listed the HON code of approval [23]. Third, the risk each website could pose to patients, based on an overall score, and finally the type of CAM, distinguishing between curative, preventative or palliative cancer, depending on the context in which the CAM modality was discussed in.

Each website was scored based on the following criteria: (a) Does the site discourage the use of conventional medicine? (b) Does the site discourage adhering to clinician's advice? (c) Does the site provide opinions and experiences or factual details? (d) Does the site provide commercial details? For each positive answer one point was given. Thus, each website could receive a 'risk score' ranging from 0 to 4 points. The higher the score the greater the risk.

Two independent reviewers (HLW, KS) extracted the results and compared the data extraction sheets for each website and each criterion. Discrepancies were resolved by discussion with the third reviewer (EE). Extracted data was tabulated. Subsequently, the most frequently discussed therapies of CAM for the prevention, cure and supportive/palliative cancer care were identified.

Results

Thirty-two websites were included in our study. Table 2 lists all sites with their Sandvik score. The mean Sandvik score for all websites is 10.8 (standard deviation 1.7). Two websites stand out for their excellent quality: quackwatch.org and jr2.ox.ac.uk/bandolier/booth/booth. The websites that received the lowest Sandvik score of '8' are skepdic.com/alhelth.html and alkalizeforhealth.net/complementarymedicine.htm. Two websites listed the HON code of approval (cis.nci.nih.gov/fact, quackwatch.org).

Table 3 summarizes the potential 'risk score' of all websites. The results show that three of the 32 websites fall into the two high-risk categories. Two of these websites are based in the USA (heall.com and healthy.net), and one is based in the UK/Cyprus (worldwidehealthcenter.net). All three websites overtly discourage patients from using conventional cancer care. Sixteen per cent of all websites provide information that discourage patients from using conventional cancer treatment, 3% discourage from adhering to clinician's advice, 91% provide opinions, experiences and factual details, and 22% provide mainly commercial details.

Table 4 lists all forms of CAM that have been discussed on websites for prevention, palliation and cure of cancer. Phytomedicine, nutritional supplements and mind–body therapies topped this list.

Table 5 summarizes the information on each website according to the number of CAM therapies each site discussed for prevention, cure and palliation of cancer. The total number of different CAM therapies advertised are as follows: 118 for the cure of cancer, 88 for palliative/supportive cancer care and 59 for the prevention of cancer. The two websites that stand out for their high number of discussed treatments are positivehealth.com (54 treatments for palliative/supportive cancer care) and ivillagehealth.com/library/onemed with 51 'cancer cures'. The

Table 2. Sandvik score for websites included in the study

Website	Ownership	Authorship	Source	Currency	Interactivity	Navigability	Balance	Total ^a
quackwatch.org	2	2	2	2	2	2	2	14
jr2.ox.ac.uk/bandolier/booth/booth	2	2	2	2	2	2	2	14
cis.nci.nih.gov/fact/	2	2	2	2	1	2	2	13
rosenthal.hs.columbia.edu/	2	1	2	2	2	2	2	13
holisticonline.com/	2	2	1	2	2	2	2	13
yourhealthbase.com/alternative_med	2	2	2	1	2	2	2	13
oncolink.com/templates/treatment/t	2	2	2	1	2	2	2	13
hsc.virginia.edu/medcntr/cancer/coping	1	2	2	2	2	2	2	13
www3.cancer.gov/occam/	2	2	2	0	2	2	2	12
mdanderson.org/	2	2	2	1	1	2	2	12
health.yahoo.com/	2	0	1	2	2	2	2	11
chisuk.org.uk/	1	2	0	2	2	2	2	11
naturalhealthlink.com	2	1	1	1	2	2	2	11
healthandage.com	2	1	1	1	2	2	2	11
cnn.com/HEALTH/cancer/9905/16/alte	2	2	0	1	2	2	2	11
altmedicine.about.com/cs/womenshealth/index.htm	2	1	1	1	2	2	2	11
cancer.med.umich.edu/learn/pwcomplimentarymed.htm ^b	2	1	1	1	2	2	2	11
ompress.com/	2	1	1	0	2	2	2	10
1uphealth.com/	0	1	1	2	2	2	2	10
nccam.nih.gov/	2	0	0	2	2	2	2	10
healthy.net/asp/templates/center.asp?centerid=1	2	2	1	0	2	2	1	10
worldwidehealthcenter.net/	2	2	1	1	2	2	0	10
ivillagehealth.com/library/onemed	1	2	0	1	2	2	2	10
mothersdaughters.org/medicine.html	2	1	0	1	2	2	2	10
heall.com/body/	2	1	1	0	2	2	1	9
umm.edu/cam	2	0	0	1	2	2	2	9
thorne.com/altmedrev	2	2	2	0	0	2	1	9
aimforherbs.com/breascanaw.htm/	2	1	0	1	2	2	1	9
anac.org.uk	2	1	0	0	2	2	2	9
positivehealth.com	0	1	1	1	2	2	2	9
skepdic.com/alhelth.html	2	1	0	1	0	2	2	8
alkalizeforhealth.net/complementarymedicine.htm	1	1	1	0	2	2	2	8
Means	1.75	1.38	1.03	1.09	1.8	2.0	1.8	

^a0–5 points, ‘poor’ quality; 6–10 points, ‘medium’ quality; 11–14 points, ‘excellent’ quality.

^bSpelling mistake in the original name of the site.

website that lists most ($n = 35$) treatments for cancer prevention is healthy.net/asp/tempates/center.asp?centerid=1.

Discussion

The results of our survey are somewhat reassuring as they suggest that the majority of the evaluated websites provide valuable and reliable information. This was the case, especially for the prevention of cancer. Most of the websites were of medium quality and provide additional links to other main cancer websites. However,

other websites issued information on CAM that is misleading. Such websites promoted and discussed CAM treatments for which no compelling safety and efficacy data exist [24]. Generally speaking, the ‘cancer cures’ discussed on these websites are not supported by good scientific evidence. Other sites were outright dangerous, as they advise patients against using conventional therapies. For instance, healthy.net stated that ‘Chemotherapy alone can help only about 3% of the patients with epithelial cancer. [Breast, lung, colon and prostate cancer]... kills 80% of total cancer patients’. Similarly, worldwidehealthcarecenter.net

Table 3. Judgement of whether website can harm patients

Website	Score ^a
worldwidehealthcenter.net/	4
healthy.net/asp/templates/center.asp?centerid=1	3
heall.com/body/	3
ompress.com/	2
chisuk.org.uk/	2
thorne.com/altmedrev	2
ivillagehealth.com/library/onemed	2
store.yahoo.com/aimforherbs/breascanaw.html	2
alkalizeforhealth.net/complementarymedicine.htm	2
mdanderson.org/	1
cis.nci.nih.gov/fact/	1
quackwatch.org	1
health.yahoo.com/	1
1uphealth.com/	1
nccam.nih.gov/	1
holisticonline.com/	1
umm.edu/cam	1
naturalhealthlink.com	1
healthandage.com	1
cnn.com/HEALTH/cancer/9905/16/alternative.cancer/index.html	1
skeptdic.com/althealth.html	1
yourhealthbase.com/	1
oncolink.com	1
healthsystem.virginia.edu/internet/cancer/choicesinhealing.cfm	1
mothersdaughters.org/medicine.html	1
altmedicine.about.com/cs/womenshealth/index.htm	1
anac.org.uk	1
positivehealth.com	1
cancer.med.umich.edu/learn/pwcomplimentarymed.htm ^b	1
www3.cancer.gov/occam/	0
rosenthal.hs.columbia.edu/	0
jr2.ox.ac.uk/bandolier/booth/booth	0

^a0 points, no harm conceivable; 1 point, harm unlikely; 2 points, some harm conceivable; 3 points, potentially harmful; 4 points, definite harm conceivable.

^bSpelling mistake in the original name of the site.

stated that ‘Chemotherapy and radiation, though known to be a total failure in the so-called war against cancer, remain as the only therapies, which enjoy federal mandate’. We also found a lack of agreement between the sites as to what constitutes the best CAM for the prevention, cure and palliation of cancer (Table 4).

We carried out extensive literature searches in databases such as Medline, Cinahl, Amed, Psycinfo and Embase to assess the evidence of the top five CAM modalities suggested for preventative, curative and palliative cancer care in our study [24]. Our results show that coenzyme Q10 is one of the most frequently discussed

‘cancer cures’. Coenzyme Q10 has been associated with regression of breast cancer [25] and may stimulate the immune system [26]. To date, this evidence is far from compelling and does not seem to warrant a positive recommendation.

Shark cartilage has also been frequently recommended as a ‘cancer cure’. It is claimed to have anti-angiogenesis effects that may inhibit the growth of malignant cells, and preliminary non-clinical investigations supported this claim [27]. A preliminary phase II study suggested that high doses of Neovastat, a product derived from cartilage can increase survival time [28]. This finding, however, needs to be replicated in randomized controlled trials (RCTs). At present, there is insufficient evidence for shark cartilage to be used as a cancer treatment and the only published clinical study of shark cartilage for cancer failed to produce encouraging results [29].

Laetrile, according to our survey, enjoys somewhat of a renaissance. It contains the toxic compound amygdalin, which commonly occurs in the kernels of almonds, apricots, cherries, peaches and apples. Clinical trials and animal studies have found no relevant benefit for cancer patients [30, 31].

The Gerson’s diet, another frequently discussed ‘cancer cure’ on the Internet, is also not supported by convincing evidence. One study retrospectively compared 5-year melanoma survival rates of Gerson patients to rates reported in the medical literature. A six-fold increase in the 5-year survival was calculated [32]. However, the study was methodologically too flawed to allow any firm conclusions.

Similarly, mistletoe is often advocated. Our own systematic review of all 10 RCTs of mistletoe found no good evidence for an effect of this therapy on cancer progression or quality of life [33]. Thus, none of the top five ‘cancer cures’ discussed on the websites is supported by appropriate evidence.

Lycopene, a carotenoid, is derived from tomatoes and has been suggested as a preventative therapy for cancer. Research has shown that diets rich in fruits and vegetables are associated with a decreased risk of developing cancer [34]. The antioxidant characteristics of lycopene have been investigated in various observational studies with mixed results. A recent review concluded that current evidence could not be considered adequate support either for or against the use of lycopene in cancer prevention [35].

A meta-analysis evaluating the association between dietary β -carotene intake and decreased risk of epithelial ovarian cancer included five observational studies with a total of 3782 cancer patients [36]. It was suggested that high dietary intake of β -carotene may represent a protective factor for ovarian cancer development. However, the authors admit its magnitude is modest. In a randomized controlled study studying the protective effects of β -carotene in smokers it was found that the intervention group had 15% lower level of thioether excretion, a possibly carcinogenic intermediate product of smoking [37]. However, no clear link between β -carotene and the prevention of cancer has so far been shown.

Experimental studies suggest that the risk of prostate cancer can be reduced with the intake of long-chain *n*-3 polyunsaturated fatty acids. However, human data are insufficient for firm conclusions. One case-controlled study involved 317 prostate cancer cases and

Table 4. 'Alternative cancer cures', preventative CAM and CAM for palliative cancer care discussed on websites

Curative CAM	<i>n</i>	Preventative CAM	<i>n</i>	Palliative CAM	<i>n</i>
Shark cartilage	11	Vitamin C	9	Massage	8
Co Q10	10	Vitamin E	8	Visualization (imagery)	8
Laetrile	10	Lycopene	8	Acupuncture	7
Gerson's diet	9	β-carotene	6	Meditation	7
Mistletoe	9	EPA omega 3 fatty acids	6	Mind-body approaches	4
Acupuncture	8	Vegetarian diet	5	Homeopathy	4
Antineoplaston therapy	8	Green tea	5	Progressive relaxation	4
Bovine cartilage	8	Selenium	5	Castor oil packs	3
Vitamin C	8	Flax seed	4	Melatonin	3
Hoxsey therapy	7	Fruits	4	Qi Gung	3
Cucumin	6	Soy	4	Reflexology	3
Essiac	6	Vitamin A	4	Support groups	3
Genistein	6	Calcium	3	Vitamin C	3
Green tea	6	Fibre	3	Co Q10	2
714-X	6	Garlic	3	Counselling	2
Astragalus	5	Plant foods	3	Electroacupuncture	2
Beta carotene	5	Whole grains	3	Fruits and vegetables	2
Garlic	5	Carotenoids	2	Ginger root	2
Immuno augmentative therapy	5	<i>Corioliolus versicolor</i>	2	Herbalism	2
Meditation	5	Cruciferous vegetables	2	Hydrazine sulfate	2
Melatonin	5	Curcumin	2	Hyperthermia	2
PC-SPES	5	Folate	2	Hypnotherapy	2
Selenium	5	Laetrile	2	Organic food	2
Visualization (imagery)	5	Lignans	2	Prayer	2
Cancell	4	Olive oil	2	Psychotherapy	2
EPA (omega-3 fatty acids)	4	Sun rays	2	Reiki	2
Hydrazine sulfate	4	Acupuncture	1	Soy	2
Macrobiotic diet	4	Antineoplastons	1	Spiritual healing	2
Modified citrus pectin	4	Antioxidants	1	Tai Chi	2
Pau D' Arco (<i>Tabebuia impetiginosa</i>)	4	Behavioural changes	1	Vitamin E	2
Vitamin E	4	Black tea	1	Yoga	2
Aromatherapy	3	Bromelain	1	Acupressure	1
Cat's claw	3	Cartilage	1	Aloe vera	1
Ginkgo biloba	3	Chinese skullcap	1	Aromatherapy	1
Ginseng	3	Chondroitin sulfate	1	Arsenicum	1
Maitake mushroom	3	Cranberries	1	Art therapy	1
Qi Gung	3	Essential oils	1	Bach flower remedies	1
Red clover	3	Gold thread	1	Barley	1
Bromelain	2	Homeopathy	1	Biofeedback	1
Coley toxins	2	Lemon grass	1	Bioflavonoids	1
Flax seed	2	Macrobiotic diet	1	Black cohosh	1
Glutamine	2	Massage	1	Calcium	1
Gonzalez protocol	2	Oolong tea	1	Carrot juice	1
Hilde Clark's cure for cancer	2	Organic fruits and vegetables	1	Chiropractic manipulation	1
Homeopathy	2	Potassium	1	Colloidal gold	1

Table 4. Continued)

Curative CAM	<i>n</i>	Preventative CAM	<i>n</i>	Palliative CAM	<i>n</i>
Kelly's nutritional metabolic therapy	2	Pumpkin seed	1	Colon cleansing	1
Livingston-Wheeler therapy	2	Rye	1	Creative activity	1
Massage	2	Sesame seed	1	Cruciferous vegetables	1
Newcastle Disease Virus	2	<i>Spirulina</i>	1	Detoxification	1
Pokeroot	2	Transcendental meditation	1	Dowsing	1
Revisi	2	Vaccines	1	EPA	1
Scudder's alternative compound	2	Visualization	1	Essiac	1
Shiitake mushroom	2	Vitamin B	1	Feng shui	1
Vitamin D3	2	Vitamin B6	1	Flax oil	1
Aloe-vera	1	Vitamin D	1	Gerson's diet	1
Anthroposophical medicine	1	Vitamins and herbs	1	Ginkgo biloba	1
Arnica	1	Walnut	1	Hallelujah diet	1
Beans	1	Wheat germ	1	High fibre diet	1
Broccoli	1	Zinc	1	Iscador	1
<i>Bryonia alba</i>	1			Kava kava	1
Burdock root	1			Kinesiology	1
Celandine	1			Laughter	1
Chaparral tea	1			Macrobiotic diet	1
Chiropractic manipulation	1			Magnets	1
Cinnamon	1			Maitake mushroom	1
Coneflower	1			Manipulative body therapies	1
Detoxification	1			Manual healing	1
Dimethyl sulfoxide	1			Micronutrient therapy	1
Echinacea	1			Mistletoe	1
Epigenin flavonoid	1			Neurolinguistic programming	1
<i>Eupatorium perfoliatum</i>	1			Olive oil	1
Evening primrose	1			Organic geranium	1
Figwort	1			Passion flower	1
Gavallo immune therapy	1			Peppermint tea	1
Ginger	1			Poke root	1
Gold thread	1			Positive thinking	1
Golden seal	1			PSK (mushroom)	1
Graviola	1			Pumpkin seeds	1
Hansi-herbs	1			Reishi mushroom	1
Hawthorn	1			Saw palmetto	1
Hypnotherapy	1			Selenium	1
Lactoferrin	1			Shiatsu	1
Le Shan's psychotherapy	1			St John's Wort	1
Lemon grass	1			Vitamin A	1
Licorice	1			Vitamin B3	1
Limonine	1			Vitamins and herbs	1
Luteolin	1			Zenobiotics	1
Lycopene	1			Zinc	1
Lysine	1				
Magnesium	1				

Table 4. (Continued)

Curative CAM	<i>n</i>	Preventative CAM	<i>n</i>	Palliative CAM	<i>n</i>
Mind–body medicine	1				
Nieper biological therapy	1				
Nuts	1				
Olive oil	1				
Oxygen treatment	1				
Placenta extract	1				
Plant food	1				
PSB	1				
Reflexology	1				
Reiki	1				
Resveratrol	1				
Steiner’s approach	1				
Sun light	1				
Sun soup	1				
Thuja	1				
Thymus therapy	1				
Traditional Chinese medicine	1				
Vegetables	1				
Vitamin A	1				
Vitamin B	1				
Vitamin E	1				
Vitamins and herbal products	1				
Whey protein	1				
Whole grains	1				
Wild indigo	1				
Yoga	1				
Yoghurt	1				
Zinc	1				

CAM, complementary and alternative medicine.

480 age-matched community controls [38]. These examples show that some of the preventative strategies discussed on the evaluated sites are, in fact, backed up by promising, albeit not compelling evidence.

Various studies of CAM advocated on the evaluated websites have shown encouraging results in the palliative/supportive care of cancer patients. Meditation has been shown to improve quality of life in women with breast cancer [39]. The prevention of chemotherapy-related nausea and vomiting with the application of acupressure and acupuncture has been shown to be effective [40, 41]. Massage can decrease stress, anxiety, depression and pain in cancer patients [42]. Thus, there is at least some evidence to support some of the palliative CAM approaches discussed on the websites evaluated.

Our study of cancer websites has several limitations. Because of the potentially fast-changing nature of the information available

on the Internet the results are, strictly speaking, only valid for the period December 2002 to January 2003, when the study was carried out. However, comparing the overall findings with those from our pilot study conducted about one year earlier, we find little evidence for the main problems related to cancer websites to change. Due to the chosen research methodology, the sample of websites included in this survey is relatively small and may therefore not be representative of the totality of information available to cancer patients. We have only assessed websites published in the English language. It is therefore possible that websites in other languages have different characteristics than the ones evaluated in our study.

With currently 600 million individuals worldwide accessing the Internet [1], the findings of our study have important implications. Public awareness about the usefulness of Internet information needs to be raised and the content of some websites needs to be

Table 5. Number of CAM for cancer discussed on each website

Website	Curative CAM ^a	Preventative CAM ^a	Palliative CAM ^a
www3.cancer.gov/occam/	10	0	0
mdanderson.org/	18	4	9
cis.nci.nih.gov/fact/	6	6	6
quackwatch.org	24	3	10
rosenthal.hs.columbia.edu/	11	0	0
ompress.com/	19	0	4
health.yahoo.com/	7	11	4
1uphealth.com/	5	0	0
nccam.nih.gov/	11	0	0
healthy.net/asp/templates/center.asp?centerid=1	28	35	20
worldwidehealthcenter.net/	6	0	0
holisticonline.com/	10	21	0
chisuk.org.uk/	0	0	7
heall.com/body/	18	8	2
umm.edu/cam	1	0	0
naturalhealthlink.com	12	16	20
healthandage.com	33	14	15
thorne.com/altmedrev	8	1	0
cnn.com/HEALTH/cancer/9905/16/alternative.cancer/index.html	7	0	6
skeptdic.com/althealth.html	1	0	0
jr2.ox.ac.uk/bandolier/booth/booth	1	0	0
ivillagehealth.com/library/onemed	51	3	4
yourhealthbase.com/	19	14	1
oncolink.com	1	12	1
healthsystem.virginia.edu/internet/cancer/choicesinhealing.cfm	0	6	2
store.yahoo.com/aimforherbs/breascanaw.html	1	4	8
mothersdaughters.org/medicine.html	2	0	3
alkalizeforhealth.net/complementarymedicine.htm	33	13	13
altmedicine.about.com/cs/womenshealth/index.htm	8	3	10
anac.org.uk	0	0	9
positivehealth.com	35	12	54
cancer.med.umich.edu/learn/pwcomplimentarymed.htm ^b	1	7	0
Total number of different treatments	118	59	88

^aNumbers depict the total number of such therapies discussed on each site.

^bSpelling mistake in the original name of the site.

CAM, complementary and alternative medicine.

further evaluated. Major cancer organizations and other impartial interest groups should investigate websites and create and administer a 'seal of approval', for safety and reliability, such as the HON code. In 2002 a UK expert committee drafted the BIOME Resource Evaluation guidelines to help evaluate information relating to CAM [43]. However, after having tested these guidelines on various CAM cancer websites for defining their appropri-

ateness, levels of inconsistencies in the results indicated that the BIOME guidelines need to be further developed.

By showing that some CAM cancer websites provide misinformation, we do not mean to deny that cancer patients can feel empowered and have a more active social support by accessing (preferably reliable) health information on the Internet [44, 45]. We feel that raising Internet users' awareness as to what a good

website contains is an important and timely task for researchers and health-care providers. Future research needs to identify and assess a larger number of websites promoting CAM for cancer. It would also be interesting to know the number of cancer patients who use information from such sites or purchase CAM for cancer online.

In conclusion, our analysis has shown that many websites offering information on CAM for cancer are not as reliable as one would hope. In the interest of cancer patients we should find ways of minimizing the potential harm such misinformation may cause.

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