Do Cancer Patients with a Poor Prognosis Use Complementary and Alternative Medicine More Often than Others?

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Abstract

Introduction: One reason for patients with cancer to use complementary and alternative medicine (CAM) is that their cancer cannot be cured by conventional therapy. The aim of the present study is to explore whether use of CAM is associated with survival prognosis in long-term survivors of cancer.
Materials and methods: Cancer patients who were alive 5 years or more after diagnosis were chosen to participate in the study, one group with less than 20% and another group with 40%–60% expected five-year survival at the time of diagnosis. A total of 735 patients received a four-page postal questionnaire about CAM use; 397 questionnaires were returned (response rate = 54%).
Results: The results are reported at five levels of CAM use. The poor prognosis group reported CAM use more often than the better prognosis group; however, only significantly higher at CAM level 2 (use of a CAM provider) ($p = 0.021$) and in use of self-support/CAM techniques ($p < 0.001$). Use of over-the-counter (OTC) dietary supplements and use of diet as treatment were not significantly different between the groups.
Discussion: This study supports the suggestion that use of a CAM therapist and use of self-support/CAM techniques might be associated with less hope of cure given by the physician.

Introduction

Although self-reported use of complementary and alternative medicine (CAM) among cancer patients is increasing,[1,2] studies report substantial differences in level of use, ranging from 7%[3] to 95%.[4] This wide range in self-reported use could be due to differences in the definition of a CAM user[5,6] and/or differences in timeframe of CAM use.[7]

Younger, highly educated women are the most frequent users of CAM among cancer patients.[8–10] Frequent use is also reported among patients with symptoms related to their cancer, patients receiving only palliative treatment, patients with metastatic disease, and patients diagnosed with cancer more than 3 months previously.[11]

Other researchers report that use of or interest in CAM among cancer patients is predicted by younger age, progressive cancer, active coping behavior,[12] and time after diagnosis.[7] Likelihood of death occurring from the cancer is both associated[13,14] and not associated[15] with CAM use.

The use of CAM among cancer survivors with a poor survival prognosis at diagnosis is still insufficiently studied, and

a comparison of CAM use among survivors who had a poor prognosis compared to survivors with a better prognosis at the time of diagnosis has, to our knowledge, not been performed. The aim of the present study was therefore to explore whether reported use of CAM in cancer survivors is associated with diagnostic survival prognosis.

Materials and Methods

Materials

Cancer patients were extracted from the Norwegian Cancer Registry. All patients had been diagnosed with cancer between 1 January 1986 and 31 December 1997 and were older than 15 years of age at the time of first diagnosis, and more than 20 years old at the time of the study. Two groups with different survival prognosis at the time of diagnosis according to a previous classification model[16] were selected.

Poor prognosis group. All 286 patients with less than 20% expected 5-year survival at time of diagnosis were included (31.4% with colon cancer, 10.2% with breast cancer, 7.4% with

tracheal cancer). Of the patients in this group, 64.9% were women and the mean age was 65.3 years. Mean time from diagnosis was 10.1 years.

Better prognosis group. A random sample of 599 of 2,716 patients with 40%–60% expected 5-year survival at the time of diagnosis were included (35.2% with rectal cancer, 17.6% with stomach cancer, 10.9% with cervical cancer). Of the patients in this group, 51.9% were women and the mean age was 69.1 years. Mean time from diagnosis was 10.8 years.

In September 2003 a request was sent to the 144 hospital departments where the patients were diagnosed. The departments were asked to confirm the diagnosis and forward a numerically coded questionnaire to the patient; 108 departments (response rate 75%) agreed.

Questionnaires were forwarded to 735 patients. 400 questionnaires were returned directly to the researchers, 82 of them after a reminder. Three questionnaires were excluded from the study because of death, dementia, or absence of the identification number. The material thus consists of 397 cancer patients; 114 in the poor prognosis group and 283 in the better prognosis group. This is a response rate of 54.4% to the questionnaires actually sent out by the hospital departments (Fig. 1). Patients in the better prognosis group were significantly older than those in the poor prognosis group ($p = 0.024$), and the better prognosis group also included fewer women than the poor prognosis group ($p = 0.019$) (Table 1).

Methods

The information from the patients was collected through a 40-item 4-page multiple-choice postal questionnaire developed on the basis of the self-developed questionnaire used in a previous Norwegian study.[17] The validation process included discussions and feedback from more than five Norwegian CAM providers and pilot testing on more than five cancer patients who had used CAM treatment in connection with their cancer. The questionnaire included questions about use of CAM providers, use of dietary supplements, practice of self-support, and change in diet and physical activity. It also included sociodemographic variables like age, educational level, place of residence, and population size of place of residence. We have in a previous report presented a cumulative 6-level model for classifying cancer patients' use of CAM, the NAFKAM model[18]:

- CAM 6: All CAM use including prayer
- CAM 5: Use of a CAM provider or OTC-products or CAM techniques such as yoga, meditation etc. or special diets or exercise

All cancer patients who had survived at least 5 years after diagnosis with less than 20 % expected five-year survival at the time of diagnosis.	All cancer patients who had survived at least 5 years after diagnosis with 40 - 60 % expected five-year survival at the time of diagnosis.
286 patients found in the Cancer Registry that met the inclusion criteria. All patients were included in the study	2716 patients found in the Cancer Registry that met the inclusion criteria. A random sample of 599 patients was included in the study.

September 2003 Questionnaire and invitation letter was sent from the Cancer Registry of Norway to 144 different hospital departments responsible for the patients included in the study.
October 2003 through May 2004 108 hospital departments (response rate 75 %) agreed to forward the questionnaire to 735 patients.
October 2003 through March 2005 400 completed questionnaires were returned to the researchers at the University of Tromsø after the main sending and a reminder. Response rate 54.4 %
Three questionnaires were excluded from the study due to missing ID-number or not filled in by the patient him/herself

114 cancer patients with less than 20 % expected five- year survival	283 cancer patients with 40 - 60 % expected five-year survival.

FIG. 1. The process of selecting the patients. ID, identification.

TABLE 1. SOCIODEMOGRAPHIC CHARACTERISTICS OF THE STUDY PARTICIPANTS

	Poor expected survival % (n = 114)	Better expected survival % (n = 283)	p-value
Sex			
Men	35.1 (40)	48.1 (136)	
Women	64.9 (74)	51.9 (147)	0.019
Age			
31–50 years	14.9 (17)	5.7 (16)	
51–70 years	47.8 (55)	45.7 (129)	
71 years or more	36.5 (42)	48.9 (138)	0.004
Years of education			
Less than 8 years	23.9 (27)	24.9 (70)	
8–9 years	9.7 (11)	17.4 (49)	
10–12 years	39.8 (45)	40.2 (113)	
13–16 years	17.7 (20)	10.3 (29)	
More than 16 years	8.8 (10)	7.1 (20)	0.218
Mean time from diagnosis (years)	10.1	10.8	0.113

- CAM 4: Use of a CAM provider or OTC-products or CAM techniques or special diets
- CAM 3: Use of CAM provider or OTC-products or CAM techniques
- CAM 2: Seen a CAM provider at least once
- CAM 1: Seen a CAM provider at least 4 times.

The exact CAM modalities included in this study at every level have been presented elsewhere.[18] In this article the use of CAM will be reported only at the first five levels of the NAFKAM model because we did not collect data on prayer.

Statistical analysis

A descriptive presentation of the data is given. Comparison of CAM use dependent on survival prognosis was done within CAM level 1–5 using the Pearson chi-square test. The two prognosis groups differed with regard to mean age and proportion of males. Age- and sex-adjusted analyses were done using logistic regression with use/non-use as the outcome binary variable. All analyses were done with the use of SPSS 11.0 for Windows (2003). The Data inspectorate has been notified about the study and The Regional Ethics Committee has recommended it.

Results

In this section use of a CAM provider and CAM use without a CAM provider are presented separately. Subsequently CAM use is presented following the five levels of the NAFKAM model listed above.

Use of a CAM provider

More than 10% of the survivors using a CAM provider (13.3% in the poor prognosis group, 11.1% in the better prognosis group) were already in CAM treatment at the time of cancer diagnosis. One third of the survivors in the poor prognosis group had seen a CAM provider at least once after they were diagnosed with cancer. This is almost twice as many as in the better prognosis group (33.3% versus 18.4%, $p = 0.021$) (Table 2). While 77.8% ($n = 21$) of those consulting a CAM provider in the poor prognosis group had received more than three consultations, 58.8% ($n = 30$) in the better prognosis group reported the same ($p = 0.094$).

TABLE 2. SELF-REPORTED USE OF COMPLEMENTARY AND ALTERNATIVE MEDICINE (CAM) AT FIVE DIFFERENT LEVELS AMONG LONG-TERM CANCER SURVIVORS IN TWO DIFFERENT PROGNOSIS GROUPS

|	n = 397	Poor prognosis n = 114	Better prognosis n = 283	p-value	Age and sex adjusted p-value
Use of CAM at level 1	11.1%	17.5%	8.50%	0.009	0.069
Use of CAM at level 2	22.7%	33.3%	18.4%	0.001	0.021
Use of CAM at level 3	38.8%	48.2%	35.0%	0.014	0.087
Use of CAM at level 4	40.6%	48.2%	37.5%	0.048	0.213
Use of CAM at level 5	72.3%	71.1%	72.8%	0.726	0.521
Use of OTC products	14.9%	18.4%	13.4%	0.206	0.362
Use of self-support/CAM techniques	19.9%	33.3%	14.5%	<0.001	<0.001
Use of diet as treatment	6.7%	7.1%	6.5%	0.841	0.878

OTC, over-the-counter.
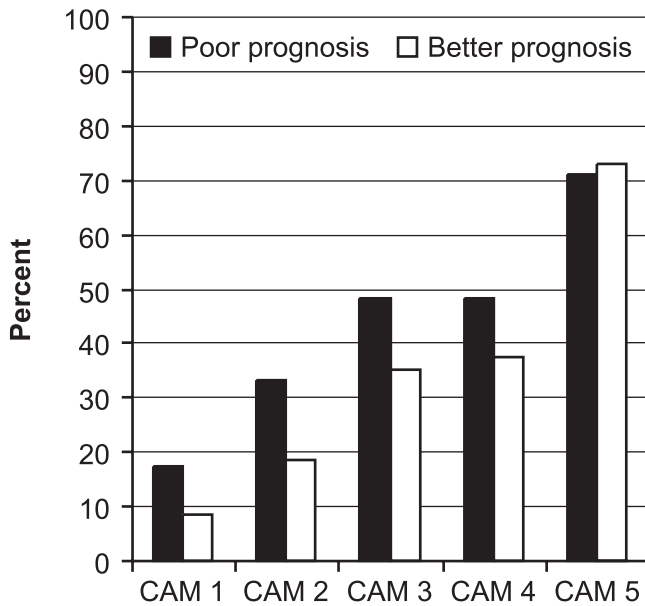
FIG. 2. Use of complementary and alternative medicine (CAM) among long-term cancer survivors.

About half of all the survivors who had seen a provider had seen him/her within the first 6 months after diagnosis. Three out of four who had seen a provider claimed a positive or very positive effect of the treatment. These results were similar in both groups.

Whereas 66.7 %, of the poor prognosis group had seen the CAM provider alongside the conventional treatment, 53.1% of the better prognosis group had done the same ($p = 0.021$, adjusted). Only four survivors, two in each group, reported use of CAM therapy instead of conventional treatment.

CAM use without a provider

Use of dietary supplements above RDA doses was reported by 18.4% ($n = 21$) in the poor prognosis group and 13.4% ($n = 38$) in the better prognosis group. These differences were not statistically significant.

Reported use of CAM techniques/self-support was 33.3% ($n = 38$) in the poor prognosis group and 14.5% ($n = 41$) in the better prognosis group ($p \leq 0.001$). This difference was only present in the survivors who also saw a CAM provider.

Approximately 7% of the patients in the two groups reported use of diet as treatment (made big differences or completely changed their diet).

Use of CAM according to the NAFKAM cumulative model

The use of CAM therapy in our study can be classified according to levels 1–5 in the NAFKAM model. Self-reported use of CAM in the *total patient group* increased from 11.1% when reported at CAM level 1 to 22.7% at CAM level 2, 38.8% at CAM level 3, 40.6% at CAM level 4, and 72.3% at CAM level 5 (Fig. 2, Table 2).

At levels 1–4, we found a statistically significantly higher use in the poor prognosis group compared to the better prognosis group, a difference varying from 9–14.9 percentage points. When adjusting for age and sex, we found

that the difference between the two prognosis groups maintained statistically significant at CAM level 2 ($p = 0.021$) (Table 2).

Discussion

This study indicates that cancer survivors who had a poor prognosis tended to visit a CAM provider to a higher degree than survivors with a better prognosis at the time of diagnosis. The poor prognosis group also seems to be more engaged in use of self-support/CAM techniques.

Bias considerations

Election bias. The Cancer Registry of Norway includes all cancer patients diagnosed in Norway since 1952. On the one hand, the selected cancer patients for this study represent our target group. The response rate (54.4%), on the other hand, will influence the generalizability of our findings.

The response rate is, however, probably somewhat underestimated. Some of the participating hospitals did not confirm dispatching all questionnaires to previous patients. In addition the actual number of questionnaires reaching survivors could have been lower due to relocation or death of the patient without the hospital's informing the researchers. The study population could therefore be lower than 735, resulting in a possible higher response rate.

The responders did not differ from non-responders with regard to age and sex. They could, however, have a higher use of CAM than non-responders. This is suspected because the reported use of CAM is higher at CAM levels 1, 2, and 4 in the responders that answered the questionnaire *before* the reminder compared to those responding after the reminder. This would, however, not influence between-group comparisons.

Information bias. The present study has two main sources of potential information bias: (1) failure of the questionnaire to include items that would be crucial in determining what CAM treatment the patient actually has used and (2) failure of describing the treatments in a manner that makes the patient response valid.

The questionnaire was developed in cooperation with experienced CAM providers and cancer survivors with CAM treatment experience. We are therefore confident that no major treatment option was left out. Whether the patients actually described in a correct manner what they had done is difficult to assess. Because of ethical considerations (full anonymity was required) it was not deemed suitable to perform qualitative interviews to validate the responses. We did, however, administer the questionnaire twice (2 weeks apart) to five cancer survivors outside the study who have used CAM treatments in connection with their cancer, and we then performed an interview with each of them. No major discrepancies were found between the two questionnaires and the interview descriptions of CAM use by these control responders.

The fact that the questionnaire was returned anonymously to independent researchers at the university and not to the patient's doctor probably ensures high validity of the responses regarding use of CAM. Recalling treatment details up to 17 years after diagnosis in mainly elderly participants

might, on the other hand, reduce accuracy in the reporting. Again, this would apply to both prognosis groups.

Other studies. Our result of 40.6% CAM level 4 use is similar to a previous Norwegian study reporting at level 4. This study reports 45% use among cancer patients within the first 5 years after diagnosis.[7]

A study in the South Thames NHS region in England among breast cancer patients reported 30.7% use of CAM among patients who have survived more than 4 years since diagnosis.[19] Their definition of CAM is similar to our CAM level 2, and their results are close to our reported level 2 CAM use according to the presented model.

Some 39.4% of breast cancer patients diagnosed in 1994 or 1995 in an Ontario, Canada, report visiting at least one CAM provider (CAM level 2), and 66.7% of the respondents indicated using some form of CAM (provider or product, CAM level 4).[20] These numbers are higher than those in our study. The difference might be due to our inclusion of both sexes and the fact that the mean age in our study is 10 years higher. Both younger age and female gender are shown to indicate high use of CAM.

Our findings of a higher use of CAM providers among cancer survivors with a poor prognosis is in accordance with previous findings of more frequent use of CAM if patients have been given less hope of cure by their physicians.[21,22] Furthermore, our study supports the finding that CAM users are more likely to have nodal or distinct metastasis than non-CAM users,[23] as well as a greater fear of dying from their cancer than the non-users.[13,14]

Conclusions

This study supports the suggestion that use of a CAM therapist and self-support/CAM techniques might be associated with a poor survival prognosis at the time of diagnosis. The variation both in total CAM use and the variation in CAM use between groups dependent on reported level of use according to the NAFKAM model, underlines the need to report CAM use on more than one level of use. We emphasize that the present data are based on cancer survivors only.

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Disclosure Statement

No competing financial interests exist.

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