

The impact of acculturation on the use of traditional Chinese medicine in newly diagnosed Chinese cancer patients

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Abstract

Goals of work This study assessed the impact of acculturation on the prevalence of traditional Chinese medicine and other complementary and alternative medicine (TCM/CAM) use in newly diagnosed Chinese cancer patients. The individual determinants of TCM/CAM use among patients were also investigated.

Materials and methods A consecutive sample of Chinese cancer patients treated at the British Columbia Cancer Agency was surveyed at admission using a 15-item questionnaire. Items included TCM/CAM use, sociodemographics, as well as medical and cultural factors. Data were analyzed using bivariate methods including Pearson's X^2 test and Student's t test. As well, multiple logistic regression was used to obtain the final causal model.

Main results Of the 230 respondents, 57% completed the survey in Chinese and 94% were immigrants. The average age was 59. Participants had a mean disease duration of approximately 2 months and 79% had already received at least one conventional treatment. Overall, TCM/CAM was used by 47% of respondents. Herbal remedies, vitamins/minerals, and prayer were the most commonly used therapies. Multivariable analysis showed that prior TCM/CAM use ($p < 0.001$), having received conventional treatment(s) ($p = 0.029$), and being less acculturated ($p = 0.028$) were associated with TCM/CAM use.

Conclusions Prevalence and type of use were found to vary as a function of the degree of acculturation. Health care practitioners would be well advised to discuss TCM/CAM use with their patients, especially those who are less acculturated to Western society, since they are the most likely users of TCM/CAM.

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Introduction

Like other countries in the world, Canada is becoming increasingly multicultural and in the next decade its population is expected to grow primarily through immigration. For example, the number of Chinese individuals residing in Canada is expected to reach 1.8 million by 2017, an increase of 80% from the 2001 national census [52]. Consequently, the health care system must adapt to this cultural diversity to deliver the high quality health care services that everyone has come to expect. In addition, the risk of cross-cultural misunderstanding during patient/family and health care practitioner encounters has often been documented [25, 40, 58]. As a result, culture needs to be better understood and taken into account when providing care or studying a specific ethnocultural group. According to Geertz, culture refers to “webs of meaning through which particular humans in specific social settings interpret their existence” [57]. Culture serves as the safety net in which individuals seek to satisfy their needs for identity, inclusion, and communication. In other words, the language, values, ideas, beliefs, and symbols of a specific culture directly influence the manner in which members ascribe meaning, experience their environment, react to stressors, and treat bodily dysfunction and illness. Moreover, what may be regarded as disease in one culture, may not be considered as such in another [22]. Within the Canadian cultural mosaic, it is therefore imperative that the health care system has a clear understanding of the impact of culture, to relate to ethnocultural minorities in an optimal way and provide them with culturally competent care.

Individuals of Chinese origin whose major philosophical and religious beliefs are rooted in Confucianism, Taoism, and Buddhism commonly refer to yin/yang, which has become the foundation of Chinese beliefs surrounding health, illness, and medical treatment within the doctrines of traditional Chinese medicine (TCM) [49]. Although TCM is mainstream in its country of origin and represents a whole medical system built on philosophical principles, theory, and practice, it is considered an alternative health care system in the Western world. As such, it is also listed as a complementary and alternative medicine (CAM) category. Previous studies have shown that among Chinese cancer patients living in the United States, between 25–41% used CAM for their cancer care [14, 21, 27, 28, 33]. In contrast, approximately 28–98% of Chinese cancer patients living in Asia reported using TCM/CAM [1, 10, 29, 30].

In an exploratory investigation using an ethnographic interview methodology, Chiu et al. [9] conducted a qualitative study to better understand the perspectives and practices of TCM and other CAM among Chinese cancer patients in British Columbia, Canada. All participants used at least one form of TCM; however, some patients did not relate TCM to CAM, as they perceived TCM to be part of their daily lives. All participants except one individual were first generation Chinese and the mean age was approximately 50. Many of the reasons for using TCM were grounded in traditional Chinese beliefs about health and illness. Patients expressed the notion that TCM regulates and strengthens the body and cares for the mind and spirit. For example, TCM was used to replace qi after cancer surgery. Other reasons for using TCM included the failure of conventional medicine to cure cancer, having a previous positive experience with TCM, and the encouragement of others. Influencing the decision to use TCM included factors such as Chinese cultural beliefs, social network, and cost. Several patients were on fixed or no income and scaled down their use of TCM or indicated they returned to their place of origin to receive treatment for their cancer.

Within this context, the purpose of the present study was to estimate the prevalence of TCM/CAM use among newly diagnosed Chinese cancer patients and assess the impact of acculturation and other sociodemographic, medical, and cultural characteristics predictive of TCM/CAM use within this population in British Columbia.

Materials and methods

Study definitions

Guided by the qualitative findings of Chiu et al. [9], the 10 TCM/CAM most commonly cited modalities during the interviews were included as a list on the questionnaire designed for this study. The list was reviewed by the experts in TCM on the research team. Modalities included components of TCM (herbal remedies, supplements, massage, meditation, acupuncture/moxibustion, qi-gong, and tai chi); the remaining therapies were labelled as CAM (vitamins/minerals, patient support groups, and prayer). An additional “other” category was provided for patients to include any other therapies deemed relevant. Patients were classified as users, if they reported using TCM/CAM since their diagnosis of cancer. To assess the cultural factors associated with TCM/CAM and yet to minimize the amount of time required for questionnaire completion, five questions regularly used in Statistics Canada surveys were selected to provide a proxy measure of patients’ degree of acculturation. These included survey language, place of birth, parents’ place(s) of birth, language spoken at home, and living situation. Level of

acculturation was dichotomized into “acculturated” and “less acculturated” patients. Less acculturated patients were characterized by having each of the following characteristics: being born outside Canada, speaking a nonofficial language at home (not speaking English or French) and having completed the Chinese version of the questionnaire.

Patient selection

This cross-sectional study involved 230 newly diagnosed Chinese cancer patients who attended a tertiary oncology care center in British Columbia or a community oncology clinic (Vancouver or Richmond, respectively) for the first time (standard entry point) between March 2006 and February 2007. Newly diagnosed patients were recruited because of the necessity to assess the prevalence of TCM and other CAM use at a defined and consistent point in time for all respondents. Chinese patients were defined as those who identified themselves as having family origins from China, Hong Kong, or Taiwan. Inclusion criteria were as follows: (a) any tumor site(s) and treatment regimens, (b) ≥ 18 years of age, (c) Mandarin, Cantonese, and/or English speakers, and (d) well enough to participate.

Questionnaire

The 15-item bilingual and self-administered questionnaire was designed to be completed in 5 min, coded to maintain confidentiality, and focused on four domains corresponding to the research objectives: (a) prevalence of TCM/CAM use, (b) medical characteristics, (c) sociodemographics, and (d) cultural characteristics. The 10 TCM/CAM modalities and an “other” category were listed on the questionnaire and respondents were asked to select as many therapies as appropriate. For quality assurance between the English and

Chinese versions, the questionnaire was “backtranslated” (English to Chinese, Chinese to English) [20, 26]. In addition, questions were written in simple language and presented in a “yes/no” or “check all that apply” format. The questionnaire was reviewed by experts in questionnaire design, cross-cultural research, and CAM for content validity. A covering letter assured confidentiality and informed patients that not completing the questionnaire would not affect their medical care.

Procedure

All eligible participants were provided a bilingual (English, simplified Chinese) study package (covering letter and questionnaire) along with standard British Columbia Cancer Agency (BCCA) new-patient intake questionnaires (as per BCCA policy) upon presentation at the admission’s desk of the cancer center. Return of the questionnaire occurred confidentially in labelled study boxes placed in the reception area of the clinics. A bilingual research assistant was present to ensure that the questionnaires were distributed as per study protocol and was available for any questions participants might have. Consent to participate was implied by the return of the questionnaire. Ethics’ approval for the study was granted by two research advisory ethics boards: one from the academic institution and one from the provincial cancer agency.

Statistical analysis

Data were entered and analyzed with the Statistical Package for Social Sciences (SPSS build 13, 2004; SPSS, Chicago, IL, USA). The point prevalence was the number of patients who reported using TCM/CAM since being diagnosed with cancer. New study variables were derived where appropriate to facilitate meaningful analysis and are described in

Table 1 Reclassified variables for analysis

Category	Original variables	New variables
Place of birth	Canada	Canada
	China; Hong Kong; Taiwan; other	Outside Canada
Parental place(s) of birth	Canada	Canada
	China; Hong Kong; Taiwan; other	Outside Canada
Language spoken at home	English; French	Official language
	Cantonese; Mandarin; Taiwanese; other	Nonofficial language
Marital status	Single; widowed; divorced	Single
	Married; common law	Married
Living situation	Alone; spouse; parents; children or grandchildren	With immediate family
	With friends; other relatives	With extended family
Education level	Elementary; some high school	<High school diploma
	High school diploma; technical/community college; some university; university degree; postgraduate training	\geq High school diploma
Income	<\$20,000; \$21,000–\$40,000	\leq \$40,000
	\$41,000–\$60,000; \$61,000–\$80,000; >\$81,000	>\$40,000

Table 1. Associations between TCM/CAM use and the other study variables were assessed using Pearson's χ^2 tests (or Fisher's exact test, where applicable) and Student's *t* tests to identify bivariate associations. Multivariable analysis involved a forward, stepwise multiple logistic regression methodology to develop a model of patient, medical, and cultural influences on TCM/CAM use ($p=0.05$ to enter and remain in model). Effect modification was assessed by including interaction terms between the 11 variables entered in the regression model. An effect modification was present if the interaction term was found to be a significant predictor of TCM/CAM use within the model. Confounding was also assessed and a variable was deemed a confounder if its inclusion in the model resulted in 10% change in the estimated regression coefficients [44]. All statistical tests were two-tailed using a confidence level of $\alpha=0.05$.

It was estimated that approximately 200 participants could be recruited over a 1-year period; thus, a reverse-power calculation was utilized to determine the precision in which the prevalence of TCM/CAM use could be estimated. Using the formula for inference of a population parameter [43], it was determined that the prevalence of TCM/CAM use could be reasonably estimated within $\pm 7\%$.

Results

Patient characteristics

The most frequent diagnoses were cancer of the breast (27%), colon/rectum (15%), lung or prostate (8%), liver (5%), and stomach (4%). Nine percent of patients did not know their diagnosis. The most common conventional treatment received was surgery (66%); however, 21% of patients reported not having had any conventional treatment at the time of the survey. The mean time since diagnosis was 1.8 months.

Characteristics of patients, as well as, comparisons between TCM/CAM users and nonusers are shown in Table 2.

Characteristics of TCM/CAM use

One hundred eight patients (47%) reported having used TCM/CAM since their cancer diagnosis and prevalence of use was higher among those deemed less acculturated (54%). Among TCM/CAM users, the mean number of modalities used was two (range: 1–5). Forty-five percent of users used ≥ 1 TCM/CAM modality. The most frequently used TCM/CAM modalities included, herbal remedies (61%), vitamins/minerals (30%), prayer (23%), supplements (19%), qi-gong (10%), and tai chi (9%). Other commonly used therapies were acupuncture/moxibustion, massage, support groups, and meditation. *Ganoderma lucidum* was the most commonly used herbal remedy (35%).

When classifying participants' use according to TCM/CAM type, it was observed that 43% used only TCM, 25% used only CAM, and 32% used both. Exploratory analyses showed that these groups are relatively homogeneous. The only difference detected between these groups was that users of both TCM and CAM were more likely ($p=0.005$) than TCM only users to have used these therapies before being diagnosed with cancer. When examining type of use by level of acculturation, the rate of TCM use alone was more than double in the less acculturated patients compared to the acculturated patients; however, an approximately equal proportion of participants within each group used only CAM or both TCM and CAM.

Overall, 70 patients (31%) reported using TCM/CAM before their cancer diagnosis and of these patients 20 (29%) stopped using TCM/CAM after being diagnosed. At the same time, of the 153 patients who did not use TCM/CAM previously, 52 (34%) began using such modalities after being diagnosed.

Table 2 Patient characteristics by TCM/CAM use

Variable, <i>n</i> (%)	All patients <i>n</i> =230	Users <i>n</i> =103	Nonusers <i>n</i> =113	<i>P</i> value
Age (years) ^a	59.4±16.1	57.3±15.0	61.2±16.8	0.075
Disease duration (months) ^a	1.8±1.8	1.8±1.9	1.8±1.7	0.817
Female	139 (61)	70 (69)	58 (51)	0.010
Married	170 (76)	81 (79)	83 (74)	0.373
≥High school diploma	141 (64)	68 (67)	66 (60)	0.235
>\$40,000/year	112 (50)	11 (11)	22 (20)	0.050
Prior CAM use	70 (31)	49 (49)	20 (18)	<0.001
Received conventional treatment(s)	155 (79)	90 (87)	84 (74)	0.016
Child of immigrant	218 (97)	101 (98)	110 (97)	1.000
Lives with immediate family	212 (94)	71 (95)	84 (97)	0.045
Less acculturated	121 (56)	65 (63)	56 (50)	0.045

Missing data were observed for five and nine patients in the users and nonusers group, respectively, and were excluded from the present analysis.

^a Mean±standard deviation.

To assess determinants of TCM/CAM use, a forward, step-wise logistic regression analysis was performed. Variables included in the regression analysis were taken from each variable domain: sociodemographic elements including age, sex, education, and total annual household income; medical characteristics, including previous use of TCM/CAM and cancer type; and level of acculturation as a composite measure of culture. Table 3 shows that prior use of TCM/CAM, having received conventional treatments, and being less acculturated predicted use of TCM/CAM since being diagnosed with cancer. No effect modification or confounding was found.

Discussion

In British Columbia, Canada, approximately 47% of newly diagnosed Chinese patients with various cancers have used or were currently using TCM/CAM therapies since being diagnosed with cancer. However, the prevalence rate was affected by the level of acculturation as shown in the final logistic regression model (Table 3). The distribution of cancer types in this sample was comparable to the 2006 incidence estimates for British Columbia [38]. The prevalence of CAM use found in this study is similar to studies conducted in Canada with a majority Caucasian population [4, 35, 56] and to studies conducted in the United States with Chinese-American cancer patients [21, 23, 27, 28, 33]. However, the prevalence of TCM/CAM use is somewhat lower than the prevalence observed in studies conducted in China, Hong Kong, and Taiwan [1, 10, 29, 30]. Lower prevalence of use may be attributable to restricted availability and accessibility of TCM/CAM in North America compared to Asia. The relatively equal proportions of participants using TCM only, other CAM only, or both TCM/CAM suggests that Chinese patients, regardless of their sociodemographic and medical characteristics or level of acculturation are utilizing a wide range of therapies, including patient support groups. This may reflect a desire in patients to try any potentially effective therapy when faced with a life-threatening disease such as cancer. This may also be a direct consequence of the types of services offered within a conventional cancer center.

The proportion of participants using herbal remedies was similar to that seen in studies conducted in Asia with Chinese cancer patients [1, 29], whereas use of vitamins/minerals were more congruent with studies conducted in Canada with

Caucasian cancer patients [11, 56]. This observation shows that Chinese-Canadian cancer patients may be a distinct group and cannot be homogenized with either Chinese patients overseas or with the general Canadian population. The fact that such a high proportion of patients used herbal remedies, especially *G. lucidum* should be of interest to clinicians. *G. lucidum* (Ling-zhi, Reishi) has been used in TCM in Asia since antiquity [50]. Recent in vitro evidence with various cancer cells shows that *G. lucidum* is an immunomodulator [19], suppresses tumor growth [6, 31, 39, 51], induces apoptosis [54], and is a free radical scavenger [55]. Despite these encouraging findings, few studies have been conducted in humans, none of which report any potential adverse effects associated with *G. lucidum* [13, 24]. Concerns regarding its potential adverse effect on hemostasis in the perioperative period were assessed in a randomized trial and showed that *G. lucidum* was not associated with impairment of platelet and hemostatic function and is unlikely to increase the risk of bleeding in healthy volunteers [24]. *G. lucidum* used for health purposes is considered a natural health product which is regulated by the Natural Health Products Directorate of Health Canada [16]. As these regulations are phased in, products licensed by the Directorate must meet good manufacturing standards which, it is hoped, will facilitate more research of *G. lucidum* in treating patients with cancer [5]. Clinicians should familiarize themselves with the various herbal remedies used by cancer patients to prevent the potential for herb–drug interactions [12, 34, 37, 41].

It is interesting to note that despite recent evidence demonstrating the effect of acupuncture in reducing the signs and symptoms of chemotherapy- and radiotherapy-induced nausea and vomiting [47, 48], the fact that only a few participants reported using acupuncture as compared to other studies [9, 35] is most likely because of the study sample, as many patients had not yet begun conventional cancer treatment. Among the four participants who reported using acupuncture for their cancer care, two reported being on active treatment.

It was unexpected to observe that low income was associated, albeit only moderately, with TCM/CAM use as this finding is inconsistent with previous research which shows that CAM use is more prevalent in individuals with high SES. Although some have documented no association between income and CAM use, only two other studies have demonstrated that CAM users tended to have low

Table 3 Determinants of TCM/CAM use

Variable	Adjusted odds ratio	95% Confidence interval	P value
Prior CAM use	10.53	4.43, 24.99	<0.001
Received conventional treatment(s)	2.80	1.11, 7.07	0.029
Less acculturated	2.39	1.10, 5.18	0.028

income in cultural populations [2, 23]. Such a finding seems counter-intuitive considering that most CAM therapies are not covered under provincial and/or private health care insurance and thus the majority of costs associated with CAM are consumer-born. Also, it was shown that less acculturated patients were more likely to report a low income. This finding is consistent with previous research [15], and may be explained by the presence of stronger ties with family or friends in their country of origin who have the means to send various herbal remedies or supplements overseas.

Multivariable analysis showed that prior TCM use, having received conventional treatments, and being less acculturated were significantly associated with TCM/CAM use. Such findings further support the effect of acculturation on the use of TCM/CAM for cancer care. In this study, cultural factors appear to play a greater role in predicting TCM/CAM use compared to sociodemographic or medical characteristics such as age, sex, and tumor type. Less acculturated patients may have a stronger belief in the effectiveness of TCM/CAM for the treatment of cancer and thus chose to use such therapies despite personal financial costs. As well, use of TCM/CAM may reflect the integration of such practices in the day-to-day life of less acculturated patients, irrespective of age and sex. It is thus important to further discriminate the relative contribution of cultural effects and socioeconomic factors when studying ethnic minority populations in Canada. Furthermore, in providing optimal cancer care, health care practitioners in the oncology setting should be aware that less acculturated patients may be more likely to use TCM/CAM for their cancer care. A recent systematic review has shown that cultural competence training is a promising strategy for improving the knowledge, attitudes, and skills of health care professionals and can be used to create a more competent health care system [3]. Health care professionals must realize that TCM/CAM use for cancer care is grounded in deep cultural meaning for Chinese patients and that these patients highly value the individualized aspect of TCM/CAM and perceive such therapies as a safe and effective form of treatment [59].

Cancer, as a life event, will usually induce stress, anxiety, anger, and depression, especially in newly diagnosed patients. While some may turn to support groups or other ways to help them cope, Chinese cancer patients tend to exhibit a high degree of self-control and aim to improve their situation by adjusting to it [18]. They may derive an inner sense of strength by clinging to their traditional/cultural norms through the utilization of TCM/CAM and strive to restore balance with these practices. This may contribute to explaining the association between acculturation and TCM/CAM use within this population.

Although this study is the first to investigate the use of TCM/CAM in a specific ethnocultural group in Canada, the sample was geographically restricted to a single province. These results may have limited external validity to the Chinese-Canadian population across the nation. However, the results provide a first understanding of the use of TCM/CAM by newly diagnosed Chinese cancer patients. Further studies in other urban centers such as Toronto which includes 40% of the Chinese-Canadian population and in other countries are required to confirm the results obtained in this early work.

Although attempts were made to reach out to study participants by providing a choice of languages for completing the questionnaire and by having a trained bilingual research assistant on-site to provide any support to patients, the impersonal format of data collection may have prompted unease and distrust, potentially leading to nondisclosure of TCM/CAM use. In addition, given the busy daily operations of a major provincial cancer center, some participants might have felt rushed to fill out the form, thus leaving out some detail. Cancer is also a personal and sensitive topic and many patients may be hesitant in disclosing information about their disease. This is especially true within the Chinese culture, of which members hold strong beliefs that a diagnosis of cancer is considered a “death sentence” and discussing the disease with persons outside the immediate family is sometimes viewed as taboo [7, 32].

Defining levels of acculturation is a difficult task. In several other studies assessing the use of health services by Asians, single-item proxy measures, either alone or in combination, have been utilized to categorize the different subpopulations [8, 17, 42, 46]. It is important to bear in mind that any single-item proxy measure taken in isolation provides only a superficial measure of acculturation and results may therefore vary when different measures are used [36, 45]. For example, in this study, immigrant status alone was not associated with TCM/CAM use, but when combined with survey language and language spoken at home to define participants’ acculturation status, the association was significant. Because a combination of such single questions better approximates a multidimensional scale, the use of this approach in the current study therefore seemed adequate for classifying patients as either acculturated or less acculturated. Future research in this population should rely on a combination of validated questions to measure acculturation, or if feasible, use a reliable and valid multidimensional scale such as the Suinn-Lew Asian Self-Identity Acculturation scale [53].

Despite these limitations, this study is novel and adds to the body of knowledge about cross-cultural issues in relation to the health care system and the findings bring a new awareness of

some of the challenges but also directions that might help address them. For example, a simple inquiry as to the place of birth of the patient may give some valuable insights for the patient's management. Because terminology is of uttermost importance when conducting cross-cultural research, it is important to distinguish between traditional whole systems' approaches such as TCM which are integrated in the daily lives of patients and other CAM approaches. Moreover, by focusing on newly diagnosed cancer patients in the study also provided evidence that patients are not choosing TCM/CAM as a last resort for a cancer cure, but rather as a complement to conventional cancer treatments throughout the disease process.

Conclusion

Using a consecutive sample at two major cancer centers in Canada, this study examined the use of TCM/CAM among newly diagnosed Chinese cancer patients and found that approximately 47% of participants were using such therapies, a robust estimate of the prevalence of TCM/CAM use in this population. Receiving conventional treatments, prior TCM/CAM use, and being less acculturated all significantly influenced whether a patient used TCM/CAM for their cancer care.

The large interest and availability of TCM/CAM require that health care practitioners be sensitive toward and educated in these types of therapies and their potential benefits and dangers. This study reemphasizes the need for health care practitioners to initiate communication with their patients regardless of their ethnocultural affiliation, and to inquire about and develop an interest in their patients' health beliefs and practices, especially within an oncology setting. A national study utilizing a random sampling procedure is required to further evaluate the influence of ethnicity and culture on the use of TCM/CAM in patients with cancer. With an increase in the number of immigrants and a population more and more diverse, the impact of culture on the health practices and health care utilization of the Canadian population need to be taken into account when developing more inclusive and responsive health policies.

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