

PREVALENCE OF TRADITIONAL CHINESE MEDICINE AND OTHER
COMPLEMENTARY AND ALTERNATIVE MEDICINE
USE AMONG CHINESE CANCER PATIENTS IN
BRITISH COLUMBIA, CANADA

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By

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ABSTRACT

Purpose: Little is known about the use of complementary and alternative medicine (CAM), including traditional Chinese medicine (TCM) in ethnic populations with cancer living in Canada. The purpose of this study was to assess the prevalence and predictors of TCM/CAM use in newly diagnosed Chinese cancer patients who were starting cancer treatments.

Patients and Methods: A consecutive sample of newly diagnosed Chinese cancer patients treated at the British Columbia Cancer Agency over a four month period was surveyed. During admission, the study questionnaire was distributed along with other registration forms and anonymously returned in well-labeled boxes. A bilingual Chinese interpreter was available to answer any questions potential participants might have had. The 15-item questionnaire focused on TCM/CAM use, socio-demographics, and medical and cultural factors.

Results: Ninety-one patients completed the questionnaire. The majority of respondents (90%) were born outside of Canada and 64% completed the questionnaire in Chinese. TCM/CAM was used by 44% of respondents. Herbal remedies, vitamins/minerals, and prayer were the most commonly used therapies. In the bivariate analysis, factors predicting TCM/CAM use were prior TCM/CAM use ($p < 0.001$), having received chemo/radiotherapy ($p = 0.021$), female sex ($p = 0.015$), immigrant status ($p = 0.040$), and reporting a non-official language most frequently used at home ($p = 0.018$). Following multivariate analysis, it was found that prior CAM use ($p < 0.001$), lower income ($p = 0.043$), and immigrant status ($p = 0.030$) were associated with TCM/CAM use.

Conclusion: TCM/CAM use in newly diagnosed Chinese cancer patients is very common and results are comparable to previous studies in other populations. Healthcare practitioners must become aware of the widespread use of CAM and engage discussions about CAM use with their patients, especially those of a specific ethno-cultural group who may be less acculturated to Western society.

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LIST OF ABBREVIATIONS

BC – British Columbia

BCCA – British Columbia Cancer Agency

CAM – complementary and alternative medicine

CI – confidence interval

EORTC-QOL – European Organisation for Research and Treatment of Cancer Quality of Life

NCCAM – National Center for Complementary and Alternative Medicine

OR – odds ratio

OR_{adj} – adjusted odds ratio

RCOC – Richmond Community Oncology Centre

REF - reference

SD – standard deviation

SES – socioeconomic status

SL-ASIA – Suinn-Lew Asian Self-Identity Acculturation

SPSS – Statistical Package for the Social Sciences

TCM – traditional Chinese medicine

VCC – Vancouver Cancer Centre

1. INTRODUCTION

Over the past decade, the worldwide use of complementary and alternative medicine (CAM), including various traditional Chinese medicine (TCM) modalities has been increasingly documented within the general adult population,¹⁻⁴ and its popularity continues to grow in Canada.⁵⁻⁸ Research also suggests that an increasing number of cancer patients are using CAM primarily as adjunct to conventional cancer treatments.⁹⁻¹²

1.1 Background

As defined by the National Center for Complementary and Alternative Medicine (NCCAM), CAM encompasses “a group of diverse medical and healthcare systems, practices, and products that are not presently considered to be part of conventional medicine.”¹³ Within the realm of CAM, TCM is classified as a complete healthcare system with its own unique practices dating back to ancient China.¹⁴ Table 1.1 lists the NCCAM’s system of classifying CAM modalities and therapies. When deconstructing the meaning of CAM, it is important to note that the term “alternative” is used for therapies that are substituted for mainstream conventional medicine, whereas “complementary” is the term used for therapies used in conjunction with, not as a replacement for conventional medicine. Several explanations proposed for the surge in popularity of CAM include, dissatisfaction with conventional treatment and/or the medical encounter^{15, 16} and the emergence of the postmodern philosophy.¹⁷

Social changes, including globalization, which have given birth to postmodernism, include beliefs that science and technology will not create the utopian society promised in the middle of the last century and “green” movements with emphasis on natural and holistic solutions to problems have arisen.¹⁷ Such philosophies are congruent with those therapies practiced by CAM practitioners which help to explain that CAM users are not so much “pushed away” from conventional medicine as they are “pulled towards” CAM.¹⁸ Also, individualism and consumerism have infiltrated all aspects of society, including healthcare. Individuals are now less accepting of authority and seek greater control and empowerment over their lives.¹⁹ With the advent of the Internet and increased access to volumes of information,²⁰ patients have become more active in the physician-patient relationship; challenging practitioners’ regimens, exercising more power in the medical decision-making process, and as Eastwood comments, have caused “a diminution of biomedical prestige and authority.”²¹

Another reason for the growth of CAM in recent decades is Western society's acceptance of other cultural views on health and illness due to the increase in human migration and exchange of medical knowledge from other healthcare systems (e.g., Ayurveda from India, TCM from China). CAM therapies as they are known today have existed for centuries as traditional medicine throughout the world. In fact, the majority of the world's population uses traditional medicine as the major healthcare system and this trend is beginning to emerge in Western nations as well.²²

Table 1.1 – NCCAM classification of CAM therapies.¹³

Domain	Description	Examples
Alternative healthcare systems	Alternative healthcare systems are built upon complete systems of theory and practice. Often, these systems have evolved apart from and earlier than the conventional medical approach used in most Western cultures.	Ayurveda; Homeopathy; Naturopathy; TCM
Mind-body interventions	Mind-body medicine uses a variety of techniques designed to enhance the mind's capacity to affect bodily function and symptoms.	Meditation; Music therapy; Prayer; Support groups
Biologically-based therapies	Biologically based therapies in CAM use substances found in nature, such as herbs, foods, and vitamins.	Ginseng; Green tea; Mega-dose vitamins/minerals; Shark cartilage
Manipulative and body-based methods	Manipulative and body-based methods in CAM are based on manipulation and/or movement of one or more parts of the body.	Chiropractic; Massage
Energy therapies	Energy therapies involve the use of energy fields.	Magnetism; Qi-gong; Reiki; Therapeutic touch

As described in Chapter 2, a plethora of epidemiological studies reporting the prevalence of CAM use in various cancer populations have been published in the past ten years. A systematic review on CAM use reported an average prevalence of 31% (7 – 64%) across 26 studies in adult cancer patients in 13 countries.²³ Such huge variations are the result of several factors including the type and severity of the cancer, national characteristics, study methodology, and most critically, how CAM is defined by both researchers and patients.

Canada has become increasingly multi-cultural and consequently the risk of cross-cultural misunderstanding during patient/family and healthcare practitioner encounters is steadily increasing. As a result, an understanding of the concept of culture is of utmost importance when studying a specific ethno-cultural group. Due to intensely debated discussions among anthropologists surrounding its definition,

the term, “culture” is believed to be one of the most complex words in the English language and is defined differently by nearly every scholar who writes about the topic.

As with most active research endeavors, the definition of culture has evolved during recent centuries. In a classic definition by Taylor in 1871, “Culture... taken in its wide ethnographic sense is that complex whole which includes knowledge, belief, art, morals, laws, custom, and any other capabilities and habits acquired by man as a member of society.”²⁴ In 1952, Kroeber and Kluckhohn unified various definitions of culture into a single formulation when they wrote,

Culture consists of patterns, explicit and implicit, of and for behavior acquired and transmitted by symbols, constituting the distinctive achievement of human groups, including their embodiments in artifacts; the essential core of culture consists of traditional (i.e., historically derived and selected) ideas and especially their attached values; culture systems may, on the one hand, be considered as products of action, on the other hand, as conditioning elements of further action.²⁵

Twenty years later, Geertz expressed culture as “webs of meaning through which particular humans in specific social settings interpret their existence.”²⁴ Other recent attempts at defining culture appear to revolve around common themes of shared tradition, norms, and symbols. Mendyka and Bloom define culture as the framework by which experience, perception, and world view are patterned and given meaning.²⁶ Leininger describes culture as the learned, shared, and transmitted values, beliefs, norms, and lifeways of a particular group that guide the group’s thinking, decisions, and actions in patterned ways.²⁷ Ting-Toomey states that culture is a complex frame of reference that consists of patterns, traditions, beliefs, values, norms, symbols, and meanings that are shared in varying degrees by interacting members of a community.²⁸ It becomes obvious that culture, which we learn beginning in childhood, represents a way of perceiving, behaving, and evaluating the world. Ting-Toomey uses the iceberg model as an analogy of culture. As only a small fraction of an iceberg is visible above the water line, similarly, only the uppermost layers of an individual’s culture can be observed through verbal and non-verbal symbols. The deeper layers; traditions, beliefs, and values are hidden from view. It is these deeper layers that drive individuals’ thoughts, reactions, and behaviours.

Furthermore, it is important to understand that the concept of culture is not static and is no longer simply used to explain the ways of life of societies, but refers to dominant values, symbols, social practices, and interpretive categories of a population.^{29, 30} The dynamic nature of culture was described in a recent article by Kleinman:³¹

The term “culture” is often misused. In its early anthropologic usage, culture referred to the shared patterns of life that define social groups. This usage tended to portray cultures as bounded, fixed entities, neglecting crucial differences among and within groups, and it risked reducing culture to an autonomous variable among others. But

culture is not a thing; it is a process by which ordinary activities acquire emotional and moral meaning for participants. Cultural processes include the embodiment of meaning in habitus and physiological reactions, the understanding of what is at stake in particular situations, the development of interpersonal connections, religious practices, and the cultivation of collective and individual identity. Culture is inextricably caught up with economic, political, psychological, and biologic conditions. Treating culture as a fixed variable seriously impedes our ability to understand and respond to disease states.

Not only is the fluidity of the “culture concept” highlighted, but culture’s affect on health and disease is brought to attention. The values, ideas, beliefs, and symbols of a specific culture directly influence the manner in which members experience, react to, and treat disease and bodily dysfunction, and what may be regarded as disease in one culture, may not be so regarded in another.³² Culture serves as the safety net in which individuals seek to satisfy their needs for identity, inclusion, and communication. 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 TCM.³³ Although mainstream in its country of origin, TCM is considered an alternative healthcare system in the Western world. Within the Canadian cultural mosaic, it is imperative that the healthcare system have a clear understanding of the concept of culture in order to provide culturally appropriate, and culturally sensitive care to cancer patients of differing ethno-cultural origins.

1.2 Problem Statement

As discussed in Chapter 2, several recent studies document CAM use in Canada but none adequately focus on the cultural influences on CAM use in a specific ethno-cultural group. More specifically, very little is known about TCM and complementary and alternative health service utilization in the Chinese community whose members are diagnosed with cancer. Within British Columbia (BC), immigrants from China, Hong Kong, and Taiwan represent the largest ethno-cultural group. According to the 2001 Canadian census, Chinese individuals represent the largest ethnic group in BC (9.4% of the provincial population) and within BC, the cities with the highest proportion of Chinese population are Richmond (39%), Vancouver (30%), and Burnaby (26%).³⁴ Given the predominance of Chinese communities in BC, it is important that the health needs of this ethno-cultural group be addressed.

1.3 Purpose

The growing ethno-cultural diversity in Canada challenges oncology practitioners to develop culturally sensitive care strategies. Nevertheless, it is important to bear in mind the theoretical and practical difficulties of describing and understanding CAM utilization within the Canadian healthcare system from an ethno-cultural perspective. These difficulties may be attributed to the diversity in beliefs and customs, immigration history, degree of acculturation, place of origin, and religious background in these ethno-

cultural populations. Within this context, the overall goal of the proposed research is to estimate the prevalence and identify the characteristics of TCM/CAM use among Chinese cancer patients in BC, and to briefly examine the influence of culture on TCM/CAM use within this population. Due to the paucity of research in this academic field, the following specific research objectives were addressed:

1. To estimate the prevalence of TCM/CAM use among newly diagnosed Chinese cancer patients upon admission to the British Columbia Cancer Agency (BCCA).
2. To identify socio-demographic, medical, and cultural characteristics predictive of TCM/CAM use among Chinese cancer patients according to Andersen and Newman's model of health service utilization.
3. To investigate differences in TCM/CAM and other characteristics between acculturated and less acculturated patients.
4. To explore differences between male and female TCM/CAM users.

1.4 Conceptual Framework

This study was guided by Andersen and Newman's model of health service utilization³⁵ which is a widely recognized model that conceptualizes the diverse influences on health behaviour. According to this framework, factors that influence health service utilization (i.e., TCM/CAM use) can be classified into three broad categories: societal, healthcare system, and individual.³⁶ Societal determinants are comprised mainly of technology (the principles and tools used to bring about change) and norms (ways or modes in which members of society comply). The healthcare system includes health-related services and goods such as, physician care, hospital care, and medications. Individual determinants, which have received the greatest research attention, are further categorized into predisposing, enabling, and illness level factors. A conceptual representation of the individual determinants of this model is illustrated in Figure 1.1.

Predisposing factors are socio-demographic characteristics, social structures, and attitudes/beliefs surrounding health and disease which are thought to influence an individual's propensity to use health services before the need for these services are present. Enabling factors are family- and community-level characteristics that facilitate or inhibit the ease in which health services are obtained. Illness level factors including, perceived health status and established diagnoses are commonly viewed as the most important factors in determining whether an individual seeks out health services. This model served as the theoretical and conceptual framework for this study and guided development of the questionnaire and interpretation of results.

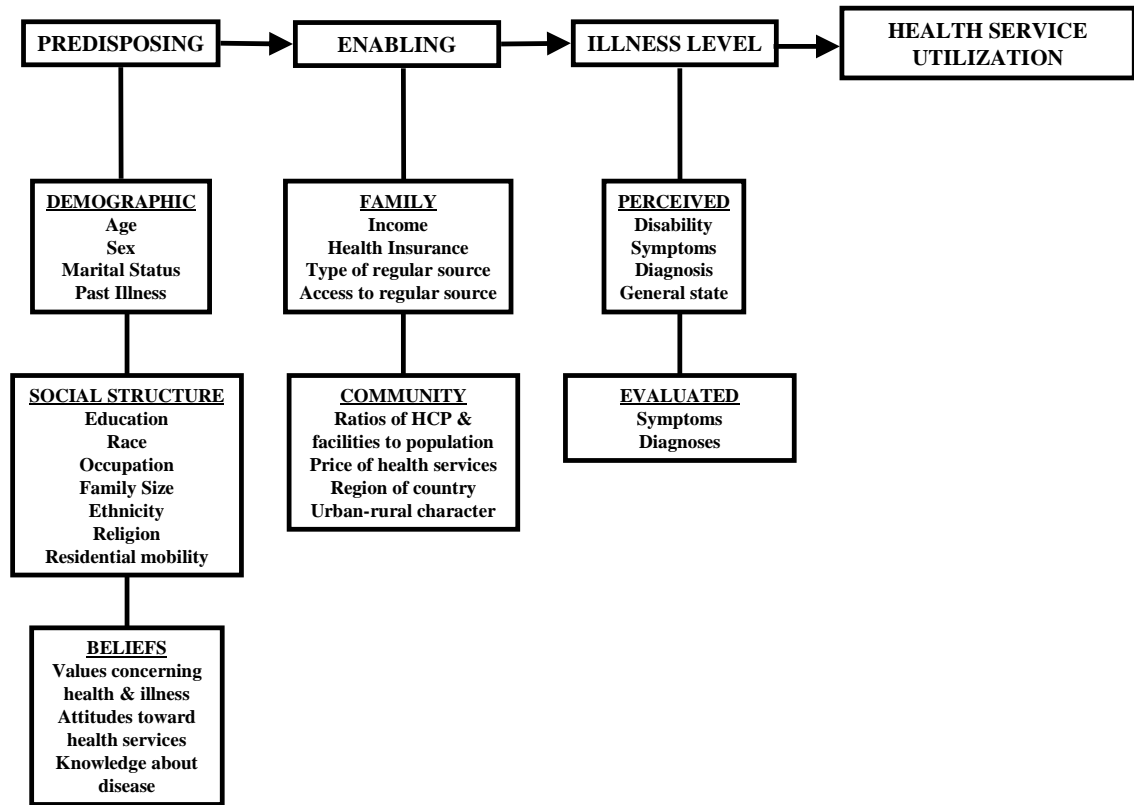


Figure 1.1 – Individual determinants of health services utilization.³⁵
 HCP, healthcare practitioner.

2. LITERATURE REVIEW

2.1 The Ethos of TCM

Scholars attribute modern-day TCM as evolving from the folk medicine practiced during the Zhou dynasty (1027 – 221 B.C.) of ancient China, with the first classical book on TCM, “The Yellow Emperor’s Classic of Internal Medicine,” being written in the first century B.C., during the Han dynasty.^{37, 38} In addition to this sacred text, the major philosophical and religious beliefs from Confucianism, Taoism, and Buddhism have become the foundation of Chinese beliefs surrounding health, illness, and the theoretical basis of medical treatment within TCM.³³

Whereas Taoism is concerned mainly with how one lives in relation to one’s natural setting, Confucianism is concerned with how one lives in one’s social context.³⁹ Specifically, Taoism emphasizes the importance of passive attitudes for physical and psychological harmony and well-being. According to Confucianism, good health is achieved through active social participation and that achieving individual health is secondary to maintaining social harmony and balance. Furthermore, in Buddhist doctrine, cause and effect are the principles that encourage people to do good and to receive good in return. Therefore, when people are morally good, they have inner peace, thus promoting their health and well-being.⁴⁰ However, even before the advent of Taoism, Confucianism, and Buddhism, theories of yin/yang and the five phases were devised in ancient China and resound still in modern times.

As a symbolic representation of the universe, yin/yang, embodies the concept of change, relationships, patterns, and process at all levels of existence, whereby yin/yang mutually complement each other and are dependent on each for definition.^{37, 41} The qualities of yin/yang are polar opposites where yin has all the feminine attributes and is quiescent, yielding, static, contracting, cold, wet, and dark, while yang is masculine, dynamic, active, expansive, hot, dry, and light.⁴² As such, yin/yang represents all facets of Chinese philosophy and is fundamental concept in the natural sciences such as medicine, but also heavily influences social behaviours. The theory of the five phases states that all phenomena in the universe are shaped and affected by five entities; wood, fire, earth, metal, and water.^{41, 43} With respect to Chinese health beliefs, the five phases are the basis for the categorization of organs and the properties of medicinal drugs.

Apart from the ideas of yin/yang and the five phases, there is no concept more crucial to TCM than qi – the idea that the body is pervaded by subtle material and mobile influences that cause most physiological

functions and maintain the health and vitality of the individual.^{38, 41} Commonly, the term qi is translated to express the notion of energy; however, this translation is lacking. A recent review of TCM by Quah, refers to qi as “the basic substance from which the cosmos was made...very minute particles in continuous motion, the deep spring and the motive force in the transformation of things, and represents the link between the body and the universe.”⁴² Thus, it is reasonable to state that the ethos of TCM is based on the theories of yin/yang, the five phases, and the existence of qi.

The concept of health within the realm of TCM is quite simple. Health is achieved through balance and harmony between the body and the universe, with respect to internal psychological functions as well as external social and ecological conditions, which cannot be quantified with conventional medical standards.^{39, 41, 44} Disease is a reflection of disharmony between the individual and the universe, or within the individual himself, and as such, disease is rarely localized, but generally affects the entire individual.⁴⁵⁻⁴⁷ In the case of cancer, as discussed by Beinfield and Korngold, the etiology of a malignant tumour is initiated by adverse pathogenic factors leading to the stagnation and depletion of qi, moisture, and blood, impairing the coordinated functioning of the organ system, thus leading to further weakness and obstruction of essence, the source of qi and blood.⁴⁸ At some critical level of depleted qi, blood, and essence, yin/yang becomes separated, losing balance and harmony. Such disorganization leads to failure of the body to govern cellular differential and proliferation. Despite such a poetic ideology of health and disease, at the core of TCM doctrine, if a person is without symptoms, he is healthy.⁴⁹

Diagnosis of disease in TCM involves a highly comprehensive examination which gathers information that reflects the physiological status in order to determine the underlying cause of the disease.⁵⁰ The process of assessment in TCM can be complex. Typically, four diagnostic methods are employed: inspection, auscultation/olfaction, inquiry, and palpation.⁵⁰ Just as disease is a disruption of balance within an individual, treatment aims to restore balance and harmony utilizing the principle of yin/yang.⁴³ For example, a symptom complex whereby qi is deficient should be treated with a qi reinforcing method. Therapeutic methods employed by TCM practitioners include, acupuncture, moxibustion, cupping, Chinese massage, mind-body exercises, and Chinese herbal medicine. Although each can be used independently, TCM practitioners will generally use a combination of therapeutic methods to restore a harmonious equilibrium in patients.

2.2 Pilot Study

A pilot study among Chinese cancer patients was conducted by Chiu et al., in 2004.⁵¹ This qualitative study assessed the use of CAM among 14 Chinese cancer patients (six male, eight female) using an ethnographic interview methodology. In this study, Chinese was defined as individuals from China, Hong Kong, or Taiwan who were either first generation (i.e., immigrants) or second generation (i.e., child of

immigrants). Patients had a mean age of approximately 50 years and all but one patient were first generation Chinese. Thirteen patients reported Cantonese or Mandarin as their primary language and 86% of patients had an education level of high school or above. All patients used at least one form of TCM. It was interesting to note that some patients did not relate TCM to CAM, as they perceived TCM to be part of their daily lives. The most common types of TCM modalities used were herbal medicine (79%), qi-gong (50%), food therapy (36%) and meditation (29%).

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 having surgery for their cancer. Other reasons for using TCM included the failure of conventional medicine, to cure cancer, having a previous positive experience with TCM, and by the encouragement of others within their social network. The decision to use TCM was seen as a four-phase process in which patients were involved in seeking information, examining the evidence, conducting an experiment, and then evaluating the outcomes. Influencing this process included factors such as Chinese cultural beliefs, social networks, and importantly, cost. As many of the patients were on fixed or no income, many scaled down their use of TCM or returned to their place of origin to receive treatment for their cancer.

This pilot study provided the necessary groundwork for the present study. It exposed the wide use of TCM among Chinese-Canadians living with cancer, albeit in a small sample of patients. What was central to this study was the call for healthcare practitioners, especially those in the oncology setting to be mindful of cultural beliefs and practices of this specific ethno-cultural group. This study aims to build on this framework.

2.3 CAM Use in Canadian Cancer Patients

CAM use among the various cancer populations in Canada has been well documented. In a MEDLINE search from 1996 – 2005, a total of 13 publications were found investigating the prevalence of CAM use among cancer patients in Canada.⁵²⁻⁶⁴ The key data from these reports are summarized in Table 2.1. Increasing interest in CAM use among Canadian cancer patients is reflected in the steady growth in the numbers of publications on the subject, with five articles published in the latter part of the previous decade⁵²⁻⁵⁶ and eight publications thus far in the early part of this century.⁵⁷⁻⁶⁴

Publications were based on research conducted across Canada, with the majority of studies coming from BC^{52, 60, 63} and Ontario^{55-57, 62} (three and four studies, respectively). Two studies were conducted in Alberta,^{53, 61} with Saskatchewan,⁵⁹ Manitoba,⁵⁴ Quebec,⁵⁸ and Nova Scotia⁶⁴ each having one study conducted in the respective province. The vast majority of these prevalence studies utilized a mail survey

in a cross-sectional study design,^{52, 57, 61-63} although two studies implemented in-person interviews with patients at cancer clinics,^{53, 56} and one study used a telephone interview for data collection.⁵⁹ The measurement instruments, which consisted of a survey or questionnaire, were either structured or semi-structured, and had been adapted from previous research and validated with the use of focus groups. Such methodologies were consistent with other research conducted elsewhere.⁶⁵⁻⁷³

Table 2.1 – Studies investigating CAM use in Canadian cancer patients.

Author, Year, & Site	Study Sample	Method	CAM Therapies	Prevalence
Fernandez et al., 1998 British Columbia	Parents with a child with cancer (N=366)	Self-administered questionnaire	Any CAM	42%
Oneschuk et al., 1998 Alberta	Palliative cancer patients (N=143)	In-person interview	Any CAM, minus diets, mind-body therapies	37%
Balneaves et al., 1999 Manitoba	Breast cancer (N=52)	Self-administered questionnaire	Any CAM	67%
Nam et al., 1999 Ontario	Prostate cancer (N=232)	Self-administered questionnaire	Vitamins, minerals, herbs, & supplements	33%
Warrick et al., 1999 Ontario	Head & neck cancer (N=200)	In-person interview	Any CAM	39%
Boon et al., 2000 Ontario	Breast cancer (N=422)	Self-administered questionnaire	Any CAM	67%
Edgar et al., 2000 Quebec	Breast cancer (N=156)	In-person interview	Any CAM	72%
Bold & Leis, 2001 Saskatchewan	Families with a child with cancer (N=44)	Telephone interview	Any CAM	36%
Lesperance et al., 2002 British Columbia	Breast cancer (N=90)	Historical cohort	Mega-dose vitamins/minerals	n/a
Tough et al., 2002 Alberta	Colorectal cancer (N=871)	Self-administered questionnaire	Any CAM	49%
Boon et al., 2003 Ontario	Prostate cancer (N=534)	Self-administered questionnaire	Any CAM	30%
Eng, et al., 2003 British Columbia	Prostate cancer (N=451)	Self-administered questionnaire	Any CAM	39%
McKay et al., 2005 Nova Scotia	Gynaecologic cancer	Self-administered questionnaire	Any CAM	76%

Only two articles discussed the use of CAM in pediatric cancer populations, with a reported prevalence of approximately 41%.^{52, 59} The remaining studies all focused on CAM use among adult cancer patients. Prevalence values ranged from 27 – 76%, with lowest usage among prostate cancer patients and highest usage among breast and gynaecologic cancer patients. The average percentage of CAM use across all adult studies was found to be approximately 46%, which is similar to other studies conducted elsewhere.⁷⁴⁻⁹¹

Although the particular nature of CAM was not always specified or defined in the studies reviewed, those studies which did include a definition of CAM for their respective study, defined CAM as therapies or approaches to the treatment and/or care of cancer that is not included in standard conventional cancer treatments used in North America, such as, surgery, chemo-, hormone-, and radiotherapy. Reported CAM therapies and modalities ranged widely across studies, although several themes became apparent. Almost all studies reported use of therapies in each one of the NCCAM's classification domains, as discussed previously; however, when the studies were organized by study sample (i.e., female, male, and children), key differences in CAM use emerged. It was observed that within cancers that affect female patients (i.e., breast and gynaecologic), the most common CAM therapies utilized were mind-body or psychological therapies, specifically, meditation, relaxation therapies, support groups, and prayer.^{54, 57, 58, 64} In contrast, studies documenting CAM use in prostate cancer, which affects solely the male population, found that biologically-based therapies were most prevalent, most notably, vitamins (e.g., vitamins C and E), minerals (e.g., selenium), and herbal remedies and/or supplements (e.g., saw palmetto).^{55, 62, 63} Interestingly, in the pediatric cancer population, use of both psychological and biological CAM therapies were highly prevalent.^{52, 59} Such differences may be the result of the various motives and reasons for patients with a cancer diagnosis to use CAM therapies.

While the use of CAM therapies among cancer patients in Canada is quite varied, the reasons for using CAM are rather focused. In addition to wanting to exhaust all treatment possibilities,^{52, 61} the most frequently cited reasons by cancer patients for using CAM include, boosting the immune system,^{52, 59, 63} improving general well-being and quality of life,^{53, 59, 63, 64} and treating the cancer itself, either to provide a cure, slow disease progression, or to prevent recurrence.^{52, 53, 56, 63} In addition, cancer patients commonly chose to use CAM therapies in order to provide symptomatic relief from conventional medicine,^{56, 59} and to utilize a self-perceived more natural and holistic approach to their cancer care.^{52, 61} Recently, evidence from research in psycho-oncology has demonstrated that many cancer patients choose to use CAM in order to increase personal control over their disease status and treatment decision-making.^{92, 93} Alternatively, reasons for non-use are centred around the lack of personal knowledge and high quality scientific research surrounding CAM therapies,^{52, 56, 63} as well as the lack of support from conventional healthcare practitioners.⁵²

In addition to determining the prevalence of CAM use among cancer patients, Canadian researchers have been quite active in identifying variables predictive of CAM use within this population. Using multiple logistic regression analyses, several studies have identified key predictor variables which can be organized into three distinct variable themes: socio-demographics, medical characteristics, and personality traits. Within the category of socio-demographics, younger age,^{56, 57, 61} female sex,⁶¹ higher education,^{54, 56, 57} and higher income^{56, 57} have all been significantly associated with CAM use among cancer patients. Medical characteristics correlated with CAM use include, having recurrent or advanced disease status^{56, 61} and having received conventional cancer treatments (e.g., chemo- and hormone therapy).^{57, 61, 62} Personality traits that have been shown to be predictive of CAM use include, a proactive role in treatment decision-making^{54, 57} and participating in support groups.^{57, 62} Of importance is the fact that these results have been validated in other studies of cancer patients conducted elsewhere in the world.⁹⁴⁻⁹⁹ However, despite such overwhelming evidence in identifying the individuals most likely to use CAM for their cancer care, studies continue to contradict each other in terms of predictor variables. Recently, in a study of gynaecologic cancers, McKay et al., did not find any significant differences in patient characteristics between CAM users and non-users.⁶⁴ As a result, researchers and clinicians must be vigilant in scrutinizing such study findings and cautious when applying such results in practical settings.

2.4 CAM Use in Chinese Cancer Patients

In recent years, the use of CAM in cancer patients of a specific ethno-cultural group has been studied by various researchers worldwide. This statement holds true for Chinese cancer patients as well. Nine publications assessing CAM use among Chinese cancer patients were retrieved from a MEDLINE search (1996 – 2005) of the literature.¹⁰⁰⁻¹⁰⁸ The observation that only two of the nine publications were published in the 1990s testifies that research in this field is spurring much interest among investigators.^{102, 107} The majority of the studies reviewed were conducted in the United States with Chinese-American cancer patients.^{102-105, 108} Taiwan^{106, 107} and Hong Kong¹⁰⁰ were the sites of other studies. Surprisingly, only one study was conducted in China.¹⁰¹ For the most part, studies had a cross-sectional design and used structured or semi-structured measurement instruments. Contrasting Canadian studies, which primarily utilized a mail survey for data collection, studies with Chinese cancer patients predominantly implemented in-person interviews.^{101-103, 106, 107} Such differences between these two study populations highlights the importance of cultural sensitivity and understanding that study methodologies must be customized to the population under study. The key data from these studies are summarized in Table 2.2.

In contrast to their Canadian counterparts which studied specific cancer populations (i.e., breast, colorectal, prostate, etc.), the vast majority of studies in Chinese cancer patients were conducted in

patients with various cancers and tumour sites.^{102, 103, 106-108} Three studies were conducted with breast cancer patients^{100, 101, 105} and only one with prostate cancer patients.¹⁰⁴ Prevalence of CAM use ranged from 25 – 98%. The average prevalence across all studies with adult Chinese cancer patients was determined to be 69%, much greater than the prevalence observed among Canadian cancer patients (46%).

Table 2.2 – Studies investigating CAM use in Chinese cancer patients.

Author, Year, & Site	Study Sample	Method	CAM Therapies	Prevalence
Liu et al., 1997 Taiwan	Various cancers (N=100)	In-person interview	TCM herbal remedies	64%
Gotay et al., 1999 United States	Various cancers (N=136)	In-person interview	Any CAM	36%
Lee et al., 2000 United States	Breast cancer (N=82)	Telephone interview	Any CAM	41%
Maskarinec et al., 2000 United States	Various cancers (N=96)	Self-administered questionnaire	Any CAM	25%
Lee et al., 2002 United States	Prostate cancer (N=109)	Telephone interview	Any CAM	28%
Kakai et al., 2003 United States	Various cancers (N=42)	In-person interview	Any CAM	N/A
Abdullah et al., 2003 Hong Kong	Breast cancer (N=352)	Self-administered questionnaire	Any TCM modalities	28%
Li-chun & I-chuan, 2004 Taiwan	Various cancers (N=137)	In-person interview	Any TCM modalities	61%
Cui et al., 2004 China	Breast cancer (N=1065)	In-person interview	TCM, supplements, physical exercises, support groups	98%

Although rarely defined in a clear, concise manner, examples of CAM therapies cited in studies with Chinese cancer patients were wide-ranging, much like in the Canadian studies. It was interesting to note that there was a distinct difference in the definition of CAM between studies conducted in the United States and those conducted elsewhere. Articles from the United States surveyed patients about any CAM therapies, categorizing TCM as a CAM modality, rather than a distinct medical system.^{102-105, 108} In striking contrast, the publications from Asia had a much narrower scope of CAM and generally focused on TCM and specific modalities within this system (e.g., acupuncture, herbal remedies, qi-gong).^{100, 101, 106, 107} Chinese cancer patients commonly chose biologically-based TCM therapies, including herbal remedies and supplements for their cancer care. Abdullah et al., reported that 45%, 14%, and 44% of

CAM users with breast cancer ingested *Ganoderma lucidum*, ginseng, and shark cartilage, respectively.¹⁰⁰ This result was confirmed in another sample of breast cancer patients in a study by Cui et al., however, more patients in this sample (62%) reported using ginseng.¹⁰¹ In addition, psychological therapies (e.g., support groups, spirituality) and mind-body therapies (e.g., qi-gong, tai chi) were used much less frequently by Chinese cancer patients. For example, in two separate studies, psychological or mental support was used by 13% and 16% of patients.^{104, 105} Furthermore, Maskarinec et al., observed that only 4% of cancer patients participated in support groups as part of their cancer care.¹⁰⁸ With respect to mind-body therapies, studies by Li-chun & I-chuan and Maskarinec et al., reported that among Chinese cancer patients only 2% and 4%, respectively practiced qi-gong or tai chi as part of their treatment regimen.^{106, 108} In striking contrast to the studies documenting CAM use in Canadian cancer patients, use of vitamins and/or minerals by Chinese cancer patients was almost non-existent with prevalence values ranging from 0 – 6%.^{101, 104, 105} Of great interest was the minimal use of acupuncture by patients as well. Among studies which documented acupuncture, use ranged from 0 – 8% within this population.^{101, 104, 106, 108} It is important to consider that such a surprising finding may be attributed to Chinese patients' perception of what therapies constitute CAM. Acupuncture has been in existence for greater than 2,500 years and is deeply rooted in Chinese culture and as such may be viewed as mainstream and not as “complementary” or “alternative”.¹⁰⁹

As well as wanting to try all treatment regimens,¹⁰⁷ Liu et al., and Cui et al., identified that Chinese cancer patients most often chose CAM as a means to treat their cancer directly, alleviate symptoms associated with cancer and its conventional treatment, and to increase strength and enhance immunity.^{101, 107} Furthermore, Abdullah et al., determined that other reasons for CAM use included the belief that simultaneous use of conventional medicine and CAM is more effective than using either one alone (51%), persuasion by family members and/or friends (48%), belief that CAM can improve general health status (42%), and CAM use enabled patients to assume a more proactive role in treatment decision-making (31%).¹⁰⁰ Although the above-reported results are comparable to results obtained with Canadian cancer patients, it is interesting to note that results on the reasons for CAM use among Chinese cancer patients were all conducted in Asia and none in North America. Chinese-Americans and Chinese-Canadians may be different from the Chinese population in Asia with respect to cultural characteristics and beliefs about conventional medicine and CAM. This may ultimately result in markedly different reasons for choosing to use CAM for cancer care.

Factors associated with CAM use among Chinese cancer patients were similar to those observed in Canadian cancer patients. The most frequently cited variables predicting CAM use included, younger age,^{100-102, 105, 107} higher education,^{100-102, 104} higher income,^{100, 101} advanced disease/metastasis,^{101, 106} and having received some form of conventional cancer treatment (e.g., chemo-, hormone-, radiotherapy).^{101, 104, 106} Other determinants of CAM use among Chinese cancer patients included the following: female

sex,¹⁰⁶ being married,¹⁰¹ attending support groups,¹⁰⁵ influence from family members and/or friends,¹⁰⁴ experiencing symptoms related to cancer or its treatments,¹⁰⁶ and religious participation.^{102, 106}

2.5 Chinese Attitudes Towards Conventional Medicine and TCM

In helping to understand the rates of CAM use among Chinese cancer patients, it is important to understand Chinese patients' beliefs surrounding both conventional medicine and TCM. Literature in this area is scant, with only four relevant studies published in the past decade.¹¹⁰⁻¹¹³ Studies will be discussed separately as each utilized different research methodologies and document specific issues relating to Chinese beliefs and attitudes towards conventional medicine and TCM.

Using qualitative analysis from semi-structured focus groups with 29 Chinese patients from Hong Kong, Lam, observed that patients' choice of medicine, whether conventional or TCM, was largely based on the type of illness experienced by the patient.¹¹⁰ Patients reported that TCM was effective for milder illnesses, such as coughs and colds and that TCM produced fewer side effects as opposed to conventional medicine. Furthermore, patients expressed the notion that TCM was better at curing disease. Many patients stated that TCM was used mainly as a supplement to conventional medicine in order to treat side effects associated with conventional medicine and to "clear the root of disease." TCM was seldom used in isolation, except in situations where patients perceived conventional medicine as failed or as an act of desperation. Not all experiences with TCM were positive, and several patients stated that TCM was slow-acting and inconvenient due to the fact that herbs needed to be boiled and it would take several visits to a TCM practitioner to be cured. The general consensus among focus groups was that patients would elicit the aid of conventional medicine practitioners first, because of the speed in controlling symptoms and convenience of conventional medicine, and then consult a TCM practitioner to help rid the body of disease and treat the side effects of conventional medicine.

Chan et al., studied 503 Hong Kong Chinese patients in order to investigate Chinese healthcare beliefs.¹¹¹ Using a structured, self-administered questionnaire, the researchers identified three specific clusters of patients, each with specific attitudes towards conventional medicine and TCM. The first cluster consisted of mainly older female patients of lower socioeconomic status (SES) with a greater proportion of chronic disease and time spent in hospital. This cluster was found to have the lowest trust in conventional medicine. The second cluster, which was comprised of younger male patients with higher education and income who have experienced higher proportions of acute illness, had the highest trust in conventional medicine and the lowest trust in TCM. Finally, the third cluster consisted of younger male patients with low SES and high proportions of chronic disease. This cluster had high trust in both conventional medicine and TCM. Although no plausible explanations for the results obtained were provided by the researchers, this study clearly highlighted the fact that the Chinese population is not a homogenous

sample and differences in healthcare choices are strongly influenced by socio-demographic and medical characteristics.

In another study, Simpson, explored the beliefs regarding diet in the context of TCM in a sample of 20 Chinese breast cancer patients in Hong Kong.¹¹² Within Chinese culture, there is a philosophical link between diet and health. Chinese diet therapies emphasize food that assists the body's ability to dispel disease and provide nourishment, thus regulating the harmonic balance between yin/yang. Because diet is so intrinsically linked with TCM, food and medicines (i.e., herbal remedies) are classified according to the same principles. Medicine is used to treat disease, and food is used for health. Thus, food can be used as medicine, but medicine cannot be used as food. Food, when used in the context of TCM to treat breast cancer is thought to increase weight, prevent nausea and vomiting, boost cell counts, and to modify mood and pain. However, patients and their families expressed much confusion as to what foods should or should not be eaten when treating someone with breast cancer. Respondents viewed conventional medicine's approach to treating cancer as fighting "poison against poison" and viewed TCM as a more holistic approach. In addition to using food, specific TCM modalities, such as qi-gong, were believed to improve blood circulation and enhance metabolism, thus helping the patient recover from "powerful" conventional treatments and to prevent recurrence. Furthermore, many patients and their families stated that some forms of conventional medicine were unacceptable and thus, TCM would be used as a first line of treatment against the cancer. For example, avoiding surgery and other forms of body disfigurement was of paramount importance due to the emphasis placed on young unmarried women being perfect, and thus more desirable marriage partners in Chinese culture.

In the final study reviewed, Liang, observed and interviewed 34 caregivers of children with cancer in Taiwan to assess the influence of culture on care practices.¹¹³ One of the themes identified was the attitudes of caregivers towards conventional medicine and TCM. Congruent with the above-mentioned studies, respondents believed that conventional medicine had a strong basis of scientific knowledge and would be most useful for treating childhood cancer, thus a practitioner of conventional medicine would always be visited first. Most caregivers reported using some form of TCM (e.g., food, herbal remedies, prayer) to help the child by increasing their strength and easing the side effects from conventional medicine. Although the majority of caregivers did not disclose their use of TCM for fear that the physician would disprove, they believed that the role of TCM was to support conventional treatments, thus providing the best chance for cure.

Overall, these studies pointed out that a considerable portion of Chinese patients believed in and encouraged the use of TCM as a complement to conventional medicine for the management of disease symptoms and to maintain overall health and well-being. Of interest was the fact that many Chinese patients did not communicate their use of TCM to their conventional medicine practitioners, similar to

the findings in Eisenberg et al., landmark study in which 72% of CAM users did not discuss their choice of therapies with their physicians.¹¹⁴ Among Chinese patients, reluctance to tell a physician that TCM/CAM therapies are being sought and utilized is due to patients' fear that their physician will "lose face" and is thus avoided.¹¹⁵

2.6 Measuring Acculturation in Health Research

Acculturation as an independent variable affecting health has been investigated by several researchers, especially in examining the association between acculturation and health service utilization.¹¹⁶⁻¹¹⁸ Acculturation refers to the process by which an individual's attitudes, beliefs, and behaviours become more congruent with that of the host or dominant society.¹¹⁹

Existing scales of acculturation measurement fall within two broad categories: single-item proxy measures and multi-dimensional scales. A third type consists of combination of the two. Within Chinese, and other Asian populations, single-item proxy measures, such as duration of residence, place of birth, generation, education, and language use/proficiency have been used to assess health service utilization relating to cancer.¹²⁰⁻¹²⁵ Results using such single-item proxy measures, however are variable and inconsistencies are evident when comparing studies investigating acculturation. For example, in the study conducted by Hislop et al., Chinese patients who had a longer duration of residence in Canada were significantly more likely to have had a Pap test in the previous two years ($p < 0.027$).¹²⁵ This relationship however was not found in the study conducted by Chen and Bakken, where degree of acculturation, as measured by language and social preferences, was not associated with perception of health service access and knowledge of breast cancer risks ($p = 0.11$, $p = 0.091$).¹²⁰ When used individually or in combination, single-item proxy measures offer researchers greater flexibility in exploring the relationships between health effects and separate dimensions of acculturation, but may provide conflicting results.¹²⁶

Despite wide-spread use of single-item proxy measures, they have been criticized for their lack of depth and providing only a superficial measure of acculturation. As a result, several multi-dimensional scales have been developed. With respect to Asian populations, the Suinn-Lew Asian Self-Identity Acculturation (SL-ASIA) scale is commonly used and its reliability and validity have been verified.¹²⁷⁻¹³⁰ The SL-ASIA is a 21-item instrument which includes the following categories: generation, language use/fluency, identity, friendship circles, and attitudes. A higher score indicates increased degree of acculturation. Using the SL-ASIA, Tang et al., observed that among Chinese-American women over 60 years of age, increased acculturation predicted having had a mammography and clinical breast examination at least once ($p < 0.05$); however, no effect was seen with adherence to breast cancer screening behaviour.¹³¹

Capturing the acculturation level of individuals is a difficult task and is complicated by other factors including education, income, SES, and geography and it is evident that results obtained in studies are greatly dependent on the choice of proxy measure or instrument scale. As such, researchers are calling for the development of refined scales which will provide consistent findings.^{119, 126}

3. STUDY METHODOLOGY

This study represents the first portion of a multi-phase, three-year study. Within the context of this larger study, this research (Phase Ia) provided an estimate of TCM/CAM use for cancer care among newly diagnosed Chinese cancer patients. Chinese cancer patients who self-identify in Phase Ia by filling a contact information form will be enrolled in the Phase Ib portion of the study and will participate in a 45-minute in-person interview collecting more detailed information, including beliefs surrounding cancer and TCM/CAM, satisfaction with both conventional medicine and TCM/CAM, and quality of life. One year later, interviewed patients who have given permission to be contacted again by the researchers will receive a telephone call for a follow-up interview (Phase II) in order to assess any changes in their use of TCM/CAM for their cancer care.

3.1 Design and Setting

This cross-sectional study involved all Chinese (Mandarin-, Cantonese-, or English-speaking) cancer patients who attended the Vancouver Cancer Centre (VCC) and the Richmond Community Oncology Centre (RCOC) for the first time between 13 March and 19 May 2006. The VCC is a full service cancer center offering several types of cancer therapies, such as chemo- and radiotherapy, with the exception of surgery. The RCOC provides systemic chemotherapy. In 2004, the VCC admitted approximately 5,258 new patients, of whom approximately 780 (15%) were identified as Chinese. The VCC's catchment area is estimated at two million people. At the RCOC, 40% of the patients are reported to be of Chinese origin. The cities of Richmond, Vancouver, and Burnaby, which have the highest proportion of Chinese population in BC, all fall within the Vancouver and Richmond cancer facilities' catchment area.

3.2 Sample Characteristics

All newly diagnosed Chinese cancer patients who attended the Vancouver and Richmond cancer facilities for treatment were invited to participate in a five-minute structured questionnaire upon their presentation at the admissions desk (Vancouver) or during their first oncology education session (Richmond). 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) all tumour sites and treatment regimens, b) ≥ 18 years of age, c) Mandarin-, Cantonese-, and/or English-speaking, and d) well enough to participate. Based on clinician feedback at the VCC, many Chinese speaking patients have expressed confidence in the care provided to them and they value contact in their own language.

Estimates have the total number of eligible participants at 900 for the year 2006, based on 780 new admissions per year at the VCC and based on at least 120 Chinese cancer patients who undergo chemotherapy treatment at the RCOC. These estimates factor out those patients not offered treatment, too ill to participate, palliative at diagnosis, and those who return to their country of origin for treatment. A sample size of 87 will provide 95% confidence with 10% absolute error in the estimated prevalence of TCM/CAM use among patients.¹³² The sample size calculation assumes that the population proportion under the null hypothesis, that is, the proportion of the newly diagnosed Chinese cancer patients who use TCM/CAM is 50%.

3.3 Measurement Instrument

Given this new area of investigation, virtually no tested and established research-derived measurement instruments were available and as such a structured questionnaire was used for data collection. The instrument was based on previous studies investigating the use of CAM and results from a study assessing CAM use among cancer patients across six Canadian provinces by Leis et al., (unpublished), as well as on expert reviews. The bilingual (Chinese and English) questionnaire consisted of 15 closed-ended questions and was designed to assess the prevalence of TCM/CAM use while collecting basic information on medical characteristics, socio-demographics, and cultural influences (see Appendix A). The instrument was devised using uncomplicated language due to anticipated communication barriers with patients (e.g., fluency in English, education levels). Questions take the form of “yes/no” and “check all that apply.” To make the translated instrument culturally appropriate, terms that are preferred and commonly used by the target population were utilized. If such a procedure was not adhered to, the translation may be foreign to the target population and accurate responses may not have been obtained.¹³³ The questionnaire focused on four domains to investigate the research objectives: a) prevalence of TCM/CAM use (use before and after cancer diagnosis, specific modalities used), b) medical characteristics (type of cancer, conventional treatment(s) received, disease duration), c) socio-demographics (age, sex, marital status, income, education), and d) heritage consistency and cultural characteristics (survey language, place of birth, parents’ place(s) of birth, language spoken at home, living situation). The questionnaire was designed to be self-administered and completed within five minutes.

To ensure that the maximum number of eligible patients were provided the opportunity to participate in the study, the questionnaire was translated from English into Chinese (one written language for both Mandarin and Cantonese). A common and highly recommended procedure known as “back translation” was used.^{134, 135} In this procedure, a translator renders the instrument into the target language. A different translator then translates the resulting interpretation back into the original language. Items with apparent discrepancies between the two translations were then modified. Evidence demonstrates that translations

are of a higher quality when undertaken by at least two independent translators.¹³⁶ The multiple translations allow for the detection of errors due to the language knowledge of a translator and divergent interpretations of ambiguous items in the original measurement instrument.^{135, 137}

3.4 Study Variables

As discussed previously, the study variables selected for inclusion in the measurement instrument were the result of previous research and expert reviews. Study variables are detailed in Table 3.1 according to their domain (socio-demographic, medical, cultural, TCM/CAM use), type (nominal, ordinal, interval), and their classification according to Andersen and Newman's model of health service utilization (predisposing, enabling, illness level). Variables classified in the socio-demographic and medical characteristics domains, as well as use of TCM/CAM before being diagnosed with cancer have all been investigated and researchers have found significant associations between these variables and TCM/CAM use in cancer patients, as discussed in Chapter 2. Novel to the knowledge base in this field of research are the variables assessing cultural factors associated with TCM/CAM (survey language, place of birth, parents' place(s) of birth, language spoken at home, living situation). Due to the complexity of measuring culture and study feasibility, these variables were selected to provide a proxy measure of patients' degree of acculturation. The cultural characteristics domain, which could have included several other variables, for example, attitudes towards TCM/CAM and conventional medicine, as well as beliefs surrounding the causes of cancer was limited to a maximum of four variables, which were compiled in a structured format in order to minimize the amount of time required for completion of the questionnaire. Study variables were then re-classified for analysis as described in Table 3.2.

3.5 Procedure

All eligible patients were identified at their first visit to their respective cancer centre and were provided a bilingual copy of a letter describing the study and the measurement instrument. Return of the questionnaire occurred anonymously in labeled boxes near the admission desk within each cancer centre. Questionnaires were coded and submission boxes were emptied regularly by a research assistant in order to maintain anonymity. A bilingual research assistant (Vancouver) and clinic nurses (Richmond) ensured that the questionnaires were distributed with the other standard forms to be completed as per BCCA policy and were available for any questions patients might have had.

Primary coordination of the study occurred at the University of Saskatchewan and a Chinese Community Advisory Committee was established at the BCCA's Sociobehavioural Research Centre to advise the researchers throughout the study stages and to collaborate in patient recruitment, data collection, and dissemination of results that may have been sensitive to the community. This committee included

members of the Canadian Cancer Society, Taiwanese Canadian Cultural Society, Richmond Hospital, Success, Provincial Health Service Authority, and Chinese cancer patients and caregivers.

Table 3.1 – Study variables collected with the measurement instrument.

Domain	Variable	Type	Model Factor
Socio-demographics	Age	Interval	Predisposing
	Sex	Nominal	Predisposing
	Marital Status	Nominal	Predisposing
	Education Level	Ordinal	Predisposing
	Household Income	Ordinal	Enabling
Medical	Cancer Type	Nominal	Illness Level
	Conventional Therapies Received	Nominal	Illness Level
	Disease Duration	Interval	Illness Level
Cultural	Survey Language	Nominal	Predisposing
	Place of Birth	Nominal	Predisposing
	Parents' Place(s) of Birth	Nominal	Predisposing
	Language Spoken at Home	Nominal	Predisposing
	Living Situation	Nominal	Predisposing
Prevalence of TCM/CAM	TCM/CAM Use Before Diagnosis	Nominal	Enabling
	TCM/CAM Use After Diagnosis	Nominal	Outcome
	Type(s) TCM/CAM Used After Diagnosis	Nominal	N/A

3.6 Data Analysis

Analyses were performed with Statistical Package for the Social Sciences (SPSS, Windows build 13, SPSS Inc., Chicago, IL). All hypothesis tests were two-sided and the type I error rate or significance level set at $\alpha = 0.05$. Based on the power calculation in comparing two binomial proportions using a two-sided test with independent samples, this study had 37% and 29% power to detect a statistically significant difference between acculturated and less acculturated patients and male and female TCM/CAM users, respectively.¹³⁸

1. **To estimate the prevalence of TCM/CAM use among Chinese cancer patients upon admission to the BCCA.** The point prevalence among newly diagnosed Chinese cancer patients was estimated with descriptive statistics by tabulating the number of patients who reported using TCM/CAM since being diagnosed with cancer (question #8). The types of TCM/CAM modalities and therapies used by patients were also identified. TCM/CAM users and non-users were compared across all study variables, except type of TCM/CAM used with X^2 -tests (or Fisher's Exact test) and t-tests,

depending on the type of the variable. A multiple logistic regression model was used to identify predictor variables of TCM/CAM use as discussed in the next section. It was hypothesized that TCM/CAM users and non-users would not differ significantly across all study variables.

Table 3.2 – Re-classified variables for analysis.

Category	Original Variables	New Variables
Place of birth	1. Canada 2. China; Hong Kong; Taiwan; Other	1. Canada 2. Outside Canada
Parental place(s) of birth	1. Canada 2. China; Hong Kong; Taiwan; Other	1. Canada 2. Outside Canada
Language spoken at home	1. English; French 2. Cantonese; Mandarin; Taiwanese; Other	1. Official language 2. Non-official language
Marital status	1. Single; Widowed; Divorced 2. Married; Common law	1. Single 2. Married
Living situation	1. Alone; Spouse; Parents; Children/grandchildren 2. With friends; Other relatives	1. With immediate family 2. With extended family
Education level	1. Elementary; Some high school 2. High school diploma; Technical/community college; Some university; University degree; Post-graduate training	1. < High school diploma 2. ≥ High school diploma
Income	1. < \$20, 000; \$21,000-\$40,000 2. \$41,000-\$60,000; \$61,000-\$80,000; >\$81,000	1. ≤ \$40,000 2. > \$40,000

2. **To identify socio-demographic, medical, and cultural characteristics predictive of TCM/CAM among Chinese cancer patients.** In order to identify patient characteristics based on socio-demographics, medical characteristics, and cultural influences predictive of TCM/CAM use since being diagnosed with cancer, multiple logistic regression was utilized on all study variables, except type of TCM/CAM used. After an initial regression analysis of all variables, the variables for age, sex, and cancer type and variables with $p < 0.25$ were then selected and inputted into another regression analysis to obtain the final predictive model. It was hypothesized that no study variables would significantly predict the use of TCM/CAM among Chinese cancer patients. Pertinent information relating to theory and application of logistic regression is discussed below.

Logistic regression is a form of regression which is used when the dependent variable (i.e., use of TCM/CAM after diagnosis of cancer) is dichotomous and the independent variables are of any type (i.e., nominal, ordinal, interval, or ratio).^{138, 139} Logistic regression can be used to predict a dependent variable on the basis of independent variables and to determine the percent of variance in the dependent variable

explained by the independent variables, rank the relative importance of independent variables, assess confounding effects, and statistically test interaction effects. Logistic regression applies maximum likelihood estimation after transforming the dependent variable into a logit variable, which is the natural log of the odds of the dependent variable occurring or not. Maximum likelihood estimation seeks to maximize the log likelihood, which reflects how likely it is (i.e., the odds) that the observed values of the dependent variable may be predicted from the observed values of the independent variables.¹³⁹ Maximum likelihood estimation is an iterative algorithm which starts with an initial arbitrary estimate of what the logit coefficients should be and the algorithm determines the direction and size change in the logit coefficients which will increase the log likelihood. After this initial function is estimated, the residuals are tested and a re-estimate is made with an improved function, and the process is repeated until convergence is reached (i.e., until the log likelihood does not change significantly). In this way, logistic regression estimates the probability of a certain event occurring. It is important to understand that logistic regression calculates changes in the log odds of the dependent variable, not changes in the dependent variable itself.

3. **To investigate differences in TCM/CAM and other characteristics between acculturated and less acculturated patients.** As with the comparison between TCM/CAM users and non-users, differences in patient characteristics among acculturated and less acculturated patients were explored with the appropriate significance tests [X^2 -tests (or Fisher's Exact test) and t-tests]. In this analysis, less acculturated patients were those defined as being born outside of Canada and completing the Chinese version of the questionnaire. Using this combination of single-item proxy measures, allowed for the discrimination of patients who may have been born outside of Canada but immigrated at a very young age and were thus more acculturated to Western society as observed by their comfort in completing the English version of the questionnaire. Patients were compared across all study variables to determine if differences existed in the socio-demographic, medical, and cultural characteristics between the two groups. It was hypothesized that acculturated and less acculturated patients would not differ significantly across all study variables.

4. **To explore differences in patient characteristics among TCM/CAM users.** In this subset analysis, male and female TCM/CAM users were compared with the appropriate significance tests [X^2 -tests (or Fisher's Exact test) and t-tests] across all study variables to determine if differences existed in the socio-demographic, medical, and cultural characteristics, as well as the types of TCM/CAM therapies used between the two groups. It was hypothesized that male and female users of TCM/CAM would not differ significantly across all study variables.

3.7 Ethical Considerations

Although the methodology employed for this study required much more in depth ethical considerations as opposed to other potential study procedures, such as mail surveys, the in-person recruitment strategy used in this study was implemented in order to maximize patient participation. Such procedures were utilized so as not to compromise the scientific validity of the research. As is evident in the literature surrounding research with Chinese populations, the preferred method for data collection revolves around personal contact with patients,^{101-103, 106, 107} and as such this methodology was employed. In addition, due to the fact this research targeted a specific ethno-cultural group, specific considerations for patient recruitment were employed in order to avoid any pitfall that might be related to racial profiling. This included having a research coordinator on staff at the BCCA clinic who facilitated the identification of eligible participants without having to rely on their physical characteristics.

Patients received information about the study in a cover letter prior to completing the questionnaire and consent was obtained by the actual completion and submission of the questionnaire to either the research assistant or in one of the designated collection boxes. Study data, including completed questionnaires and analyses performed are now stored in a locked cabinet in the Department of Community Health & Epidemiology at the University of Saskatchewan for a minimum of five years under the responsibility of Dr. Anne Leis. This study was approved by the University of Saskatchewan Behavioural Research Ethics Board, the BCCA Research Ethics Board, and the Richmond Health Services Delivery Area Research Advisory Committee as a minimal risk study (see Appendix B).

4. RESULTS

This study aimed to assess the use of TCM/CAM in a sample of newly diagnosed Chinese cancer patients in a major metropolitan centre in Canada. Univariate, bivariate, and multivariate analyses describe a heterogeneous population of patients who chose to use TCM/CAM for their cancer care.

4.1 Patient Characteristics

Univariate analyses were first used to describe the study population and their use of TCM/CAM. A total of 186 questionnaires were distributed and 91 were completed by patients yielding a response rate of 48.9%. The final study population was comprised of 51 females (56.7%) and 40 males (43.3%). The mean age was 59.5 ± 15.9 years (range: 21 – 89). The majority of patients (63.7%) completed the questionnaire

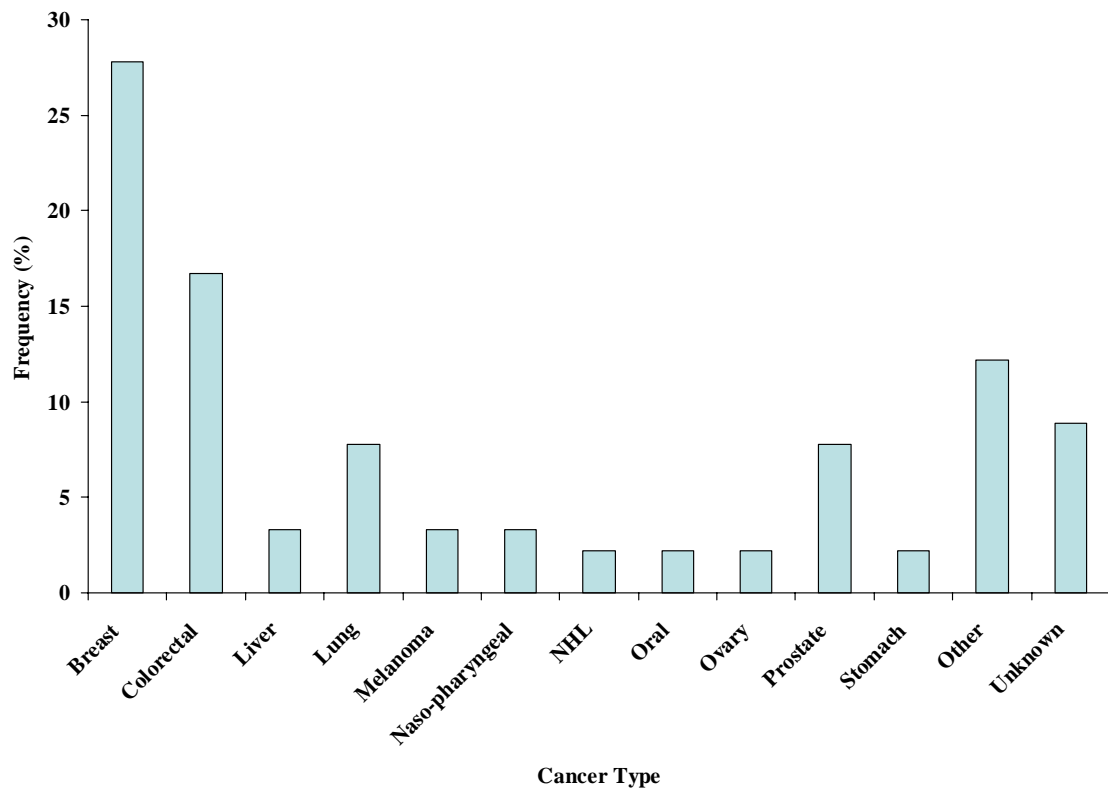


Figure 4.1 – Distribution of cancer types in all patients.

The “Other” category included 10 single incidence cancer types: appendix, bladder, bone, cervix, hearing tumour, leukemia, merkel nerve, pancreas, pituitary, and thyroid.

NHL, Non-Hodgkin's lymphoma.

in Chinese. Most patients were married (70.8%), had a high school diploma or higher education (59.6%), and had a total annual income \leq \$40,000 (48.9%). Patients had a mean disease duration of 2.4 ± 2.2 months at the time of the survey and the most frequent diagnoses were cancer of the breast (27.8%), colon/rectum (16.7%), and lung and prostate (7.8% each), as shown in Figure 4.1. The most common

Table 4.1 – Patient socio-demographic characteristics.

Variable	All Patients	Users	Non-users
Age (years, mean \pm SD)	59.5 \pm 15.9	58.8 \pm 15.7	60.2 \pm 16.3
	n (%)	n (%)	n (%)
Sex			
Male	38 (42.7)	11 (28.2)	27 (54.0)
Female	51 (57.3)	28 (71.8)	23 (46.0)
Marital Status			
Common law	2 (2.2)	0 (0.0)	2 (4.0)
Married	63 (70.8)	29 (74.4)	34 (68.0)
Single*	24 (27.0)	10 (25.6)	14 (28.0)
Education Level			
Elementary	17 (19.1)	8 (20.0)	9 (18.4)
Some high school	18 (20.2)	6 (15.0)	12 (24.5)
High school diploma	12 (13.5)	5 (12.5)	7 (14.3)
Technical/community college	12 (13.5)	4 (10.0)	8 (16.3)
Some university	13 (14.6)	7 (17.5)	6 (12.2)
University degree	12 (13.5)	7 (17.5)	5 (10.2)
Postgraduate training	4 (4.5)	2 (5.0)	2 (2.1)
Other	1 (1.1)	1 (2.5)	0 (0.0)
Household Income			
< \$20,000	22 (24.4)	11 (27.5)	11 (22.0)
\$21,000 - \$40,000	22 (24.4)	12 (30.0)	10 (20.0)
\$41,000 - \$60,000	7 (7.8)	3 (7.5)	4 (8.0)
\$61,000 - \$80,000	6 (6.7)	1 (2.5)	5 (10.0)
> \$81,000	3 (3.3)	0 (0.0)	3 (6.0)
Don't know/Don't want to answer	30 (33.3)	13 (32.5)	17 (34.0)

* Includes widowed, separated, and divorced patients.

conventional treatment received was surgery (46.7%); however, 30.0% of patients reported not having had any conventional treatment at the time of the survey. With respect to patients' cultural characteristics, just over half of the patients were born in China (51.1%). Patients were most commonly observed to be living with their partner/spouse (62.2%) and Cantonese was the language most often used at home (60.0%). Socio-demographic, medical, and cultural characteristics of study participants are shown in Tables 4.1 – 4.3. No information was collected on non-responders.

Table 4.2 – Patient medical characteristics.

Variable, n (%)	All Patients	Users	Non-users
Disease Duration (months, mean ± SD)	2.4 ± 2.2	2.8 ± 2.6	2.1 ± 1.8
	n (%)	n (%)	n (%)
TCM/CAM use before diagnosis	35 (38.9)	25 (62.5)	10 (20)
TCM/CAM use after diagnosis	40 (100)	n/a	n/a
Cancer Type			
Breast	25 (27.8)	12 (30.0)	13 (26.0)
Colorectal	15 (16.7)	6 (15.0)	9 (18.0)
Liver	3 (3.3)	1 (2.5)	2 (4.0)
Lung	7 (7.8)	4 (10.0)	3 (6.0)
Melanoma	3 (3.3)	0 (0.0)	3 (6.0)
Naso-pharyngeal	3 (3.3)	2 (5.0)	1 (2.0)
Non-Hodgkin's lymphoma	2 (2.2)	2 (5.0)	0 (0.0)
Oral	2 (2.2)	1 (2.5)	1 (2.0)
Ovary	2 (2.2)	1 (2.5)	1 (2.0)
Prostate	7 (7.8)	2 (5.0)	5 (10.0)
Stomach	2 (2.2)	0 (0.0)	2 (4.0)
Other	11 (12.2)	5 (12.5)	6 (12.0)
Unknown	8 (8.9)	4 (10.0)	4 (8.0)
Conventional Therapies Received*			
None	27 (30.0)	7 (17.5)	20 (40.0)
Chemotherapy	19 (21.1)	12 (30.0)	7 (14.0)
Radiotherapy	22 (24.4)	15 (37.5)	7 (14.0)
Surgery	42 (46.7)	19 (47.5)	23 (46.0)
Other	2 (2.2)	2 (5.0)	0 (0.0)

* Due to multiple selection options on the questionnaire, percentages will not sum to 100%.

Table 4.3 – Patient cultural characteristics.

Variable, n (%)	All Patients	Users	Non-users
Survey Language			
English	33 (36.3)	11 (27.5)	22 (44.0)
Chinese	58 (63.7)	29 (72.5)	28 (56.0)
Place of Birth			
Canada	9 (10.0)	1 (2.5)	8 (16)
China	46 (51.1)	18 (45.0)	28 (56.0)
Hong Kong	27 (30.0)	16 (40.0)	11 (22.0)
Taiwan	4 (4.4)	4 (10.0)	0 (0.0)
Other	4 (4.4)	1 (2.5)	3 (6.0)
Parental Place(s) of Birth*			
Canada	3 (3.3)	0 (0.0)	3 (6.0)
China	68 (75.6)	33 (82.5)	35 (70.0)
Hong Kong	7 (7.8)	3 (7.5)	4 (8.0)
Taiwan	3 (3.3)	2 (5.0)	1 (2.0)
Other	1 (1.1)	0 (0.0)	1 (2.0)
Language Spoken at Home			
Cantonese	54 (60.0)	27 (67.5)	27 (54.0)
English	14 (15.6)	2 (5.0)	12 (24.0)
Mandarin	20 (22.2)	11 (27.5)	9 (18.0)
Other	2 (2.2)	0 (0.0)	2 (4.0)
Living Situation*			
Alone	11 (12.2)	3 (7.5)	8 (16.0)
With children/grandchildren	38 (42.2)	16 (40.0)	22 (44.0)
With other relatives	2 (2.2)	2 (5.0)	0 (0.0)
With parent(s)	3 (3.3)	2 (5.0)	1 (2.0)
With partner/spouse	56 (62.2)	25 (62.5)	31 (62.0)
Other	2 (2.2)	2 (5.0)	0 (0.0)

* Due to multiple selection options on the questionnaire, percentages will not sum to 100%.

4.2 Frequency of TCM/CAM Use

Forty patients (44.4%) reported having used TCM/CAM since their cancer diagnosis. Among users, the mean number of TCM/CAM modalities used was 1.75 (range: 1 – 5). The most frequently used TCM/CAM modalities included, herbal remedies (60.0%), vitamins/minerals (27.5%), and prayer (25.0%). The distribution of therapies used by male and female patients is shown in Figure 4.2. Thirty-five patients (38.9%) reported using TCM/CAM prior to being diagnosed with cancer and of these patients, 10 (28.6%) stopped using TCM/CAM after being diagnosed. At the same time, of the 55 patients who did not use prior TCM/CAM, 15 (27.3%) began using such modalities after being told of their diagnosis.

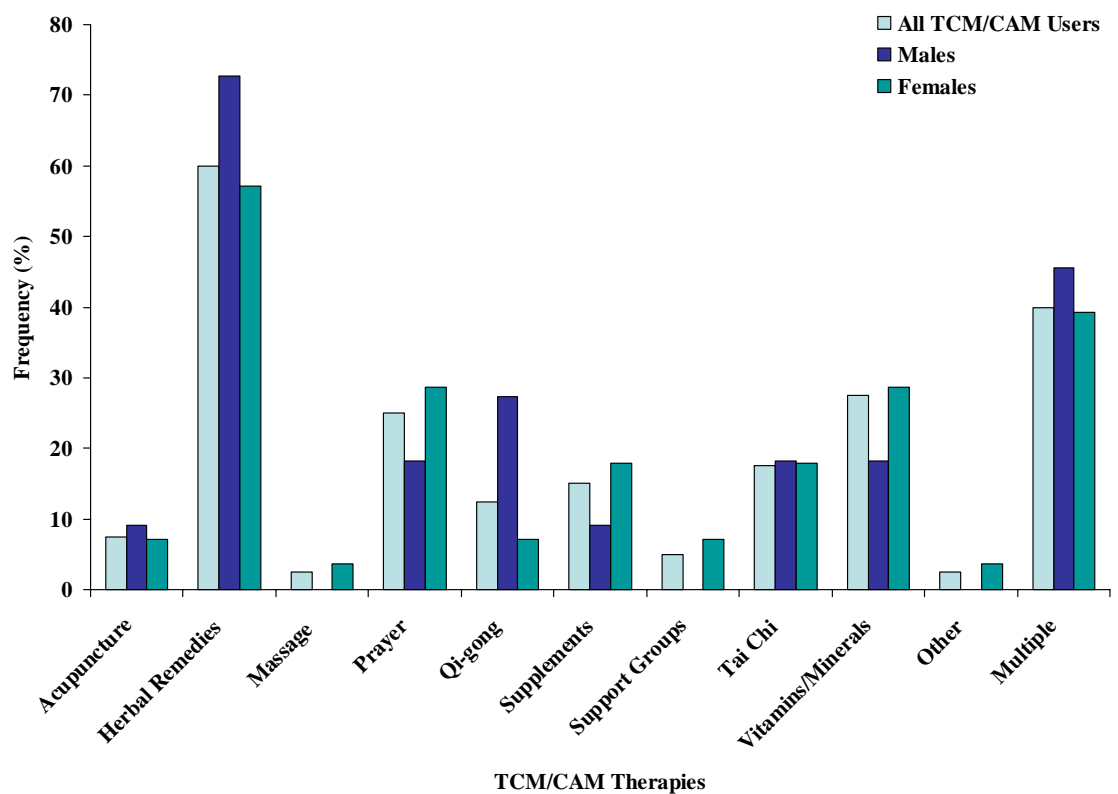


Figure 4.2 – Distribution of TCM/CAM therapies used by patients.

The “Multiple” category consists of those patients who reported using > 1 TCM/CAM therapy. No significant differences in the type of TCM/CAM therapies used by male and female patients were observed in this sample.

4.3 Comparison of TCM/CAM Users and Non-users

Using Andersen and Newman’s model of health service utilization as a guide, important variables previously identified in earlier research were selected, categorized, and analyzed using bivariate methods to determine independent factors associated with TCM/CAM use within this population. Predisposing,

enabling, and illness level factors within the model were categorized into socio-demographic, medical, and cultural characteristics (see Table 3.1) and then analyzed as described in the following sections.

Table 4.4 shows both socio-demographic factors significantly and not significantly associated with the use of TCM/CAM at any time since diagnosis. In terms of socio-demographic factors, female sex (OR 2.988; 95% CI 1.225, 7.291; $p = 0.015$) was the only variable significantly associated with TCM/CAM use. Total household income demonstrated a trend towards significance, whereby patients with > \$40,000 annual income were less likely to use TCM/CAM (OR 0.304; 95% CI 0.085, 1.091; $p = 0.081$). Age, marital status and level of education were not significantly associated with TCM/CAM use.

Table 4.4 – Bivariate analysis of socio-demographics and TCM/CAM use.

Variable, n (%)	t (df)	OR	95% CI	P-value
Age (years)	0.415 (88)	n/a	n/a	0.679
	X² (df)			
Sex				
Male	REF			
Female	5.959 (1)	2.988	1.225, 7.291	0.015
Marital Status				
Single*	REF			
Married	0.062 (1)	1.128	0.437, 2.909	0.804
Education Level				
< High school diploma	REF			
≥ High school diploma	0.262 (1)	1.250	0.532, 2.937	0.608
Household Income				
≤ \$40,000	REF			
> \$40,000	3.526 (1)	0.304	0.085, 1.091	0.081
Don't know/Don't want to answer	0.571 (1)	0.698	0.275, 1.776	0.540

Note: Unless a t-test was performed, for those variables where the OR is not available there is a null value in the 2 x 2 table.

* Includes widowed, separated, and divorced patients.

Table 4.5 shows the association of medical characteristics with TCM/CAM use. Use of TCM/CAM was significantly more prevalent among patients who used TCM/CAM prior to their diagnosis (OR 6.667; 95% CI 2.595, 17.124; $p < 0.001$) and those patients who had received or were currently receiving chemo- or radiotherapy (OR 5.238; 95% CI 1.724, 15.919; $p = 0.003$). Type of cancer was not significantly associated with using TCM/CAM for cancer care.

Table 4.5 – Bivariate analysis of medical characteristics and TCM/CAM use.

Variable, n (%)	t (df)	OR	95% CI	P-value
Disease Duration (months)	-1.010 (36)	n/a	n/a	0.319
	X² (df)			
TCM/CAM use before diagnosis	16.890 (1)	6.667	2.595, 17.124	<0.001
Cancer Type				
Breast	0.177 (1)	1.220	0.483, 3.078	0.674
Colorectal	0.144 (1)	0.804	0.260, 2.485	0.704
Liver	0.155 (1)	0.615	0.0054, 7.042	1.000
Lung	0.496 (1)	1.741	0.366, 8.272	0.695
Melanoma	2.483 (1)	n/a	n/a	0.251
Naso-pharyngeal	0.621 (1)	2.579	0.225, 29.516	0.583
Non-Hodgkin's lymphoma	2.557 (1)	n/a	n/a	0.195
Oral	0.026 (1)	1.256	0.076, 20.734	1.000
Ovary	0.026 (1)	1.256	0.076, 20.734	1.000
Prostate	0.775 (1)	0.474	0.087, 2.582	0.456
Stomach	1.636 (1)	n/a	n/a	0.501
Other	0.005 (1)	1.048	0.295, 3.720	0.943
Unknown	0.110 (1)	1.278	0.299, 5.463	1.000
Conventional Therapies Received				
None	REF			
Surgery	0.924 (1)	1.746	0.557, 5.469	0.399
Chemo/Radiotherapy	9.075 (1)	5.238	1.724, 15.919	0.003

Note: Unless a t-test was performed, for those variables where the OR is not available there is a null value in the 2 x 2 table.

Table 4.6 shows the association between cultural characteristics and use of TCM/CAM. Immigrant patients were more likely than those born in Canada to use TCM/CAM (OR 7.429; 95% CI 0.888, 62.140; p = 0.040). Also, patients who reported speaking a non-official language most frequently at home were more likely to use TCM/CAM since their diagnosis (OR 6.000; 95% CI 1.257, 28.639; p = 0.018). Other cultural variables including survey language, parental place of birth, and living situation were not significantly associated with using TCM/CAM. Combining the variables for survey language and place of birth as a measure of acculturation did not significantly predict use of TCM/CAM in this study population (OR 2.071; 95% CI 0.850, 5.048; p = 0.107).

Table 4.6 – Bivariate analysis of cultural characteristics and TCM/CAM use.

Variable, n (%)	X ² (df)	OR	95% CI	P-value
Survey Language				
English	REF			
Chinese	2.605 (1)	2.071	0.850, 5.048	0.107
Place of Birth				
Canada	REF			
Outside Canada	4.500 (1)	7.429	0.888, 62.140	0.040
Parental Place(s) of Birth				
Canada	REF			
Outside Canada	2.483 (1)	n/a	n/a	0.251
Language Spoken at Home				
Official language	REF			
Non-official language	6.107 (1)	6.000	1.257, 28.639	0.018
Living Situation				
With immediate family	REF			
With extended family	1.297 (1)	n/a	n/a	0.438

Note: Unless a t-test was performed, for those variables where the OR is not available there is a null value in the 2 x 2 table.

4.4 Predictors of TCM/CAM Use

Continuing from the bivariate investigation, the next step in analyzing the data was to perform a logistic regression analysis. Again, using Andersen and Newman's model of health service utilization as a framework, all variables were entered into the regression model. Those variables reporting a significant association with TCM/CAM use were then re-entered into the regression analysis and a final predictive model was obtained. Logistic regression, a form of multivariate analysis differs from bivariate methods in that it allows for the identification of independent predictors of TCM/CAM use, while all other variables in the model are controlled for.

Table 4.7 depicts the final logistic regression model predicting use of TCM/CAM since being diagnosed with cancer. This final parsimonious model exhibited a good fit with the data according to the Hosmer and Lemeshow Goodness-of-Fit Test ($p = 0.800$). The model included socio-demographic elements including age, sex, and total annual household income; medical characteristics, including previous use of TCM/CAM and cancer type; and place of birth as the sole cultural characteristic. Due to small counts

within the various cancer types, only the two most prevalent cancer types (breast and colorectal) were placed in the model, while the remaining cancer types were pooled into the “Other” category. Both prior use of TCM/CAM ($p < 0.001$) and being born outside of Canada ($p = 0.030$) predicted TCM/CAM use, whereas those patients with an annual income $> \$40,000$ were significantly less likely to use TCM/CAM ($p = 0.043$). When controlling for all other variables in the model, patients who selected, “Don’t know/Don’t want to answer” in response to the income question on the questionnaire, were comparable to patients in the $> \$40,000$ category, approaching significance in the logistic regression ($p = 0.177$). No effect modification or confounding was present in the multivariate analysis.

Table 4.7 – Multivariate analysis of TCM/CAM use.

Variable	OR _{adj}	95% CI	P-value
TCM/CAM use before diagnosis	30.721	6.166, 153.059	<0.001
Age (years)	0.994	0.957, 1.033	0.775
Sex			
Male	REF		
Female	1.856	0.383, 8.994	0.442
Household Income			
$\leq \$40,000$	REF		
$> \$40,000$	0.122	0.016, 0.932	0.043
Don’t know/Don’t want to answer	0.365	0.084, 1.578	0.177
Cancer Type			
Breast	REF		
Colorectal	0.220	0.025, 1.961	0.175
Other	2.282	0.446, 11.681	0.322
Place of Birth			
China	REF		
Hong Kong	4.311	1.113, 16.699	0.034
Canada	0.049	0.003, 0.740	0.030
Other	4.169	0.530, 32.823	0.175

4.5 Comparison of Acculturated and Less Acculturated Patients

In continuing with the above-stated research objectives, the effect of culture or acculturation on the use of TCM/CAM in this population was explored. For the purposes of this study, less acculturated patients were defined as those patients who were born outside of Canada and completed the questionnaire in

Chinese, rather than in English. Bivariate analyses were guided by Andersen and Newman's model of health service utilization and conducted as previously described.

Table 4.8 shows the associations between study variables and acculturated and less acculturated patients. Fifty-seven patients (63.7%) were classified as less acculturated. There was no statistically significant difference in the use of TCM/CAM since being diagnosed with cancer between acculturated and less

Table 4.8 – Comparison of acculturated and less acculturated patients.

Variable	Acculturated	Less Acculturated	t (df)	OR 95% CI	P-value
Age (years, mean ± SD)	57.8 ± 17.1	60.5 ± 15.3	-0.77 (88)	n/a	0.441
Disease Duration (months, mean ± SD)	2.0 ± 1.5	2.8 ± 2.7	-1.15 (26)	n/a	0.259
	n (%)	n (%)	X² (df)		
Current TCM/CAM	11 (33.3)	29 (50.9)	2.605 (1)	2.071 (0.850, 5.048)	0.107
Prior TCM/CAM	14 (42.4)	21 (36.8)	0.274 (1)	0.792 (0.330, 1.900)	0.601
Sex					
Male	12 (36.4)	26 (46.4)			
Female	21 (63.6)	30 (53.6)	0.860 (1)	0.659 (0.273, 1.594)	0.354
Marital Status					
Single*	13 (39.4)	11 (19.6)			
Married	20 (60.6)	45 (80.4)	4.113 (1)	2.659 (1.018, 6.947)	0.043
Education Level					
< High school diploma	11 (34.4)	25 (43.9)			
≥ High school diploma	21 (65.6)	32 (56.1)	0.765 (1)	0.670 (0.273, 1.645)	0.382
Household Income					
≤ \$40,000	12 (36.4)	32 (56.1)			
> \$40,000	11 (33.3)	5 (8.8)	8.539 (1)	0.170 (0.049, 0.594)	0.003
Did not respond	10 (30.3)	20 (35.1)	0.314 (1)	0.750 (0.274, 2.055)	0.575
Cancer Type					
Breast	15 (45.5)	10 (17.5)	8.116 (1)	0.255 (0.097, 0.672)	0.004
Colorectal	4 (12.1)	11 (19.3)	0.775 (1)	1.734 (0.504, 5.962)	0.559

Liver	0 (0.0)	3 (5.3)	1.797 (1)	n/a	0.296
Lung	5 (15.2)	2 (3.5)	3.950 (1)	0.204 (0.037, 1.117)	0.095
Melanoma	1 (3.0)	2 (3.5)	0.015 (1)	1.164 (0.101, 13.346)	1.000
Naso-pharyngeal	0 (0.0)	3 (5.3)	1.797 (1)	n/a	0.296
Non-Hodgkin's lymphoma	0 (0.0)	2 (3.5)	1.184 (1)	n/a	0.530
Oral	0 (0.0)	2 (3.5)	1.184 (1)	n/a	0.530
Ovary	1 (3.0)	1 (1.8)	0.157 (1)	0.571 (0.035, 9.450)	1.000
Prostate	0 (0.0)	7 (12.3)	4.394 (1)	n/a	0.044
Stomach	1 (3.0)	1 (1.8)	0.157 (1)	0.571 (0.035, 9.450)	1.000
Other	3 (9.1)	8 (14.0)	0.476 (1)	1.633 (0.402, 6.638)	0.740
Unknown	3 (9.1)	5 (8.8)	0.003 (1)	0.962 (0.214, 4.310)	1.000
Conventional Therapies					
None	12 (36.4)	15 (26.3)			
Surgery	8 (24.2)	21 (36.8)	1.731 (1)	2.100 (0.690, 6.393)	0.188
Chemo/Radiotherapy	13 (39.4)	21 (36.8)	0.240 (1)	1.292 (0.463, 3.609)	0.624
Parental Place(s) of Birth					
Canada	3 (9.1)	0 (0.0)			
Outside Canada	30 (90.9)	57 (100.0)	5.361 (1)	n/a	0.046
Language Spoken at Home					
Official language	13 (39.4)	1 (1.8)			
Non-official language	20 (60.6)	56 (98.2)	22.541 (1)	36.400 (4.47, 296.37)	<0.001
Living Situation					
With immediate family	33 (100.0)	55 (98.2)			
With extended family	0 (0.0)	1 (1.8)	0.596 (1)	n/a	1.000

Note: Unless a t-test was performed, for those variables where the OR is not available there is a null value in the 2 x 2 table.

* Includes widowed, separated, and divorced patients.

acculturated patients; however, the trend showed that less acculturated patients may be more likely to use TCM/CAM compared to acculturated patients ($p = 0.107$). Less acculturated patients were more likely to be married ($p = 0.043$), have parents born outside of Canada ($p = 0.046$), and speak a non-official language most often at home ($p < 0.001$), but were less likely to report an annual income of $> \$40,000$ ($p = 0.003$). As well, cancer types more prevalent in less acculturated patients included tumours of the

breast ($p = 0.004$) and prostate ($p = 0.044$). The distribution of therapies used by acculturated and less acculturated patients is shown in Figure 4.3. A higher proportion of less acculturated patients used vitamins/minerals, acupuncture, tai chi, prayer, massage, and qi-gong; however, no significant differences were observed.

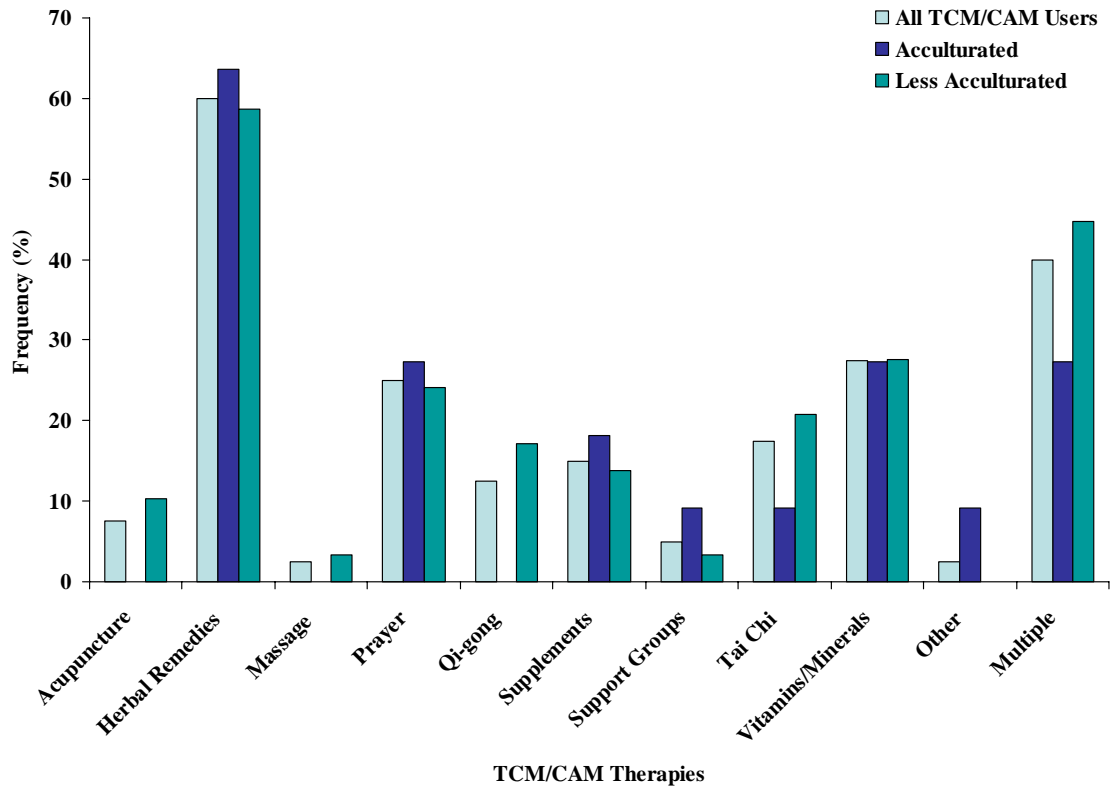


Figure 4.3 – Distribution of TCM/CAM therapies used by patients.

The “Multiple” category consists of those patients who reported using > 1 TCM/CAM therapy. No significant differences in the type of TCM/CAM therapies used by acculturated and less acculturated patients were observed in this sample.

4.6 Differences Between Male and Female TCM/CAM Users

To explore sex differences in the use of TCM/CAM, a final subset analysis of the study population was conducted. Male and female TCM/CAM users were compared across relevant socio-demographic, medical, and cultural characteristics using bivariate methods as described previously.

Twenty-eight users (70.0%) were female and the only significant difference between the two groups was the length of disease duration ($p < 0.001$). Although females used a higher proportion of TCM/CAM therapies, except for herbal remedies (72.7% vs. 57.1%), acupuncture (9.1% vs. 7.1%), and qi-gong (27.3% vs. 7.1%), no statistically significant differences were noted in the types of TCM/CAM therapies

used by males and females in this study population. A comparison of study variables between male and female TCM/CAM users is shown in Table 4.9.

Table 4.9 – Comparison of TCM/CAM users by sex.

Variable	Male	Female	t (df)	OR 95% CI	P-value
Age (years, mean ± SD)	63.6 ± 13.4	57.1 ± 16.6	1.155 (37)	n/a	0.255
Disease Duration (months, mean ± SD)	0.0 ± 0.0	3.2 ± 2.5	-4.84 (13)	n/a	<0.001
	n (%)	n (%)	X² (df)		
Prior TCM/CAM	5 (45.5)	20 (71.4)	2.315 (1)	3.000 (0.71, 12.69)	0.128
Marital Status					
Single *	1 (9.1)	9 (32.1)			
Married	10 (90.9)	19 (67.9)	2.201 (1)	0.211 (0.023, 1.912)	0.228
Education Level					
< High school diploma	5 (45.5)	9 (32.1)			
≥ High school diploma	6 (54.5)	19 (67.9)	0.608 (1)	1.759 (0.422, 7.333)	0.435
Household Income					
≤ \$40,000	9 (81.8)	14 (50.0)			
> \$40,000	1 (9.1)	3 (10.7)	0.292 (1)	1.929 (0.17, 21.54)	1.000
Did not respond	1 (9.1)	11 (39.3)	3.665 (1)	7.071 (0.77, 64.58)	0.113
Cancer Type					
Colorectal	1 (9.1)	5 (17.9)	0.466 (1)	2.174 (0.22, 21.08)	0.655
Liver	1 (9.1)	0 (0.0)	2.612 (1)	n/a	0.282
Lung	2 (18.2)	2 (7.1)	1.046 (1)	0.346 (0.042, 2.831)	0.562
Naso-pharyngeal	2 (18.2)	0 (0.0)	5.366 (1)	n/a	0.074
Non-Hodgkin's lymphoma	0 (0.0)	2 (7.1)	0.828 (1)	n/a	1.000
Oral	1 (9.1)	0 (0.0)	2.612 (1)	n/a	0.282
Other	1 (9.1)	4 (14.3)	0.191 (1)	1.667 (0.17, 16.83)	1.000
Unknown	1 (9.1)	2 (7.1)	0.042 (1)	0.769 (0.063, 9.454)	1.000
Conventional Therapies					
None	2 (18.2)	5 (17.9)			
Surgery	3 (27.3)	8 (28.6)	0.007 (1)	0.938 (0.197, 4.460)	1.000

Chemo/Radiotherapy	6 (54.5)	15 (53.6)	0.003 (1)	1.040 (0.256, 4.218)	0.956
Survey Language					
English	2 (18.2)	9 (32.1)			
Chinese	9 (81.8)	19 (67.9)	0.760 (1)	0.469 (0.084, 2.634)	0.461
Place of Birth					
Canada	0 (0.0)	1 (3.6)			
Outside Canada	11 (100.0)	27 (96.4)	0.403 (1)	n/a	1.000
Parental Place(s) of Birth					
Canada	0 (0.0)	0 (0.0)			
Outside Canada	11 (100.0)	28 (100.0)	n/a	n/a	n/a
Language Spoken at Home					
Official language	1 (9.1)	1 (3.6)			
Non-official language	10 (90.9)	27 (96.4)	0.495 (1)	2.700 (0.15, 47.39)	0.490
Living Situation					
With immediate family	11 (100.0)	28 (100.0)			
With extended family	0 (0.0)	0 (0.0)	n/a	n/a	n/a

Note: Unless a t-test was performed, for those variables where the OR is not available there is a null value in the 2 x 2 table.

* Includes widowed, separated, and divorced patients.

5. DISCUSSION

The Canadian population is expected to grow in the decades to come, mainly through immigration. By 2017, the number of Chinese individuals residing in Canada is expected to be 1.8 million; an increase of 80% from the 2001 census.¹⁴⁰ Importantly, immigrants to Canada must adapt to a new social system. Along the way, they contribute new values and practices and adopt the prevailing cultural paradigm. However, many ethnic groups, including Chinese, maintain some of their native identity through language, health beliefs, folk practices, and other customs. To date, very little is known about TCM/CAM use among Chinese cancer patients.

Andersen and Newman's model of health service utilization offered the theoretical framework that guided this research. According to this model, while the need (illness level factors) for healthcare is the primary factor determining use of healthcare services, predisposing and enabling factors are also critical. In particular, culture-specific predisposing factors have been acknowledged to impact healthcare utilization in the Chinese population.^{141, 142} As well, this theoretical framework has been used to guide previous research in CAM utilization.¹⁴³⁻¹⁴⁵ In this study, it was found that in addition to the need to use TCM/CAM, most likely due to side effects from chemo- and radiotherapy, predisposing cultural factors such as immigrant status and speaking a non-official language at home provide a superficial glimpse at the importance of investigating cultural influences in choosing CAM for cancer care. Such variables appear to be proxy measures of acculturation and warrant further investigation. Further research with this population (Phases Ib, II) will attempt to uncover further predisposing and enabling cultural factors, such as beliefs surrounding cancer and its causes/prevention and attitudes towards conventional and CAM therapies. In depth investigations will no doubt help to elucidate the cultural influences in the use of CAM in cancer care of not only Chinese-Canadians, but also other ethnic minorities residing in Canada. For example, research has shown that Chinese patients hold strong beliefs that cancer and other life-threatening diseases are caused by an increase in heat and an imbalance of yin/yang within the body.¹⁴⁶⁻¹⁵⁰ Thus, therapies such as qi-gong, tai chi, and acupuncture which attempt to regain energy flow and restore balance may be more desirable and philosophically congruent with their cultural beliefs, as compared to conventional cancer treatments which are considered to be too strong and produce far too many severe side effects.¹¹⁰⁻¹¹³

5.1 Utilization of TCM/CAM

This study found that approximately 44% of newly diagnosed Chinese patients with various cancers have used or were currently using TCM/CAM therapies since being diagnosed with cancer. The distribution of cancer types in this sample was comparable to the 2006 incidence estimates for BC.¹⁵¹ The prevalence of TCM/CAM use found in this study is comparable to studies conducted in Canada with a majority Caucasian population^{53-58, 61-64} and to studies conducted in the United States with Chinese-American cancer patients.^{102-105, 108} However, the prevalence of TCM/CAM use is somewhat lower than observed in studies conducted in China, Hong Kong, and Taiwan.^{100, 101, 106, 107} This result may be due to increased availability and accessibility and general acceptance of TCM/CAM in Asia as compared to North America. Furthermore, a minority of patients used TCM/CAM prior to their diagnosis. The increase in use after diagnosis is a phenomenon that has been reported elsewhere in the literature and can be attributed to patients' need to try all available treatment options, ease the side effects of conventional therapies, and to become more active in the treatment decision-making process.⁸²

The types of TCM/CAM therapies used by patients were similar to patterns observed in most other studies, with the exception of herbal remedies and vitamins/minerals. The proportion of patients using herbal remedies was more similar to that seen in studies conducted in Asia with Chinese cancer patients,^{100, 106} whereas use of vitamins/minerals were more congruent with studies conducted in Canada with Caucasian cancer patients.^{61, 63} This observation shows that Chinese-Canadian cancer patients are a distinct group and cannot be homogenized with either Chinese patients overseas or with the general Canadian population and highlights the need for cross-cultural research and exploring the influence of ethnicity and culture in understanding CAM use in patients with cancer. Interestingly, despite recent evidence demonstrating the effect of acupuncture in reducing the signs and symptoms of chemo- and radiotherapy-induced nausea and vomiting,^{152, 153} only a few patients reported using acupuncture as compared to other studies.^{51, 64} This is most likely due to the fact that this study focused on newly diagnosed cancer patients, many of whom had not yet begun conventional cancer treatments. However, upon review of the data, it was observed that of the three patients who reported using acupuncture for their cancer care, two reported having had or currently undergoing chemo- and/or radiotherapy.

The only socio-demographic factor associated with TCM/CAM use was female sex. Female sex has been widely documented as being associated with CAM use in cancer populations,^{61, 66, 82, 95, 98, 99, 106} however, the trend of lower income towards significance is inconsistent with previous research. Although several studies have documented no association between income and CAM use, only one other study has demonstrated that TCM/CAM users tended to have a low total household annual income.⁶⁵ Such a finding seems counter-intuitive considering the fact that most CAM therapies are not covered under provincial and/or private healthcare insurance and thus the majority of costs associated with CAM are

consumer-born. This finding may be the result of several potential factors including the fact that a large proportion of patients chose not to respond to this survey item. As a result, conclusions drawn may not reflect the true population. Imputing a high income classification to those patients who did not report their income negated the association between low income and TCM/CAM use; however, this may be the result of selection bias due to small sample size. Also, it was shown that less acculturated patients were more likely to report a low income. This finding is consistent with previous research.¹⁵⁴ These patients may have stronger ties with family or friends in their country of origin who have the means to send various herbal remedies or supplements overseas. An ad-hoc analysis did not show that either low income or less acculturated patients were more likely to use so-called “free” TCM/CAM (support groups, tai chi, qi-gong, and prayer) compared to acculturated patients. Furthermore, studies that found associations between higher income or SES and CAM use were conducted with a sample representing the dominant culture; in the case of North America, Caucasian. It is likely that these patients were highly acculturated and thus used disposable income as a means to try any and all possible cancer treatments. In this study, cultural factors may play a greater role in predicting TCM/CAM use. Less acculturated patients may have a stronger belief in the effectiveness of TCM/CAM in the treatment of cancer and thus chose to use such therapies despite personal financial costs. Later phases of this study will attempt to uncover if such beliefs are in fact predictive of TCM/CAM within this population.

Medical and cultural factors were also evaluated with bivariate analysis. Medical characteristics associated with TCM/CAM use were prior use of TCM/CAM and having received or were currently receiving chemo- or radiotherapy, and have been reported in previous studies of cancer patients, mostly for the reduction of symptoms associated with such conventional cancer treatments.^{57, 61, 62, 72, 77, 88, 101, 104, 106} The BCCA advises patients on its website to withhold from ingesting or injecting CAM modalities while undergoing chemo-, hormone-, or radiotherapy.¹⁵⁵ However, it appears that Chinese patients attending the BCCA are either disregarding this recommendation or are not properly educated on the matter. This finding is a cause for concern, as many herbal remedies used in cancer care have been implicated in several herb-drug interactions leading to decreased effectiveness of conventional medicines and other more serious adverse events, including patient fatalities.¹⁵⁶⁻¹⁶⁰ Development of culturally-sensitive education sessions for newly diagnosed patients may be warranted to help prevent adverse events. Furthermore, as opposed to previous studies which report CAM use as a “last resort” for cancer patients, this study documented that TCM/CAM is frequently used by newly diagnosed Chinese patients and as such discussions about CAM need to occur early in the diagnosis so that healthcare practitioners, along with patients can implement an effective treatment strategy. With respect to cultural characteristics, immigrants, that is, those patients born outside of Canada and those reporting speaking a non-official language most frequently at home were more likely to use TCM/CAM therapies. As well, completion of the Chinese version of the questionnaire showed a trend towards significance. Such findings further support the effect of acculturation, or lack thereof in the use of TCM/CAM for cancer care. Healthcare

practitioners in the oncology setting must be aware of the fact that less acculturated patients may be more likely to use TCM/CAM so that they can provide optimal cancer care.

After controlling for all other variables with logistic regression analysis, prior TCM use, immigrant status, and low income remained significantly associated with TCM/CAM use. Interestingly, patients who chose not to respond to the question regarding income were less likely to use TCM/CAM. Although this finding was not significant, it lends credence to the possibility that these patients behave similarly to those in the high income category and that future studies in the Chinese and other ethno-cultural populations can use the technique of imputation to analyze data and draw valid conclusions while maintaining appropriate statistical power. Imputation is a technique based on the strategy of using known attributes to impute unknown attributes, that is, patients with complete data who are similar to patients with missing data with respect to other factors are randomly selected to replace the missing data.¹⁶¹ As well, the data, as discussed previously indicate that low income patients were more likely to be less acculturated (immigrant status and completion of Chinese questionnaire). Using the logic described by Boon et al.,⁵⁷ this finding supports the argument that underlying cultural characteristics explain TCM/CAM use and that low income may be a proxy measure of less acculturated patients. This highlights the importance of developing appropriate methodologies that distinguish cultural effects from those due to socio-economic factors when studying ethnic minority populations in Canada.

This study found no differences between male and female TCM/CAM users, except for disease duration. Male users had a significantly shorter disease duration at the time of the survey compared to females and the reason for this observation is unknown since there were no statistically significant differences between gender non-specific cancer types between the two groups. It is conceivable that since females had a higher proportion of surgical treatment (mainly due to cancer of the breast), a longer period of recovery may have been required post-surgery prior to attending the cancer centre as compared to males. However, cultural factors may also account for this difference between the sexes. Research suggests that females are higher users of healthcare services in general and in cancer populations,¹⁶²⁻¹⁶⁴ but within Chinese culture women are expected to put the needs of their family before their own and as such may delay medical appointments, consultations, treatments, and other healthcare services for their cancer care in order to maintain the status quo in their family.^{112, 113, 148, 165-167} Furthermore, it cannot be ruled out that this result is simply an artifact due to small sample size.

5.2 Effect of Culture on TCM/CAM Use

Based on the criteria for acculturation in this study, patients who were less acculturated to Western society were not significantly more likely to use TCM/CAM as compared to those patients classified as acculturated; however, with a larger sample size this finding may become statistically significant. As

well, a significantly higher proportion of less acculturated patients was married and had a low income. Such a finding is reasonable considering the trend that individuals in Western society have a steadily increasing rate of divorce and are delaying marriage to focus on their education and careers, potentially leading to higher incomes.^{168, 169} Other differences between acculturated and less acculturated patients were evident as well. The higher rate of breast cancer among acculturated patients can be the result of higher risk factors in that population, including exposure to carcinogens and adopting a more Western lifestyle, for example, higher dietary fat intake. The reason for all patients with prostate cancer to be in the less acculturated is unknown; however, it is hypothesized that small sample size is to blame. Less acculturated patients had a higher proportion of having parents born outside of Canada. This was to be expected as one of the criteria for classifying less acculturated patients was that they were immigrants and as such it would be highly unlikely that such patients would have had parents born in Canada. Also, more patients in the less acculturated group reported speaking a non-official language at home. Future analyses within this population may benefit from including language spoken at home as another criteria in the definition of “less acculturated,” as such a factor is an important aspect of the acculturation process.¹²⁶

Early findings in cross-cultural research indicate that cultural factors influence cancer patients’ use of CAM. Specifically, strong associations between race/ethnicity and prevalence and types of CAM used have been identified.^{104, 105, 108, 170-172} Although this study did not replicate the previous findings supporting younger age, female sex, and higher SES with use of CAM for cancer care, this study did confirm that previous or current use of conventional cancer treatments, especially chemo- or radiotherapy was strongly associated with use of TCM/CAM. In those previous studies, as in the current study, a recurrent theme suggested that in addition to alleviating or lessening the side effects associated with conventional cancer therapies, TCM/CAM therapies provided a means for patients to maintain and preserve their cultural heritage and identity. This desire to maintain cultural autonomy may in fact be a coping strategy initiated by cancer patients.

Cancer, as a life event, will usually induce stress, anxiety, anger, and depression, especially in newly diagnosed patients. With the plethora of information, new terminology, and treatment options, cancer patients may find one or more ways to physically and psychologically cope with their diagnosis. As opposed to North American patients who generally use an independent coping strategy, Chinese patients often cope in an interdependent manner, whereby patients exhibit a high degree of self-control and aim to better their situation by adjusting to it.¹⁷³ Though patients cannot control their cancer diagnosis, they may perceive control of the situation by clinging to their traditional/cultural norms through the utilization of TCM/CAM. Such a control strategy can overcome a generation or two of acculturation and thus may help explain the effect between acculturation and TCM/CAM use within this population.

5.3 Study Strengths

This study has several strengths. First, this study represents novel research in the field of CAM use and cancer. No previous studies have documented the use of TCM/CAM among Chinese cancer patients in Canada. In addition, newly diagnosed cancer patients were studied, a group often pooled with people who have been diagnosed for some time in previous CAM utilization studies. It is anticipated that researchers will build upon the methodology used in this study to further understand CAM use in other ethnic minority cancer populations in Canada, thus incorporating cross-cultural research in the field of CAM use in cancer care.

Second, Andersen and Newman's model of health service utilization, specifically the individual determinants of use was found to be an appropriate conceptual framework for this research. This model permitted the implementation of an effective strategy for the selection of variables, development of the measurement instrument, analysis of results, and identification of factors associated with TCM/CAM use within this population of study.

Third, using a bilingual recruitment strategy provided a suitable methodology to maximize patient recruitment. Having a bilingual Chinese research assistant on site put potential participants at ease and secured their trust in participating in the study. Moreover, as discussed previously, all study-related documents were back-translated and thus were of higher quality, providing patients a sense of familiarity during their first visit to the cancer centre.

Fourth, based on the methodology and research protocol employed, this research allows for follow-up of patients in future phases of the study. Changing from a cross-sectional to a longitudinal study design permits the study of patients as they undergo a transition from recently diagnosed to further stages of the illness trajectory and will enable the identification of any changes in TCM/CAM use over time in patients who consent to follow-up. Quantification of the themes identified in Chiu et al., qualitative pilot work may then be possible and build on the qualitative results of that study.

5.4 Study Limitations

This study has several limitations. First, this study has inadequate power (< 80%) to detect statistically significant differences between users and non-users of TCM/CAM due to the small sample size. The effect of the small sample size is reflective in the rather large confidence intervals observed in both the bivariate and multivariate analyses. Such wide-ranging confidence intervals prevent the estimation of a precise measure of association. However, it must be emphasized that this study reflects pilot work and data collection is currently on-going. It is estimated that at the end of data collection (approximately one

year), the number of patients will total approximately 470, providing acceptable statistical power. Second, the sample in this study is one of convenience, with geographical limitations to the greater Vancouver area in BC. These results may have limited external validity to the Chinese-Canadian population across the province and the nation. However, the results provide a glimpse of the use of TCM/CAM by newly diagnosed Chinese cancer patients. Further studies in other urban centres across Canada are required to confirm the results obtained in this preliminary work.

Third, with less than a 50% response rate, this study suffers from response bias, potentially leading to results that are not reflective of the true population. No data was collected on non-respondents and thus a measure of how the study sample reflects the entire population cannot be established. The low response rate may be due to the fact that patients must complete standard BCCA admission forms during their first visit to the clinic and as such may not have adequate time to complete the study questionnaire prior to their scheduled appointment time. Also, cancer is a personal and sensitive topic and many patients may feel uneasy disclosing information about their disease. This is especially true within Chinese culture, who's 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 viewed as taboo.^{174, 175}

With respect to limitations in the measurement instrument, the impersonal format of data collection (self-administered survey) may have prompted unease and distrust among patients potentially leading to non-disclosure of TCM/CAM use. This issue was attended to by providing the questionnaire in the patients' preferred language (Chinese and/or English) and by having a trained bilingual research assistant on-site to provide any support to patients. Also, as indicated previously, terminology is of uttermost importance when conducting cross-cultural research and as such, the measurement instrument was back-translated to ensure proper use of language in this context. However, patients may still not have associated TCM with CAM and thus did not report its use.

Furthermore, this study is hindered by the fact that no relevant clinical outcomes were measured; however, it should be noted that assessing the prevalence and identifying factors associated with TCM/CAM was the central focus of this research. Future research should investigate the level of satisfaction with TCM/CAM among Chinese cancer patients as well as overall effectiveness of various TCM/CAM modalities in reducing tumour size and side effects from conventional treatments, as well as the effect on patients' quality of life using the paradigm of good evidence-based medicine. The next phases of this study will assess and compare quality of life between users and non-users using the European Organisation for Research and Treatment of Cancer Quality of Life (EORTC-QOL) scale. The EORTC-QOL is a widely used quality of life measure and provides reliable and valid results in Chinese cancer patients.¹⁷⁶

Also, due to the limited amount of time patients would have to complete the questionnaire, only a limited number of cultural variables were included. Future phases of this study will compensate for this limitation by probing deeper into the cultural influences affecting TCM/CAM use through the use of a longer, in-person interview at the patient's preferred location. As well, defining and measuring culture, or as in this study's case, acculturation is a difficult task. Several other studies assessing use of health services by Asian populations have utilized single-item proxy measures, either alone or in combination.¹²⁰⁻¹²⁵ It is believed that the proxy measures used in this study were adequate in classifying patients as either acculturated or less acculturated, since combination measures better mimic multi-dimensional scales. Adding the variable "language most frequently spoken at home" to the definition of being acculturated in this study did not alter the reported findings. However, it is important to bear in mind that single-item proxy measures provide only a shallow measure of acculturation and results may become high variable when different measures are used.^{119, 126} For example, in this study, immigrant status was independently associated with TCM/CAM use, but when combined with survey language to define patients according to their degree of acculturation, the association was no longer significant, thus leading to variable interpretations of the findings. Future research in this population should incorporate as many single-item measures as possible in defining acculturation, or if feasible, use a reliable and valid multi-dimensional scale such as the SL-ASIA.

5.5 Challenges Linking Previous and Future Research

The pilot work by Chiu et al., assessed the use of TCM/CAM in Chinese cancer patients and challenged researchers to continue work with this population in the form of larger, national quantitative research endeavors. This study is the first step towards that end. Socio-demographic and cultural characteristics were similar between the sample in this study and the sample from the pilot research; however, some differences in methodology and findings were apparent which need to be addressed in future cross-cultural research.

First, Chiu et al., recruited patients not only from the clinic, but also from a community setting and utilized a naturalistic, semi-structured ethnographic interviewing methodology, allowing researchers to obtain more in-depth information from patients surrounding the use of TCM/CAM since being diagnosed with cancer. The limited amount of data collected during this study will be supplemented with more detailed information collected during Phases Ib and II. Second, the primary reason for using TCM/CAM according to the focus group was due to the failure of conventional cancer treatments. However, this reason cannot be extrapolated to reflect the current study population due to the fact that this study recruited only newly diagnosed patients who had not yet begun or were not yet completed conventional treatments and thus would not be able to comment on its effectiveness in treating their cancer. Results from Phases Ib and II, whereby patients are no longer considered new diagnoses and may have

completed their conventional treatment regimen will be permissible. Third, there was a large difference in the prevalence of TCM/CAM use between the two groups (100% vs. 44%). This finding can be attributed to the fact that newly diagnosed cancer patients are often discouraged by conventional healthcare practitioners to use CAM while preparing for or currently undergoing chemo- or radiotherapy and excluded the sample of newly diagnosed patients who often return to their country of origin to receive cancer treatment. The patients in the pilot study were established cancer patients who had completed treatment and thus may have resumed their use of TCM/CAM. Thus, it is plausible that prevalence of TCM/CAM use will increase in the later phases of the study. Interestingly, Chiu et al., observed that patients found it difficult to locate credible and trustworthy TCM practitioners who could provide adequate cancer care and thus may help to explain the low prevalence of TCM/CAM use within this sample and the high proportion of users who self-medicate with herbal remedies (60%), possibly on the advice of family and friends.

Of special note, this pilot work elucidated that TCM/CAM was an integral part of the daily lives of Chinese cancer patients and therefore most patients did not associate TCM with CAM. This finding has been reported in previous research with South Asian women residing in Canada.¹⁷¹ This may also explain the low prevalence of TCM/CAM use within this sample, despite clearly stating on the questionnaire that researchers were interested in both “TCM and other CAM.” This highlights the critical importance of terminology used in cross-cultural research. As well, it is possible that researchers must utilize other methods than self-administered questionnaires for data collection in ethnic minority populations in order to deal with such nuances. Use of structured interviews, whereby researchers support patients during completion of the survey and clarify potentially ambiguous sections is warranted in order to collect reliable and valid data. Such a procedure will be implemented in the later phases of this study.

Phase II of this research will involve continued data collection in order to improve the statistical power of the study and will transform this cross-sectional utilization study into a longitudinal outcome study assessing the quality of life in newly diagnosed Chinese cancer patients, comparing TCM/CAM users and non-users during a year follow-up. In addition, collecting more detailed information during the in-person and telephone interviews will be beneficial in understanding the cultural factors influencing the use of TCM/CAM for patients’ cancer care. Through this and other cross-cultural research, healthcare practitioners who encounter the heterogeneity of the Chinese cancer population will be better able to identify those patients who may be more inclined to use CAM therapies for their cancer care. As well, the endpoints for future cross-cultural research within this population should permit a clearer understanding of patients’ reasons and motivations for choosing to use TCM/CAM for their cancer care, leading to more culturally appropriate patient education, clinic assessment, and an overall improvement in culturally sensitive cancer care in Canada.

6. CONCLUSION

Using a consecutive sample at two major cancer centres in Canada, this study examined the use of TCM/CAM among newly diagnosed Chinese cancer patients and found that approximately 44% of patients who responded to the survey were using such therapies and that sex, income, receiving chemo- or radiotherapy, prior TCM/CAM use, immigrant status, and speaking a non-official language at home all significantly influenced whether a patient used TCM/CAM for their cancer care.

In guiding this research, Andersen and Newman's model of health service utilization provided a suitable framework for this study. According to this model, findings revealed that in addition to need for healthcare services as assessed by patients' medical characteristics and socio-demographic predisposing and enabling factors, cultural determinants, especially patients' degree of acculturation strongly influenced a Chinese patient's choice to use TCM/CAM for their cancer care.

The large interest and availability of TCM/CAM requires that healthcare practitioners be sensitive toward and educated in these types of therapies and their potential benefits and dangers. This study re-emphasizes the need for healthcare practitioners to initiate communication with their patients, no matter their ethno-cultural 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 evaluate the influence of ethnicity and culture on the use of CAM in patients with cancer. With an increase in the number of immigrants and the increasing diversity of the population, the effects of culture on the health practices of the Canadian population are important considerations in developing a more responsive health policy.

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**Use of Traditional Chinese Medicine and Other Complementary/Alternative Medicine
Among Chinese Cancer Patients In British Columbia, Canada**

本页背面为中文版

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You are invited to participate in a research study to better understand the use of traditional Chinese medicine and other complementary/alternative medicine by Chinese individuals with cancer. It is hoped that this study will help to provide a foundation for culturally-competent care. This study will serve as the research project for a graduate student.

By completing the survey, you are agreeing to participate in this study and acknowledge that you have received this letter for your own records.

Please complete the attached short survey that you can fill out while you are at the BC Cancer Agency if you wish. Once finished, please place the completed form into the designated yellow boxes located throughout the clinics. A research assistant who speaks your language is available within the cancer centre to answer any questions you or your family may have.

There are no known risks (problems) related to taking part in this study and all information from this study will be kept strictly confidential. No identifying information is collected. All documents are identified only by a study number. Only group findings will be reported.

It is entirely up to you whether you take part in this study and the healthcare that you usually get will not be changed in anyway by your refusal to participate. You can change your mind at any time. By completing the survey, you do not waive any of your legal rights.

If you have any questions or worries about this study, now or later, please contact Mr. Richard Doll at 604-877-6126. If you have any questions about your rights as a research participant, you can contact the Research Subject Information Line in the UBC Office of Research Services at 604-822-8598. This study is funded by the Palliative Care in a Cross-Cultural Context: A New and Emerging Team grant from the Canadian Institute for Health Research.

Please keep this letter for your records.



BC Cancer Agency
CARE & RESEARCH



传统中医和其他补充/替代医学在加拿大卑诗省的华裔癌症患者中的使用情况

English version available at the back of this page

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Dr. Lyren Chiu, 卑诗大学

Mr. Mark Ferro, 萨省大学

Dr. Michael Chung, 琥珀传统中医康复中心

为了更好地认识传统中医和其他补充/替代医学在华裔癌症患者中的使用情况，我们邀请您来参与一项研究调查。希望本项调查有助于为多元文化环境下的健康保健提供一个正确的根据，本项调查也将作为一个毕业生的研究课题。

如果您填写了调查表，就意味着您同意参与本项调查、并同意本信件仅作为您自己存档之用。

在本信件之后附有一份简短的调查表，如果愿意，您在卑诗省癌症机构内就可以把它填好。请将完成后的表格放入指定的黄色箱子内，这些指定的箱子在诊所内随处可见。届时，癌症中心会有一位与您语言相通的研究助理，将为您或您的家庭解答所提出的任何问题。

参与本项调查没有任何已知的风险或难题，一切与本调查有关的资料都将被严格保密。本项调查不搜集任何个人资料，所有的文件都只是通过一个调查号码来识别，调查报告中也只有分组的调查结果。

是否参与本项调查完全取决于您自己，而且您目前的医疗保健并不会因为您拒绝参与本次调查而有任何的改变。您可以随时改变您的主意。填写本调查表也不会让您放弃任何的合法权利。

如果您对本次调查有任何问题或是担忧，无论现在还是以后，请致电 604-877-6126 与理查德·多尔先生 (Mr. Richard Doll) 联系。如果您对作为一个研究参与者的权利有任何问题，您可以联络卑诗大学研究服务办公室的研究对象信息专线，电话是 604-822-8598。本研究课题是由加拿大健康研究学院的“跨文化背景中的康复护理：一个新兴的团队 (NET)”项目拨款资助的。

请保留该信件作为您存档之用。

**Use of Traditional Chinese Medicine (TCM) and other Complementary/Alternative Medicine
among Chinese Cancer Patients**

本页背面为中文版



If you have answered this questionnaire before, please do not do it again. Please write clearly and put the completed questionnaire in the box labelled with "Traditional Chinese Medicine & Complementary/Alternative Medicine Survey – Completed Forms"

Date: (Day/Month/Year) : _____ **If you are not of Chinese origin [] or do not want to participate in this study [], please tick within [] and put the form in the box.**

1.	Where were you born? (pick one only) [] Canada [] China [] Hong Kong [] Taiwan [] Other (please specify) _____	
2.	Where were your parents born? (may pick more than one) [] Canada [] China [] Hong Kong [] Taiwan [] Other (please specify) _____	
3.	What is the language you speak most frequently at home? (pick one only) [] English [] French [] Cantonese [] Mandarin [] Taiwanese [] Other (please specify) _____	
4.	What kind of cancer do you have? (e.g., breast, colon, lung, etc.) _____	
5.	When was your cancer diagnosed? (Day/Month/Year) _____	
6.	What kind of cancer treatment(s) have you received or are receiving? [] Surgery [] Chemotherapy [] Radiotherapy [] Other (please specify) _____	
7.	Have you used Chinese medicine or tried other complementary/alternative treatment(s) BEFORE you discovered that you have cancer (such as herbal medicine, qigong, vitamins/minerals, patient support group)? [] Yes [] No	
8.	Have you used Chinese medicine or tried other complementary/alternative treatment(s) AFTER you discovered that you have cancer (such as herbal medicine, qigong, vitamins/minerals, patient support group)? [] Yes [] No (if you pick this option please go to Question 10)	
9.	Please list the Chinese medicine or other complementary/alternative treatments you have used or are using after you discovered you had cancer (may pick more than one). [] Chinese herbal medicine (please specify) _____ [] Vitamins/minerals _____ [] Supplements (such as shark cartilage) _____ [] Massage _____ [] Zen meditation _____ [] Patient support group [] Acupuncture/moxibustion [] Qigong [] Tai Chi [] Prayer [] Other (please specify) _____	
10.	How old are you? _____	11. What is your gender? [] M [] F
12.	What is your present status? (pick one only) [] Single, widowed, separated/divorced [] Married [] Common law relationship [] Other (please specify) _____	
13.	Who are you living with? (may pick more than one) [] Alone [] Common law partner/Spouse [] Parent(s) [] Children/Grandchildren [] Other relative [] Friend [] Other (please specify) _____	
14.	What is your education level? (please pick the highest qualification completed) [] Elementary School [] High School [] High School Graduated [] Technical school/2-year college [] University [] University Graduated [] Graduate studies [] Other (please specify) _____	
15.	Gross income of your household last year? [] Below \$20,000 [] \$21,000 -- \$40,000 [] \$41,000 -- \$60,000 [] 61,000 -- 80,000 [] Over \$81,000 [] Don't know/Don't want to answer	

Please put the completed questionnaire in the box labelled with "Traditional Chinese Medicine & Complementary/Alternative Medicine Survey – Completed Forms"

Thank you for your participation!

华裔癌症患者对传统中医和补充/替代疗法的使用情况

English version available at the back of this page



请您在填写时字迹清楚，并将已经完成的调查问卷放入贴有“传统中医及补充/替代医学调查—已填写的表格”标签的箱子内。

日期 (日/月/年) : _____ 若您不是华裔 [] 或是不想参与该调查 []，请在 [] 打勾，并将表格放入箱内。

1.	您在哪里出生? (选一项)	
	[] 加拿大 [] 中国 [] 香港 [] 台湾 [] 其他 (请说明) _____	
2.	您的父母在哪里出生? (可选多项)	
	[] 加拿大 [] 中国 [] 香港 [] 台湾 [] 其他 (请说明) _____	
3.	您家中最常讲的语言? (选一项)	
	[] 英语 [] 法语 [] 粤语 [] 国语 [] 台语 [] 其他 (请说明) _____	
4.	您患了什么癌症 (例如乳腺癌, 结肠癌, 肺癌等)? _____	
5.	您的癌症是何时被诊断出来的? (日/月/年) _____	
6.	您接受过或正在接受何种癌症治疗?	
	[] 手术 [] 化学疗法 [] 放射疗法 [] 其他 (请说明) _____	
7.	您在发现自己患了癌症之前服用过中药以及/或是使用过其它补充/替代疗法吗 (草药, 气功, 维他命/矿物质, 帮助患者小组)?	
	[] 是 [] 否	
8.	您在发现自己患了癌症之后服用过中药以及/或是使用过其它补充/替代疗法吗 (草药, 气功, 维他命/矿物质, 帮助患者小组)?	
	[] 是 [] 否 (若选该项, 跳到问题 10)	
9.	请列出您在发现患了癌症后正在使用或已经使用过的传统中医疗法或是其他补充/替代疗法。(可选多项)	
	<input type="checkbox"/> 中草药 (请说明) _____ <input type="checkbox"/> 帮助患者小组 <input type="checkbox"/> 针灸/艾灸 <input type="checkbox"/> 气功 <input type="checkbox"/> 太极拳 <input type="checkbox"/> 维他命/矿物质 <input type="checkbox"/> 祷告 <input type="checkbox"/> 补充品 (例如鲨鱼软骨) <input type="checkbox"/> 其他 (说明) _____ <input type="checkbox"/> 推拿 <input type="checkbox"/> 打禅	
10.	您多大年纪? _____	11. 您的性别是什么? [] 男 [] 女
12.	你目前的生活状况是什么? (请选一项)	
	[] 单身, 丧偶, 分居/离异 [] 已婚 [] 同居 [] 其他 (请说明) _____	
13.	您与什么人住在一起? (可选多项)	
	<input type="checkbox"/> 自己住 <input type="checkbox"/> 同居伴侣/配偶 <input type="checkbox"/> 父母 <input type="checkbox"/> 孩子/孙辈 <input type="checkbox"/> 其他亲戚 <input type="checkbox"/> 朋友 <input type="checkbox"/> 其他 (请说明) _____	
14.	您的学历是什么? (请选已完成的最高学历)	
	<input type="checkbox"/> 小学 <input type="checkbox"/> 高中肄业 <input type="checkbox"/> 高中毕业 <input type="checkbox"/> 技校/两年大专 <input type="checkbox"/> 大学肄业 <input type="checkbox"/> 大学文凭 <input type="checkbox"/> 研究生班 <input type="checkbox"/> 其他 (请说明) _____	
15.	去年您的家庭的总收入?	
	[] \$20,000 以下 [] \$21,000 - \$40,000 [] \$41,000 - \$60,000 [] \$61,000 - 80,000 [] \$81,000 以上 [] 不知道/不想回答	

请您在填写时字迹清楚，并将已经完成的调查问卷放入贴有“传统中医及补充/替代医学调查—已填写的表格”标签的箱子内。

感谢您的参与!

**The use of Traditional Chinese Medicine (TCM) and Other Complementary/Alternative Medicine
among Chinese Cancer Patients**

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If you would like to further participate in this study, please complete the attached form with your information and place it in the box labelled: "**Traditional Chinese Medicine & Complementary/Alternative Medicine Survey – Completed Forms**". A research assistant who speaks your language will contact you for a sixty-minute interview at a convenient time and location. Patients who participate in the interview will receive further information about the study, a consent form, and will be provided with a \$20 honourarium for their time

Please print clearly.

First Name:		Last Name:	
Daytime Phone:		Evening Phone:	
E-mail:			
I prefer to have the interview conducted in (check one): <input type="checkbox"/> English <input type="checkbox"/> Cantonese <input type="checkbox"/> Mandarin			

Please separate this sheet from the questionnaire and place each in the designated boxes.

华裔癌症患者对传统中医和补充/替代疗法的使用情况

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如果您愿意继续参与该项调查研究，请将您的个人资料填入所附表格，并把它放入贴有“**传统中医及补充/替代医学调查 – 已填写的表格**”标签的箱子内。一位与您语言相通的研究助理会联络您，跟您约定在您方便的时间和地点进行一次为时六十分钟的面谈。更多有关该项调查的资料和一张同意书将会寄给参与面谈的患者，并将提供\$20的酬金作为对参与者所付出时间的答谢。

请用清楚的字迹填写

名:		姓:	
白天电话:		晚间电话:	
电邮:			
我希望面谈用以下语言进行 (选一项): <input type="checkbox"/> 英语 <input type="checkbox"/> 粤语 <input type="checkbox"/> 国语			

请将本页与调查表分开，并分别放入指定箱子内。



University of Saskatchewan
Behavioural Research Ethics Board (Beh-REB)

28-Nov-2005

Certificate of Approval

PRINCIPAL INVESTIGATOR
Anne Leis

DEPARTMENT
Community Health and Epidemiology

BEH#
05-266

STUDENT RESEARCHER(S)
Mark Ferro

INSTITUTION(S) WHERE RESEARCH WILL BE CONDUCTED (STUDY SITE)
University of Saskatchewan

SPONSOR
University of Saskatchewan

TITLE
Prevalence of traditional Chinese medicine (TCM) utilization among Chinese patients in British Columbia, Canada

CURRENT APPROVAL DATE
25-Nov-2005

CURRENT RENEWAL DATE
01-Nov-2006

CERTIFICATION

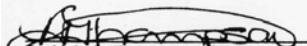
The University of Saskatchewan Behavioural Research Ethics Board has reviewed the above-named research project. The proposal was found to be acceptable on ethical grounds. The principal investigator has the responsibility for any other administrative or regulatory approvals that may pertain to this research project, and for ensuring that the authorized research is carried out according to the conditions outlined in the original protocol submitted for ethics review. This Certificate of Approval is valid for the above time period provided there is no change in experimental protocol or consent process or documents.

Any significant changes to your proposed method, or your consent and recruitment procedures should be reported to the Chair for Research Ethics Board consideration in advance of its implementation.

ONGOING REVIEW REQUIREMENTS

The term of this approval is five years. However, the approval must be renewed on an annual basis. In order to receive annual renewal, a status report must be submitted to the REB Chair for Board consideration within one month of the current expiry date each year the study remains open, and upon study completion. Please refer to the following website for further instructions: <http://www.usask.ca/research/ethical.shtml>.

APPROVED.


Dr. Valerie Thompson, Chair
Behavioural Research Ethics Board
University of Saskatchewan

Please send all correspondence to:

Ethics Office
University of Saskatchewan
Room 304 Kirk Hall, 117 Science Place
Saskatoon, SK S0N 0A0



BC Cancer Agency
CARE & RESEARCH

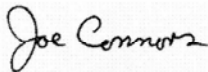
University of British Columbia - British Columbia Cancer Agency Research Ethics Board
(UBC BCCA REB)

UBC BCCA Research Ethics Board
Vancouver Centre – Rm. 4113
600 West 10th Avenue
Vancouver, B.C. V5Z 4E6
Tel: (604) 877-6284 Fax: (604) 708-2132
Email: reb@bccancer.bc.ca
Website: www.bccancer.bc.ca > Research Ethics

CERTIFICATE OF EXPEDITED APPROVAL

BCCA PRINCIPAL INVESTIGATOR (BCCA PI)	BCCA PI CENTRE	BCCA DEPARTMENT	UBC BCCA REB NUMBER
DOLL, Richard	Vancouver Centre	Cancer Rehabilitation	R06-0013
PRINCIPAL INVESTIGATOR FOR EACH ADDITIONAL PARTICIPATING BCCA CENTRE IF APPLICABLE: (NAME & CENTRE)			
N/A			
PROJECT TITLE:			
Prevalence Of Traditional Chinese Medicine Use Among Chinese Cancer Patients In British Columbia, Canada			
SPONSORING AGENCY(S) AND COORDINATING GROUP(S):			
Canadian Institutes of Health Research (CIHR)			

The **UBC BCCA Research Ethics Board Chair, Vice-Chair or second Vice-Chair**, has reviewed the above described research project, including associated documentation noted below, and finds the research project acceptable on ethical grounds for research involving human subjects and hereby grants approval.

EXPIRY DATE OF THIS APPROVAL: 2007-January-14	
DOCUMENTS INCLUDED IN THIS ACTION:	APPROVAL DATE
<ol style="list-style-type: none"> 1) REB Application signed and dated January 10, 2006 2) Research Proposal dated June 30, 2005 3) External Peer Review Report dated September 11, 2005 4) Questionnaire: English dated October 15, 2005 5) Questionnaire: Chinese dated October 15, 2005 6) Cover letter for questionnaire: English version 3 dated November 10, 2005 7) Cover letter for questionnaire: Chinese version 3 dated November 10, 2005 	2006-January-14
Certification	
<ol style="list-style-type: none"> 1. The membership of the UBC BCCA REB complies with the membership requirements for research ethics boards defined in Division 5 of the Food and Drug Regulations of Canada. 2. The UBC BCCA REB carries out its functions in a manner fully consistent with Good Clinical Practices. 3. The UBC BCCA REB has reviewed and approved the research project named on this Certificate of Approval including any associated consent form and taken the action noted above. This research project is to be conducted by the principal investigator named above. This review and the associated minutes of the UBC BCCA REB have been documented electronically and in writing. 	
 Approval of the UBC BCCA Research Ethics Board Chair, Vice-Chair or second Vice-Chair, verified by the above signature of one of the following: Dr. Joseph Connors, Chair Dr. Lynne Nakashima, first Vice-Chair Dr. Ken Swenerton, Second Vice-Chair	

If you have any questions, please call:

Bonnie Klimek, BCCA Research Ethics Coordinator, 604-877-6284 or email: reb@bccancer.bc.ca
 Dr. Joseph Connors, Chair, 604-877-6000-ext. 2746 or email: jconnors@bccancer.bc.ca
 Dr. Lynne Nakashima, first Vice-Chair, 604-877-6000-ext.2241 or email: lnakas@bccancer.bc.ca
 Dr. Ken Swenerton, second Vice-Chair, 604-877-6000-ext. 2365 or email: kswener@bccancer.bc.ca
 All Correspondence by fax or mail should be sent to the UBC BCCA Research Ethics Board office above.



March 6, 2006

Richard Doll, MSW, MSc.
Provincial Leader, Cancer Rehabilitation
Director, Sociobehavioural Research Centre
200 – 601 W. Broadway
Vancouver, BC V5Z 4C2

Dear Richard Doll,

Re: "Prevalence of Traditional Chinese Medicine Use Among Chinese Cancer Patients in British Columbia"

On behalf of the Richmond Health Services Delivery Area (RHSDA) Research Advisory Committee (RAC), I would like to thank you for submitting the above named research proposal.

The RAC reviewed the information you provided and has granted final approval for the study to proceed. The RAC would ask that you:

- Notify the RAC Secretary of the start date for research,
- Notify the committee of any changes to the study protocol following RAC approval,
- Provide 3 or 6 month progress reports for RAC information,
- Provide a copy of the final research report for RAC information and files.

Submissions should be forwarded to:

Marion Wardley	Fax No.:	604-244-5292
C/o Quality Initiatives	Tel. No.:	604-244-5209
Richmond Health Services		
7000 Westminster Highway		
Richmond, BC V6X 1A2		

Thank you for providing the opportunity for RHS to participate in this study.

Yours sincerely,

for Dr. Ingrid Söchting,
Assistant Research Director
Research Advisory Committee
Richmond Health Services Delivery Area

Promoting wellness. Ensuring care. Vancouver Coastal Health Authority

VITA

Biographical

April, 1980	Born in Hamilton, Ontario, Canada.
June, 1998	Diploma, Cardinal Newman Catholic Secondary School.
June, 2004	B.Sc.(Hon.), Biochemistry Co-op, McMaster University.
October, 2006	M.Sc., Community Health and Epidemiology, University of Saskatchewan.

Honours

June, 1999 – 2004	Dean's Honour List, McMaster University.
August, 2005	Research grant, Palliative Care in a Cross-cultural Context New Emerging Team. Value: \$10,000.
September, 2005	Graduate Scholarship, College of Medicine, University of Saskatchewan. Value: \$15,000.
September, 2005	Graduate Scholarship, Cancer and Complementary and Alternative Medicine Research Team. Value: \$5,000.
September, 2005	Graduate Studentship, Canadian Interdisciplinary Network for Complementary and Alternative Medicine Research. Value: \$5,000.
November, 2005	Gold Medal Essay, Canadian Interdisciplinary Network for Complementary and Alternative Medicine Research. Value: \$99.
November, 2005	University President/Student Fund, University of Saskatchewan. Value: \$150.

Publications

1. Ferro MA, Leis A. Complementary and alternative medicine use among Chinese cancer patients in British Columbia, Canada: Prevalence and predictors of use. *Cancer. In submission*, 2006.
2. Leis A, Ferro M. Complementary and alternative medicine (CAM) and cancer. *Oncology Exchange. In submission*, 2006.