The Medical Pluralism Paradigm: Examining Patterns of Use across Conventional, Complementary and Public Health Care Systems among Canadians aged 50 and older.

by

Kristine Votova
B.A., University of Victoria, 1999
M.A., Simon Fraser University, 2003

A Dissertation Submitted in Partial Fulfillment
of the Requirements for the Degree of

DOCTORATE OF PHILOSOPHY

in the Department of Sociology

Supervisory Committee

The Medical Pluralism Paradigm: Examining Patterns of Use across Conventional, Complementary and Public Health Care Systems among Canadians aged 50 and older.

by

Kristine Votova
B.A., University of Victoria, 1999
M.A., Simon Fraser University, 2003

Supervisory Committee

Dr. Margaret Penning, PhD, Supervisor
(Department of Sociology)

Dr. Neena Chappell, PhD, Departmental Member
(Department of Sociology)

Dr. Zheng Wu, PhD, Departmental Member
(Department of Sociology)

Dr. Denise Cloutier Fisher, PhD, Outside Member
(Department of Geography)

Abstract

Supervisory Committee

Dr. Margaret Penning, PhD, Supervisor
(Department of Sociology)

Dr. Neena Chappell, PhD, Departmental Member
(Department of Sociology)

Dr. Zheng Wu, PhD, Departmental Member
(Department of Sociology)

Dr. Denise Cloutier Fisher, PhD, Outside Member
(Department of Geography)

This dissertation examined health care utilization patterns across conventional health care (CHC), complementary and alternative medicine (CAM), and public health care (PHC) systems among Canadians aged fifty and older. I argued that utilization research is currently limited by a primary focus on discrete use of health care services, largely within the CHC system (i.e., medical doctors, specialists, hospitals). However substantial growth in use of CAM and PHC, particularly among late middle-age cohorts, suggests the need to widen the research lens from discretionary service use *within* health care systems to include medical pluralism or use *across* health care systems. To address the lack of research on medical pluralism and the need for a comprehensive overview of service use, I used two different strategies to create discrete patterns of service use and non-use. To frame the predictors of these patterns, a *medical pluralism paradigm* was proposed, which suggests that there are distinct social location and health characteristics that may explain use across health care systems. Five hypotheses were tested using data pooled from two cycles of the Canadian Community Health Survey (Cycles 2.1 [2003] and 3.1 [2005]) to create an overall sample (n=117,824). Results from the deductive (variable oriented) and inductive (person centred) strategies were compared. Differences in both the number and form of patterns are apparent. Across both strategies, the most common pattern is dual use of CHC (medical visits, specialist visits) and PHC (flu shots, sex-specific screening) but not CAM (chiropractors, other CAM providers). Consistent with the literature, women use more types of services overall than do men. The gender effect is significantly mediated by age: older men are less likely to use services across the three health care systems than older women. Strong evidence for a socioeconomic gradient in medical pluralism is also found. Higher levels of income and education increase the likelihood of using services across the three health care systems compared to low and middle levels of both income and education. The relationship between race and health service use was much less significant. Long-term immigrants demonstrate tri-use patterns close to those of Canadian born individuals; however, service differentials remain even after controlling for health needs, in favour of native-born Canadians. Medical pluralism is also associated with health related-need as support was found for both illness and wellness care. Lastly, regional differences point to a greater likelihood of medical pluralism in western Canada, but not always in urban areas. In future, a longitudinal examination of medical pluralism is necessary and would help establish the sequencing of services and how services are used in relation to the disablement process. Health policy would thus benefit from insight into the extent of service duplication for specific conditions and clarify the role of medical doctors in referral processes.

Table of Contents

List of Tables

List of Figures

Acknowledgments

This dissertation would not be finished without guidance from my committee members, and the unwavering support of my family. Thank you for believing in me.

I would like to express my gratitude to my supervisor Dr. Margaret Penning for helping me navigate the academic process. She saw my vision and helped me stay the course. Her keen eye for detail and way with the written word contributed immensely to the end product. I learned a lot.

Further acknowledgements go to the institutions that financially supported my research. These include the Michael Smith Foundation for Health Research (2005-2008), the Canadian Institute for Health Research (2005-2008), and the University of Victoria (Health Research Fellowship, President's Scholarship). I would also like to acknowledge Drs. Margaret Penning and Neena Chappell for providing me with research and travel stipends, in addition to travel stipends provided by the UVIC Graduate Studies and Department of Sociology.

Dedication

I dedicate this dissertation to my husband and daughters. Mommy is finally done her book. I would also like to dedicate this dissertation to the people who were with me when I started the PhD program but who died before they could see me through to the finish. You are with me in memory and in spirit. And mom, thank you for the novenas.

Chapter 1: Introduction

North American health care systems appear to be undergoing dramatic transformation away from systems dominated by a biomedical model and medical professionals' decision-making toward ones in which there is a pluralistic range of health models and therapeutic options to choose from. In this context, the dominant medical paradigm is being challenged by industry, consumers, and alternative (competing or complementary) health care models (Ballard & Elston, 2005; Bloom, Standing, & Lloyd, 2008; Coburn, 2006; Goldstein, 2004; McKinlay & Marceau, 2002). Although it can be argued that the seeds of health care consumerism and industry-driven health care were sown in the 1970s (Reeder, 1972), it took until the 1990s before their impact was noted in the health care system (Lupton, 1994; 1997; Pellegrino, 1999). Increased use of conventional health care (CHC), complementary and alternative medicine (CAM), and public health care (PHC) is now being reported across North America (Goldstein, 2004). The consequent increase in medical pluralism—or use of more than one health care system—is being touted as a new cultural norm, based on distinct concentrations of use reported among cohorts born after 1945 (Kessler et al., 2001).

Collectively, social scientists use the term medical pluralism to refer broadly to health care practices across more than one health care system (Baer, 2008; Broom, Doron, & Tovey, 2009; Cant & Sharma, 1999; Han, 2002; Hsu, 2008; Kaptchuk & Eisenberg, 2001a). Minocha (1980) considers medical pluralism to mean the co-existence of multiple medical systems, such as folk, traditional and scientific medicine within one overall system. Hsu (2008) states that medical pluralism "implies that in any one community, patients may resort to different therapies even when these have mutually incompatible explanations for the disorder" (pg.316). Medical monism, in contrast, while not defined in the literature per se, has come to represent health care seeking as it pertains to CHC only, reflecting the normative perspective, in which biomedical health care is the dominant model in Western society (Cant & Sharma, 1999; Sharma, 1992). Consistent across these definitions is that in Western society biomedicine serves as the baseline against which all other health care systems are assessed as being alternative to (Frohock, 2002; Press, 1980).

Although sociologists first began using pluralist models to describe the power-elite in political systems (Newton, 1969) and assimilation by race into American culture (Milton, 1961), it was medical anthropologists who first introduced the notion of pluralism to describe medical systems (Hsu, 2008; Press, 1980). Medical anthropologist Leslie's (1980) seminal publication on medical pluralism characterized Asian countries as having "one pluralistic medical system". He observed a multitude of scientific, popular and folk medicines, including Western scientific medicine, as well as Ayurvedic medicine, acupuncture and others, each one having distinct theories (i.e., written text or scripture), practices (i.e., educational and therapeutic), and institutions (i.e., clinics or hospitals). These observations served to problematize Western constructions of medicine by showing that the theory and social organization of health care systems was not restricted to Western medicine alone.

Medical pluralism has been evident throughout history (Baer, 2008; Bates, 2002; Leslie, 1980; Press, 1980). In North America, it was following the formalization of scientific medicine (orthodox, allopathic), beginning in roughly the late 18th century, and with the development of American medical schools in the 1760s, that any lay, folk or ‘other’ practitioner began to be marginalized for practicing ‘unorthodox’ or unconventional therapies (Bloom, 2002; Coburn, 2006; Friedson, 1970; Starr, 1982). Through processes of social closure, in both Canada and the US, educational and credentialing opportunities were increasingly restricted to those studying allopathic or scientific medicine (Bakx, 1991; Coburn & Biggs, 1986; Coburn, 2006). Scientific medicine was believed to be superior by the state, academics, the medical profession, and the lay public at large, given its perceived high success rate with curing ailments and producing vaccines (Friedson, 1970; McKinlay & Stoeckle, 1988; McKinlay & Marceau, 2002; Starr, 1982). Subsequently, those who studied and practiced it were elevated to high status in these and other Western societies. What followed was the rise to dominance of one type of medicine relative to all others for most of the 19th century and certainly well into the 20th and 21st centuries (Baer, 2008; Bates, 2002; Coburn & Biggs, 1986; Starr, 1982).

Cant and Sharma (1999) suggest that currently, there is a ‘new medical pluralism’, given the modern re-emergence of CAM and its significant shift from the fringe of society to its now partial integration with mainstream or conventional health care. Recent estimates are that just over one-half of the North American population has used at least one type of CAM in their lifetimes (Bishop & Lewith, 2008; Kessler et al., 2001; Lawrence & Meeker, 2007). Yet, contrary to early conjecture regarding the potential implications of this shift as a demedicalization movement (e.g., (Bakx, 1991;

Haug, 1988; Haug & Lavin, 1991), and the end of the ‘golden age of doctoring’ (McKinlay & Stoeckle, 1988; McKinlay & Marceau, 2002), empirical evidence suggests that individuals do not appear to be rejecting conventional health care in favour of CAM (Astin, 1998; Sirois & Gick, 2002; Sirois, 2008). Rather, the majority of CAM users are using CAM concurrently with conventional and public health care (Druss & Rosenheck, 1999; Foster, Phillips, Hamel, & Eisenberg, 2000; Kelner & Wellman, 1997; Northcott & Bachynsky, 1993). The ‘new medical pluralism’ reflects the trend toward some medical doctors referring patients to CAM practitioners (Arcury et al., 2007; Barnes, Powell-Griner, McFann, & Nahin, 2004), while still other medical doctors are practicing forms of CAM themselves (Boon, Verhoef, Vanderheyden, & Westlake, 2006; Frohock, 2002). Studies suggest that CAM could be considered mainstream health care and that there is some degree of integration taking place between conventional health care and CAM systems, which in the not too distant past represented two competing (and often antagonistic) health paradigms (Goldstein, 2004; Kaptchuk & Eisenberg, 2001a; Press, 1980).

Sociologists have described the late 20th century as an era of major transformation of social institutions and relations globally and within the nation states of most industrialized countries (Musolf, 2003; Sewell, 1992). According to Baumann (2001), the implications of these shifting social, political and economic relations are widespread and magnified under globalization, an advanced state of capitalism (Navarro, 2007) in which individualism and consumption are guiding principles. The neoliberal ideologies and free market principles associated with globalization in Western societies position health as an individual responsibility (Coburn, 2004; Navarro, 1999; Scambler, 2007). Consumerism is encouraged, and individuals increasingly find themselves turning to private markets for social and health services once offered in the public sector (Pellegrino, 1999).

The paradox of health care consumerism is twofold (Hendersen & Petersen, 2002). On the one hand, health care consumerism is perceived to be about reclaimed control and choice over health matters. It is seen as providing an outlet that empowers individuals to reclaim rights believed to be lost to medicalization and medical dominance. In this context, patient-consumers become experts on their own health, as information about their disease and treatment options is readily available to them (Bakx, 1991; Barker, 2008; Lupton, 1997). These expert patients represent a newly emerging phenomenon of 'smart consumerism' in health care, in which patients gather knowledge about a diverse range of therapeutic options and choose health care options accordingly (Frank & Stollberg, 2004; Kelner & Wellman, 1997; Spence & Ribeaux, 2004). To cite Crawford (2006), long critical of the present day emphasis on the active pursuit of health so embedded in Western culture, "through health, the modern self demonstrates his or her own agency" (pg.402).

On the other hand, whether health consumerism represents agency and reclaimed control of health is indeed questionable. To some, the rhetoric of consumer choice is seen as being distorted by broader social forces that define health needs and wants (Andreassen & Trondsen, 2010; Fuchs & Zeckhauser, 1987; Hendersen & Petersen, 2002; Henwood, Wyatt, Hart, & Smith, 2003; Pellegrino, 1999; Robertson, 1998). Specifically, health promotion has shifted from a focus on reducing unhealthy behaviours such as smoking and poor diet to a focus on consuming health services and products in pursuit of health. Goldstein (2002) chronicles this shift in focus by drawing a parallel between the growth of the fitness industry and CAM, mostly as it has occurred within the middle class. According to Frank (2002), individuals are increasingly finding their identities less tied to production and more tied to how much and what type(s) of medical services they are consuming. This is problematic, because only certain individuals can afford to be health consumers and the capitalist ‘ideal’ of health and a healthy body is often grossly unrealistic and therefore unobtainable.

The paradox of health care consumerism is a theme that resonates with medicalization theorists who view expanding health care markets and increasing health consciousness as key features of late contemporary society (Conrad, 2005; Crawford, 1980; 2006; Gallagher & Sionean, 2004). Medicalization is a concept that forms the theoretical basis for understanding the relationship between the profession of medicine and broader society. It was first theorized as a process through which nonmedical conditions come to be considered medical problems at the conceptual, institutional and interactional levels (Conrad, 1975; Pitts, 1968). In its contemporary form, however, medicalization is often considered to be less about social control through these medical processes than it is about the social, political, and economic transformation of the health care market and the evolution of a health care consumer (Clarke, Shim, Mamo, Fosket, & Fishman, 2003; Conrad, 2005; 2007; Gallagher & Sionean, 2004). Taken together, these transformations are seen as influencing both the supply of and demand for health care services and products.

When medical pluralism is viewed through a medicalization lens, industry (pharmaceutical, medical technology, health, beauty, and fitness) is implicated as a major contributor to expansion in health care systems. Industry creates a demand for health services and products that consumers might otherwise never know that they had a need for (Busfield, 2010; Clarke et al., 2003; Conrad, 2007). In a somewhat discrete process, health risks are created (or existing risk is emphasized) and markets emerge to provide options or solutions to address the risk.

Estes and Binney (1989) argue that medicalization goes hand in hand with old age and aging. In mainstream North American culture, aging can be viewed as a risk or condition that can be treated and managed through 'aging enterprises'. Katz and Marshall (2003) describe these aging enterprises as 'grey markets' for which industry sells products designed to assist with or slow the aging process. Some CAM services even promote their therapies as having 'anti-aging' qualities (Cardona, 2007). Therefore the discourse tied to grey markets—which the social institution of health care may be considered a major provider of services to—is that aging is a risk that can be (and should be) treated through 'appropriate' use of services. Thus, it would appear that opportunities to exercise agency in later life for health-related matters are becoming more widespread through expanding health care markets. Individual responsibility for preventing the 'risks' associated with old age and aging is increasingly being targeted to those at younger ages, beginning in mid- to late middle age (Gilleard & Higgs, 2002; Higgs & Gilleard, 2006).

A related body of literature views health care consumption through the lens of consumer-citizenship. From this perspective, health care consumption arises from (or leads to) being a good citizen (Jubas, 2007; McDonald et al., 2007). It is argued that in the 21st century, health is socially constructed as both a public good and an individual right (Kickbusch, 2004). The foundation of North American social fabric, according to Crawford (1980; 2006), is married to discourse that good citizens are those who 'do' health.

The discourses of individualism and consumer-citizenship resonate strongly in countries with fiscally conservative policies and aging populations. Worldwide, there is uncertainty, and perhaps unnecessary trepidation, that the growing number of older people will increasingly burden health and social care systems (Estes, Biggs, & Phillipson, 2003; Gee & Gutman, 2000). These fears can be linked to research that finds older people use a disproportionate share of health care (Freeborn, Pope, Mullooly, & Bentson H. McFarland, 1990; Shapiro, 1983; Strain, 1990; 1991; Wolinsky et al., 1983). Less well known or publicized is that much of this use can be explained by a smaller proportion of heavy users with complex care needs (Freeborn et al., 1990; Hebert et al., 2010; Jackson & Greenlick, 1974; Kuhlmey et al., 2003). Given these claims, health care consumerism is often referred to as a duty of older citizens: they are expected to actively seek out (and use) health care goods and services in pursuit of healthy aging. Thus, according to Higgs (2009), older people today are encouraged to have the "will to health" (p.619). Little attention is given to whether all citizens have equal opportunity to actively pursue health or have the 'response-*ability*' to make the right choices (Minkler, 1989).

The sociological relevance of medical pluralism is clear. Yet, sociological examinations of medical pluralism are few and, to date, have largely been of a theoretical nature (Bloom et al., 2008; Coburn, 2006; Goldstein, 2004; Press, 1980; Saks, 1992; Shapiro, 1983). With a few exceptions (Kelner & Wellman, 1997; Northcott & Bachynsky, 1993; Pescosolido, 1986; Pescosolido, 1992; Votova & Wister, 2007), empirical work is less evident. This is not to say that medical sociologists are not interested in the interaction between individuals and health care systems. The issue of who uses health care, how much, and how often has captured the imagination of North American scholars since the 1950s (Freeman & Reeder, 1957; Straus, 1957; Twaddle, 1969; Zola, 1966). As well, the relative importance of social factors (such as age, socioeconomic status, gender, race and immigration status) and health needs (such as perceived health, chronic illness, and disability) as independent or intersecting influences on the type and amount of health care being used has been an underlying theme throughout much of this period (Andersen, 1995).

Following critical reflection on the state of research in medical sociology generally, and the case of utilization research specifically, Pescosolido and Kronenfeld (1995) concluded that despite longstanding discussion of who uses health care, what type, when, and why, research has become fixed according to a particular tradition that focuses on discrete use of a small range of conventional health care services, including physicians, hospitals, and, more recently, community based services. By extension, the current state of utilization research has a medical model bias that reflects the interests of the dominant (conventional) medical system and its supporters (Baer, 2008; Bates, 2002;

Gold, 1977). The research tradition also includes primary reliance on one or two frameworks to explain health care utilization, namely the Andersen and Newman model (1973). As a consequence, not only do we lack a basic description of the extent of medical pluralism in countries like Canada, but we also do not know if the well-established social and health predictors of service use also predict use *across* health care systems.

Given its theoretical and empirical significance, this dissertation examined medical pluralism among late middle-aged (50-64) and older adults (65+) who use services available to them in the Canadian public health care system and private health care market. The following questions were addressed. Firstly, are there discernable patterns of medical pluralism that reflect use within or across several health care systems? Secondly, how do the patterns vary according to social structural (e.g., age, gender, socioeconomic status, race, and immigration status) and health factors (e.g., chronic illness, functional ability, and self-perceived health)? For instance, is advancing age associated with pluralistic health care patterns, in that use is spread out across the three health care systems, or is use concentrated within CHC only? Do women use more types of health services overall? How is medical pluralism related to the socioeconomic gradient when there are public and private health services involved? Do members of visible minority groups use different combinations of health services, given differences in what constitutes 'alternative' medicine across groups? Does the same pattern hold for being born outside of Canada, regardless of race? Are there distinct patterns of service use related to illness or wellness health care?

In the next two chapters, I present an overview of the North American literature on health care utilization with a specific focus on medical pluralism. Chapter 2 conceptualizes health care as encompassing three separate but potentially overlapping systems (i.e., conventional health care, complementary and alternative medicine, and public health care) based on the unique health models related to each system. It also documents growth in utilization among North Americans generally and specifically among those aged fifty and older in each of the three health care systems and established a case for medical pluralism and highlights its lack of development in sociology.

Chapter 3 turns to a concise overview of key sociological theories of health care utilization. Due to space considerations, only the widely used Andersen and Newman model and the lesser known but perhaps more relevant health lifestyle theory were discussed. Chapter 3 highlights the advantages and disadvantages of these models and then proposed an adaptation of the health lifestyle theory—the Medical Pluralism Paradigm—as an alternative framework to examine the social and health factors known to influence use of formal health care services. Chapter 3 concludes with a statement of the research problem, study objectives, and hypotheses.

In Chapter 4, I present the study design, data and methodology that allowed me to conduct this study. The study involved applying two different strategies (deductive and inductive) to the same data in order to identify patterns (categories and classes) of health service use among adults aged fifty and older. The goal was to compare the results of the two strategies in terms of both: (i) the number and form of the health service patterns that were identified; and (ii) predictors of these patterns.

The results, presented in Chapter 5, indicate that medical pluralism among Canadians aged fifty and older us characterized by distinct patterns that vary in number and form. Further, many of the social and health factors shown in research to be predictors of CHC, CAM and PHC separately also predicts the likelihood of medical pluralism. In Chapter 6, I conclude this dissertation with a discussion of the study's limitations and implications for future research and health policy for an aging population.

Chapter 2: Literature Review

2.1: Health Care in North America

This dissertation examined patterns of medical pluralism involving discretionary service use across three health care systems: conventional health care, complementary and alternative medicine, and public health care[1]. The conventional health care system is the primary system for health care delivery in North America and in the Western world. Its services include those provided by auxiliary staff, nurses, medical and specialist doctors, to name but a few, and these services are delivered in office, clinical or hospital settings.

Complementary and alternative medicine is a term used to refer to health services and products considered outside of the scope of conventional health care and that are used to augment (complement) or replace (alternative) conventional health care services

[1] As the purpose of this thesis was to examine patterns and predictors of use *across* health care systems (rather than strictly *within* one health care system, as is the normative approach), it is necessary to establish up front that in this study CHC, CAM and PHC were considered to be separate entities, even though in practice there are grey areas in terms of health paradigms and scope. This conceptualization may be problematic for those who feel that CHC and PHC, for example, operate within one single system under the Canadian health care system and subscribe to the same health paradigm (i.e., biomedicine). However, the health paradigms underlying CHC and PHC, and even CAM, for that matter, are conceptually distinct. Consequently, conceptualizing these three health care systems as distinctive rather than joint components of one overall system served to reveal dimensions of medical pluralism and the extent to which medical dominance is (or is not) pivotal in this 'new medical pluralism'.

and products (Kaptchuk & Eisenberg, 2001a; 2001b). CAM services may include a range of biological, spiritual, or manipulative therapies.

The public health care system includes disease surveillance, disease prevention and health protection/promotion (Health Canada, Population and Public Health, 2001). Jurisdiction over public health is a shared responsibility between Canada and the provinces/territories, as outlined in the Public Health Agency of Canada Act[2]. The services associated with public health include: (i) stopping the spread of communicable disease/viruses through vaccinations; and (ii) diagnostic screening for diseases (such as cancer, heart disease, diabetes and others). These services may be delivered in medical offices or in stand-alone clinics.

Conventional health care is typically associated with the biomedical model of health, in which health is viewed as resulting from a lack of disease (WHO, 1946). Mischler (1989) outlines four characteristics of the biomedical model: (i) health is equated with the absence of disease; (ii) a single biological (pathological) agent is generally considered responsible for physiological disruption (i.e., the doctrine of specific etiology); (iii) disease is considered universal and culturally non-specific; and (iv) scientific medicine (and those who practice it) is regarded as being objective and value-neutral. Thus, the biomedical model of health represents a biological pathogen or disease-oriented approach. In the present study, biomedicine is described as biomedical-

[2] Bill C-5: The Public Health Agency of Canada Act. (2006).

reactive to further differentiate it from the PHC model, but also to highlight the curative 'downstream' approach that this model takes relative to 'upstream' models (Zola, 1972).

The implication of having a health care system characterized by a biological pathogen approach is that there is high symbolic and practical significance placed on disease, its cure, and the care provider who possesses the knowledge and skills to treat it. Indeed, a substantial body of research shows that conventional (medical) service use is associated with illness as indicated by self-assessments of physical and mental health, acute and chronic conditions, as well as disability (Andersen & Newman, 1973; Andersen, 1995; Becker, 1974; Blaum, Liang, & Liu, 1994; Borrayo, Salmon, Polivka, & Dunlop, 2002; Cockerham, Kunz, Guenther, & Spaeth, 1986; Finlayson, Lix, Finlayson, & Fong, 2005; Freeborn et al., 1990; Hebert et al., 2010; Heinrich et al., 2008; Houle, Salmoni, Pong, Laflamme, & Viverais-Dresler, 2001; Iecovich & Carmel, 2009; Jackson & Greenlick, 1974; Kuhlmey et al., 2003; Leon-Munoz et al., 2007; Martel, Bélanger, Berthelot, & Carrière, 2005; Nabalamba & Millar, 2007; Watson, Heppner, Reid, Bogdanovic, & Roos, 2005; Wolinsky et al., 1983). Treatment in conventional health care based on the biomedical model is often aimed at eradicating the pathogen. Consequently, the patient, as a passive host for the pathogen, is not really required to have a great deal of involvement in the medical process (Bloom, 2002; Starr, 1982). A consequent power imbalance in the doctor-patient relationship is a widely observed feature of conventional health care (Fox, Ward, & O'Rourke, 2005; Friedson, 1970; Lowenberg & Davis, 1994; Lupton, 1997; McDonald et al., 2007).

CAM encompasses a wide range of health and healing practices that either complement CHC or serve as alternatives to it. Practitioners of CAM are often professional groups defined by the health and healing practices that they promote. These include chiropractors, massage therapists, osteopaths, naturopaths, homeopaths, acupuncturists, herbalists, and Reiki or other energy healers. Not all CAM practitioners fall under an established regulatory body, which means that they cannot legally (or ethically) diagnose disease. In Canada, chiropractors are considered to be one of five allied health professions (along with nurses, orthodontists, optometrists, and dentists) that are federally licensed to diagnose disease (Shah, 1998). Naturopathic doctors (also CAM practitioners) are licensed to diagnose disease in some but not all Canadian provinces.

Researchers have proposed several frameworks for differentiating among the various types of CAM. Frohock (2002) established a framework for exploring CAM in the context of scientific medicine that does two things. First, it identifies CAM as a social construction that is based on its position relative to scientific medicine (i.e., it is either complementary or alternative to CHC); therefore, the notion of CAM is itself historical and contested. Second, it suggests that in Western health care, CAM has no distinctive categories but is instead made up of "continuums of various slopes and lengths on which types of CAM are arrayed" (p.216). CAM services or techniques deemed more 'alternative', such as therapeutic touch (an energy CAM), for example, are ones that physicians have received the least amount of training in (or information about). One factor analytic study of how the public classify CAM revealed that lay people classify CAM from most to least alternative depending upon their familiarity with and perceived efficacy of the CAM (Furnham, 2000). Taking a somewhat different perspective, Kaptchuk and Eisenberg (2001b) differentiate CAM services along one continuum based on the level of 'holism' ranging from most holistic (e.g., reflexology) to least holistic (e.g., chiropractic).

These frameworks for distinguishing among types of CAM, while helpful, are also problematic as subjectivity is involved in assessing the degree to which one service is more or less holistic or efficacious than another. A more objective classification scheme classifies CAM according to whether it is a provider-based service or not (Druss & Rosenheck, 1999), as it is argued that the motivations for visiting a service provider will differ from the motivations for seeking either a non-provider based service/therapy or using a product without first consulting a health care provider (Furnham, 2000).

Regardless of how CAM services are categorized, it is the holistic health paradigm underlying CAM that is widely considered to separate CAM from the biomedical model in terms of understanding and treating disease (Kaptchuk & Eisenberg, 2001a; Thompson, 2003). Holism is a complex philosophical term often used to describe CAM treatments that encompass mind, body and spirit (Kaptchuk & Eisenberg, 2001b). In the holistic health model, disease serves as indicator of imbalance, arising from a wide range of pathogens related to biology as well as individual diet, lifestyle, environment, psychological and spiritual domains, and interpersonal relations. This directly contrasts with the biomedical model which sees disease as being caused by a distinct biological pathogen (Mischler, 1989).

In the CAM model, the individual is ultimately considered responsible for treating imbalance based on assumptions regarding the mind - body connection and the body's ability to heal (Hughes, 2004; Thompson, 2003). While the degree to which CAM practitioners adhere to this model differs, generally CAM practitioners guide the treatment process, working as perceived equals with patients, to bring their mind, body, and spirit back into balance (Kaptchuk & Eisenberg, 2001b). Therefore, the holistic health paradigm is curative insofar as it is the individual in harmony with the practitioner that brings about healing (cure).

The key distinguishing feature between the holistic and biomedical health models is that in the former the 'power' to heal is innate and lies within the individual while in the latter, the 'power' to heal comes from invasive (often man made) interventions (e.g., surgery, pharmaceuticals). Within the holistic health model, once balance is restored, it remains up to the individual to maintain health, typically through continued CAM treatments and products or what is commonly referred to as 'wellness care' (Crawford, 2004; Nitcher & Thompson, 2006; Thompson, 2003). For example, most chiropractors endorse what they call 'maintenance' care, as a long-term program requiring monthly patient visits to prevent an ongoing health (mostly musculoskeletal) problem from recurring (Leboeuf-Yde & Hestbaek, 2008). Other CAM practitioners, such as acupuncturists and massage therapists, also encourage wellness visits (Baer, Hays, McClendon, McGoldrick, & Vespucci, 1998; Frank & Stollberg, 2004; Verhoef & Sutherland, 1995).

In many aspects, PHC could also be considered a wellness-based health care system. Although few researchers distinguish between the CHC and PHC systems, given that both systems are associated with the principles of scientific medicine and the biomedical model, there are important distinctions to be made between the two systems. The treatment and cure of disease (tertiary prevention) are distinguishing hallmarks of CHC, whereas PHC is mostly concerned with preventing disease (primary prevention) and early detection (secondary prevention) (Shah, 1998). Therefore, in theory, the two models place different emphasis on curative and preventive treatments. In practice, this translates into one model for diagnosis, treatment and/or cure of the sick (biomedical-reactive model—conventional health care system) and another model for preventing sickness in the first place (biomedical-preventive model—public health care system). As public health care, by design, is intended for use by asymptomatic individuals, need for these services tends to be more self-directed and perhaps less representative of health care seeking during an illness episode and more indicative of wellness care.

Thus, in Canada, the primary or mainstream model of health care is CHC. The health paradigm associated with CHC is reactive-biomedical, as the system tends to provide acute care in response to illness. In contrast, the holistic health model is the foundation of CAM. It is founded on the principles of non-invasive and 'natural' methods that treat the entire person (mind, body and soul). There are many types of CAM services in the CAM model, ranging from least to most holistic, although classification schemas vary. In Canada, only chiropractors are licensed to diagnose disease as a health care practitioner. Few CAM services are subsidized as supplementary health benefits by provincial governments, in which case, most use is out-of-pocket or reimbursed by private or employee-sponsored health insurance plans. Finally, the PHC system also follows a biomedical paradigm, yet, unlike CHC, which focuses on tertiary prevention, the PHC model has as its focus primary and secondary prevention of disease. These services include vaccinations and disease screening, many of which are accessible outside of the CHC system.

2.2: The Case for Medical Pluralism

There has been extensive and substantial growth in CHC, CAM and PHC use in the North American population as a whole in recent years. In addition, distinct concentrations of use are noted within each of the three health care systems by age. Less well known is the extent to which there are differences in use patterns across health care systems.

2.2.1: Service Use within Health Care Systems

Going to a medical doctor is a common activity for many Canadians but the regularity of visits is associated with distinct age differences. Generally, outside of child-bearing, most research reports a positive linear relationship between age and medical visits (Blaum et al., 1994; Chi, Wu, Chan, & Lee, 2009; Deeg, Portrait, & Lindeboom, 2002; Finlayson et al., 2005; Freeborn et al., 1990; Heinrich et al., 2008; Kuhlmey et al., 2003; Link, Long, & Settle, 1982). Older people tend to contact a doctor more frequently and to have more visits per year than younger adults. For instance, in 2005, almost 90 percent of Canadians aged 65 and older consulted a medical doctor compared to 77 percent of adults aged 18 to 64 (Nabalamba & Millar, 2007). Thirty-five percent of Canadians aged 65 and over visited a specialist compared to less than 20 percent of Canadians younger than age 65 (Nabalamba & Millar, 2007).

Research suggests that among late middle-aged Canadians (i.e., those aged 50 to 65), or baby boomers as these cohorts are often referred to, there is a growing reliance on consultation with medical doctors than in times past. In a study of health outcomes analyzing over thirty years of national health survey data, Wister (2005) found a sixty percent increase among middle-aged Canadians consulting a medical doctor three or more times per year between the years 1978 and 2001, suggesting a trend toward increased intensity of use within conventional health care that may well carry on as these now late middle-aged Canadians grow older. The findings from Wister's (2005) analyses suggest that there is greater reliance on CHC in earlier periods of life for late middle-aged Canadians, relative to similar ages in earlier generations (pre-World War cohorts).

The landmark study in CAM research is the Eisenberg (1993) study in which he and his medical colleagues found that more than one-half of the American population in 1990 had used at least one type of 'unconventional' medicine in the last year and were paying billions of dollars out of pocket to do so. Since then, studies conducted in the United States on the proportion of CAM users has demonstrated that use of some CAM practitioners increased substantially between the years 1990 and 1997 (Eisenberg et al., 1998) but remained stable between 1997 and 2002 (Tindle, Davis, Phillips, & Eisenberg, 2005). In Canada, the proportion of the population making visits to CAM practitioners increased slightly from 15% of the general population in 1995/1996 to 17% in 1998/1999

(Millar, 2001). Recent Canadian data (1997-2006) on both the proportion of CAM users and volume of use confirm that the trend toward increasing use continues, but suggest that it is not consistent across all CAM practitioners (Esmail, 2007). For instance, use of publicly subsidized chiropractic services by late-middle aged and older adults, actually decreased over the decade of the 1990s in one Canadian province (Votova, Penning, Zheng, & Brackley, 2010).

However, the actual prevalence of CAM use is difficult to gauge. When CAM use is defined based on the proportion of the population making visits to CAM practitioners, rates of use within the general population range from 6.5% to 26% (Druss & Rosenheck, 1999; Eisenberg et al., 1998; Foster et al., 2000; W. J. Millar, 2001; Paramore, 1997) and up to 19% among adults aged 65 and over (Foster et al., 2000). Yet when both CAM products and services are included in the definition, the prevalence rates are much higher (28% to 46% - see (Eisenberg et al., 1998; Foster et al., 2000; Tindle et al., 2005)). Higher prevalence rates in the general population are also found when the use of prayer specifically to treat health problems is included in the definition of CAM (Barnes et al., 2004). As Eisenberg and colleagues (2001) note, prevalence rates nearly double when outcome measures include both CAM-related products *and* services, given the greater use of CAM products than services. It also depends upon whether lifetime or recent use of CAM is being measured. For instance, Esmail (2007) reported that the number of Canadians who reported ever having tried at least one CAM product or service was 74% in 2006, up slightly from 73% in 1997. However, there was a statistically significant increase in recent use among Canadians with 54% in 2006 reporting use in the last year compared to 50% in 1997.

There appears to be a curvilinear relationship between age and CAM use. Specifically, research findings reveal that use is generally lower in younger (18-44) and older (65+) relative to middle-aged and late middle-aged adults (45-64) (Eisenberg et al., 1998; Grzywacz, Suerken, & Neiberg, 2007; Kessler et al., 2001). Several explanations are possible. First, middle-aged cohorts may be more amenable to using CAM services compared with younger and older cohorts for whom CAM is potentially unfamiliar. Second, it may also be likely that older cohorts put more faith in CHC and in medical doctors as their primary source of care, given the period of history in which these cohorts were socialized (Mechanic, 1995). Third, people in mid-life are most likely to be employed and to be employed in jobs in which CAM services are likely to be covered by employee health plans. In addition, these people are most likely to have the income levels required to cover health services that are not publicly funded.

Studies examining trends in PHC service use from the last 15 years or more generally support the finding that North American men and women over the age of 40 report routine use of influenza vaccinations (i.e., flu shots) and PHC sex-specific screening services and that this use is on the rise (Kwong, Rosella, & Johansen, 2007; Nelson et al., 2002; Nelson, Bland, & Powell-Griner, 2002; Shensen, Bolen, & Adams, 2007). There was a significant increase in the number of older Americans (65+) who reported use of flu shots between the years 1991 and 2000 (Nelson et al., 2002). A similar trend is seen in Canada. Kwong (2007) found that flu shot rates increased significantly over a ten year period (1996-2004) among Canadian adults (18+), with the late middle-aged cohort (50-64) showing the greatest increase in prevalence.

When the definition of PHC services is expanded beyond flu shots to include sex-specific PHC services such as mammograms, Papanicolaou (PAP) tests and Prostate Screening Antigen (PSA) tests, it is clear that use of these services is also on the rise. Between the years 1991 and 2000, there was a statistically significant increase in mammogram use among American women aged 40 and older (Nelson et al., 2002). A similar increase was also evident among Canadian women aged 40 and older between 1981 and 1994 (Gaudette et al., 1996). In 2003, approximately 75% of American women aged 52 to 64 living in the State of Washington reported mammogram use in the two years prior (Downey, Tyree, & Lafferty, 2009). Similar rates are seen for lifetime use of PHC services for late middle-aged and older women. McFall and Davilla (2008) found that 67% of older American women reported ever having had a mammogram. Among late middle-aged Canadian women (aged 50-69), 72% reported use of at least one mammogram in their lifetime (Bancej, Maxwell, Onysko, & Eliasziw, 2005).

Further, there appears to be a curvilinear relationship between age and PHC use, similar to that apparent in CAM use. Specifically, the frequency of mammogram use peaks for women in their 50s with substantially lower proportions of use evident among women in their 70s and 80s (Nelson et al., 2002; Shensen et al., 2007). Underutilization of flu shots and sex-specific screening services and flu shots within older cohorts (aged 75+) is also noted (Kwong et al., 2007; McFall & Davila, 2008; Newsom, Kaplan, Huguet, & McFarland, 2004).

To some extent, age cohort distinctions in PHC service use, whether PHC is defined broadly (i.e. flu shots) or specifically (e.g., sex-specific screening), likely reflect the population health practices of public health agencies. In Canada, for example, population targets for PHC services are set according to age (and gender). Flu shots are recommended for infants (under age 6), older adults (65+), and adults of any age in so-called vulnerable states of health. Women aged 50-69 are encouraged/recruited into breast cancer screening programs across the country (Canada Public Health Agency, 2005). PAP tests are typically not recommended for women over the age of 65. Late middle-aged males are encouraged to seek routine PSA testing to screen for prostate cancer; however, the PSA campaign (recommendation) is nowhere near as well-established as are female cancer screening campaigns in Canada. This may well be because the jury is still out on whether PSA testing is a valid, reliable and beneficial service for detecting prostate cancer in its early stages[3].

2.2.2: **Service Use across Health Care Systems**

There are few studies of service use across health care systems. Most of those that are currently available take CHC as their point of departure and use it as a baseline from which to examine other service use. For instance, medical visits are sometimes

---

[3] British Columbia Cancer Agency (2010). Accessed on July 5, 2011 at http://www.bccancer.bc.ca/HPI/CancerManagementGuidelines/Genitourinary/Prostate/PSAScreening/default.htm

used as predictors of CAM use (Millar, 2001). Alternatively, medical visits are used to predict use of PHC services such as vaccinations (Kwong et al., 2007) or mammograms (Potvin, Camirand, & Beland, 1995; Qi, Phillips, & Hopman, 2006). In these studies, a causal relationship is implied between medical visits and use of CAM or use of public health care (Cant & Sharma, 1999; Sharma, Haas, & Stano, 2003). That is, the medical visit precedes service use in other health care systems.

Druss and Rosenheck (1999) offer one of the few nationally representative studies to examine medical pluralism. Their results, based on a 1996 national survey of American adults (aged 18+), indicate that the majority of the population (60%) reported exclusive use of CHC services in the year prior to the survey. Interestingly, 32% used neither CHC nor CAM services during this period, indicating that one in three people did not use health services that year. Only 6.5% used all three health care systems in the past year. Just 1.8% used only CAM. This is slightly lower than the 4% reported elsewhere (Astin, 1998; Eisenberg et al., 1998), but higher than the less than 1% reported by Downey and colleagues (2009). However, Druss and Rosenheck (1999) combined conventional (medical visits, specialist visits) and public health care (flu shot, mammogram, PSA, PAP) services in their conceptualization of ‘conventional health care’ thereby potentially inflating the prevalence of CHC use.

Most medical pluralism studies focus on dual health service use (CHC and CAM). For example, Eisenberg and colleagues (1998) report that among Americans aged 18 and over with self-reported health conditions, there was a statistically significant increase in dual use of medical and CAM providers within the last year between 1990 (8.3%) and

1997 (13.7%). Recently, Wade and colleagues (2008) reported that five to 18% of American women (aged 18+) with self-reported health conditions had used CAM and a medical doctor in the same year.

A more comprehensive study of medical pluralism across three health care systems found that in 2003, approximately 25% of American women aged 50-64 who had screened for breast cancer in the last two years (PHC use) had also visited a CHC and a CAM provider (Downey et al., 2009). The rate of tri-use was slightly higher (28%) for women aged 21-64 who had screened for cervical cancer (i.e., PAP test) in the last two years. While both the Wade et al. (2008) and Downey et al. (2009) studies examined medical pluralism among women, the main difference between the two is that the former study included use of CAM providers and products and the latter focused on CAM providers only. Therefore, the Downey et al. study likely generates a more conservative estimate of the extent of medical pluralism among women.

Druss and Rosenheck (1999) also found that not only did dual users of CHC and CAM visit conventional providers more often than did non-users of CAM, but they also used more types of preventive services overall, indicating that when medical pluralism does occur, consumption of services is much higher than it is in the general population. Similarly, Millar (2001) found that use of CHC services was much greater among Canadian adults who visited CAM providers than it was among non-users of CAM. Older adults (65+) who saw their primary provider more frequently (e.g., 3 visits vs. 0 visits) were also more likely to use CAM (Foster et al., 2000).

In summary, each of the three health care systems (CHC, CAM and PHC) emphasizes the diagnosis and treatment of disease to varying degrees, with similarities and differences noted in the role of patient and practitioner involvement. Although the CHC (biomedical-reactive model) and CAM (holistic model) systems are different in theory, and in many ways different in practice, some aspects of practice are the same. For instance, both CHC and CAM treat individuals who may or may not be presenting with symptoms (asymptomatic) so the visit may be illness or wellness based. In contrast, the PHC does not treat disease. It serves to protect the public against infection and disease through vaccinations and early detection of disease through screening procedures. As PHC, by design, is intended for use by asymptomatic individuals, or by symptomatic individuals who have conditions which make it important that they not acquire a secondary infection, need for these services tends to be more self-directed and perhaps less representative of health care seeking during an illness episode and more indicative of wellness care.

Growth in use of each of the three health care systems outlined above is well-documented. This includes use by late middle-aged and older adults. However, age appears to have different implications for utilization depending upon which health care system is being studied. Although a positive linear trend is evident in terms of medical and specialist visits, there appears to be a growing trend toward extensive use of both CAM and PHC services within late middle-aged groups, with use of these latter two systems decreasing somewhat with advancing age. Despite a lack of research on medical pluralism in North America, some evidence suggests that CAM is increasingly being used at the same time as CHC and PHC. Estimates range from approximately one in ten to one in three people reporting pluralistic health care practices, depending upon the population studied. The number of individuals using only CAM is small.

The next chapter explores the theoretical aspects of health care utilization. It suggests that traditional frameworks are limited for understanding the ‘new medical pluralism’ because they take a normative view of health care as occurring only within CHC and only in response to illness. Rather, service use *across* health care systems can only be understood by considering the complex interplay of social location and agency, as each interact to shape health need for services.

Chapter 3: Theories of Health Care Utilization

3.1: The Andersen and Newman Model

Much of the current knowledge about the factors that influence CHC use is based on the widely used Andersen and Newman (1973) health care utilization model. While the Andersen and Neman (1973) model has also been applied to the study of CAM (Kelner & Wellman, 1997; Votova & Wister, 2007) and PHC use (Potvin et al., 1995), its main application has been to explain use of services within CHC (Anderson, 1973). This model suggests that there are certain social, social psychological, demographic and contextual factors that predispose and enable individuals to use health care if the need for care should arise (Andersen & Newman, 1973; Andersen, 1995; Mechanic, 1979; Ward, 1977). Some individuals have the propensity to use services more than others, where propensity towards use can be explained (and predicted) by individual characteristics (such as gender, age, health beliefs) that exist prior to service use. The opportunity to use health services is also seen as being enabled by individual and area level factors. For instance, having a regular source of care, having health insurance, or living in a rural environment where health services tend to be less abundant either enable or constrain health care utilization. However, once health needs are taken into consideration, they are often found to be a dominant, if not *the* dominant factor predicting use of health care (Andersen, 1995).

The Andersen and Newman (1973) model has been revised several times since it was first developed, with the last round of revisions occurring in the mid-1990s. In 1995, Andersen added the ‘health care system’ (i.e., national health policy, health care organizational structure, and health care resources) and the ‘external environment’ (including physical, political and economic components) to the model. He also conceptualized the health care system and the external environment as parallel to each other and antecedent to the three core individual elements (predisposing, enabling and need factors) included in the original model. These revisions responded to criticisms that the original model neglected the larger social context (specifically, the health care system) which may influence individual health and decision-making (Evans & Stoddart, 1990; Mitchell & Krout, 1998; Pescosolido, 1992; Rundall, 1981; Wolinsky, 1994).

The revised Andersen and Newman model represents an improvement over the original model. However, by conceptualizing the external environment as parallel to rather than interacting with or influencing the health care system, Andersen (1995) appears to regard the CHC system and the external environment as isolated influences on individual health behaviours. Furthermore, although a number of feedback loops are included in the revised Andersen (1995) model, there is no provision for feedback from the three core elements (predisposing, enabling and need factors) back onto the health care system or external environment, suggesting that these structures are isolated from each other and from individual health activities and outcomes. This reflects “downward conflation”; a term used by Archer (1995) to describe theoretical models that are overly deterministic. In such models, the external environment (i.e., the health care system) influence individual factors without an opportunity for reverse influence from the individual back onto the system. Thus, even in its revised form, the Andersen and

Newman framework moved from being a model focused on rational action, individualism and agency (Mechanic, 1979; Pescosolido & Kronenfeld, 1995) to one in which the external environment determines individual factors and behaviours (Archer, 1995).

3.2: The Health Lifestyle Model

Given the limitations associated with using the Andersen model in its original and revised forms, and in light of dramatic changes to the health care landscape over the last two decades, the need for an alternative theoretical framework is clear (Pescosolido & Kronenberg, 1995). One possibility is Cockerham's (2005) health lifestyle model. The health lifestyle theory was developed in response to the need for theoretical models of health practices (utilization) that are dynamic and can account for individual agency, but recognize that agency operates within parameters of social structure (Cockerham et al., 1986; Cockerham, Rutten, & Abel, 1997; Cockerham, 2005; Cockerham, Hinote, Cockerham, & Abbott, 2006).

The health lifestyle model draws on Weber's lifestyle concept (1922; 1978) to capture the dialectical relationship between life choices (agency) and life chances (structure) (Abel, 1991; Cockerham et al., 1997). According to Cockerham, and Weber before him, life chances—which tend to be reflected in social location—shape life choices and these life choices, in turn, influence health practices. The perspective taken by Weber and Cockerham is that lifestyles are thus unique to individuals but are collectively related to social location. For instance, Cockerham highlights how smoking is a practice that is much more frequently observed within the collective lifestyles of lower social classes compared to the collective lifestyle of the upper class where smoking has become socially unacceptable.

The health lifestyle model could be used to explain why medical pluralism occurs and the form that the medical pluralism patterns take. The notion that health lifestyles are stratified is compatible with research that examines the predictors of CAM and PHC use, as it is often the case that service use in these two health care systems tends to be related to social status (namely income and education). Sharma (1992), among others (Baer et al., 1998; Goldstein, 2002), observes how the rise in CAM use parallels the growth in disposable income among the middle class during the 1980s.

Other instances of socialization processes influencing health behaviours have been noted by critical theorists. They argue that the ‘think pink’ breast cancer campaign that promotes regular mammogram use is one example of many middle class social movements with the agenda of ‘naming and framing’ disease (Brown et al., 2004; Fox et al., 2005; Frank, 2002). In fact the ‘discourse of diagnosis’ is now considered to be an important part of the disease socialization process because it gives the person a label from which to build a new identity (Jutel, 2009). Others see disease screening as a service that caters to the ‘elite’, as it is only a select segment of the population that can (and want to) be aware of and prevent potential health risks (Armstrong, 1995; Forde, 1998; Henwood et al., 2003). In this context, individuals aspire to and create their own ‘health lifestyles’ based on the degree to which they have been socialized to ‘choose’ and these choices may lead to use of CHC only or may include a broader scope of health practices across CAM and PHC, or a combination of the three. However, the degree to which there are options from which to choose depends in large part upon social structure, socialization and experience processes.

Cockerham's (2005) health lifestyle model was not designed to explain utilization of formal health care services, however. This is apparent in that the health care system is not a key feature of the framework but is embedded in 'collectivities'. Collectivities are collections of actors linked together through particular social networks, such as kinship, in households and in communities, and by social institutions, including but not limited to work, religion, politics and health care (Cockerham, 2005). Instead, his framework was intended to be an initial theory for explaining how it is that a constellation of health behaviours, which may or may not include formal service use, combine to create 'health lifestyles'. These health lifestyles, he argues and research supports, are concentrated in different social strata with wealthier and more highly educated individuals being more likely to participate in health producing (rather than damaging) behaviours. As a result, Cockerham's model is wellness based. It does not consider health behaviours in response to illness or as part of chronic illness management.

However, for many late middle-aged and older adults, the majority of health behaviours occur either in response to illness or arise from managing chronic illness (Arcury, Quandt, & Bell, 2001; Benyamini, Leventhal, & Leventhal, 2003; Lawton, 2002; Lawton, 2003). These behaviours may take the form of diet and lifestyle change, as individuals diagnosed with a chronic condition may be told that, as part of their chronic illness management regimen, they need to monitor sodium and fat intake, for example. Health behaviours related to aging (i.e., chronic disease prevention and management) also are increasingly defined by interaction with formal health care providers (Estes & Binney, 1989; Gilleard & Higgs, 2002), in an ever growing medical industrial complex (Relman, 1980; Waitzkin, 1989). Thus, when theorizing 'health lifestyles' for cohorts over the age of fifty, incorporating aspects of formal service use into any explanatory framework would provide a more comprehensive and realistic view of health behaviour.

The importance of including health care systems as a key component of any framework that theorizes health behaviour cannot be understated. It can be argued that health care systems, like all social institutions, shape and are shaped by social processes and by individual agency (Musolf, 2003; Sewell, 1992). For instance, dissatisfaction with the biomedical (reactive) model and power imbalances in the doctor-patient relationship are considered to be major stimulants in the surge of popular interest in CAM in recent years (Astin, 1998; Brown et al., 2004; Goldstein, 2002; Sharma, 1992; Sirois, 2008). The biomedical model is frequently perceived by patient-consumers as invasive and as treating sickness with potentially more harmful procedures and treatments (Calnan, Montaner, & Horne, 2005). It also is seen as being inappropriate for treating chronic and/or non-life threatening disease and ill-equipped to provide meaningful therapeutic relationships (Kelner, Wellman, Pescosolido, & Saks, 2000). Therefore, given that there is some degree of feedback between the social institution of health care and individual agency, a medical pluralism framework should include some mechanism to account for this. This would involve a feedback process that explains medical pluralism as arising from interaction between individual patient-consumers' preferences/practices (agency) — as they are bound by and constructed through social location — and health care systems.

Cockerham's (2005) health lifestyle theory is an advance over the Andersen and Newman model because it addresses the main critiques of the latter model. As noted, these critiques are an over-emphasis on the individual as a rational actor (Mechanic, 1979; Pescosolido & Kronenfeld, 1995) and a lack of interaction between individuals and social institutions (Archer, 1995). In the health lifestyle model, health practices are seen to result from the dialectical process of life chances (i.e., social structure) and life choices (i.e., agency). It suggests that life chances give rise to unique socialization processes and experiences that shape health practices. However, the health lifestyle model also has its weaknesses that limit its utility as an explanatory framework for addressing medical pluralism. These limits include the conceptualization of health practices as being strictly wellness based (i.e., the model does not incorporate chronic illness management as a health practice) and the fact that it includes no means for feedback between individual health practices and the health care system (and vice versa). Further, to my knowledge, there have been no empirical analyses that use the Cockerham (2005) conceptual framework.

3.3: The Medical Pluralism Paradigm

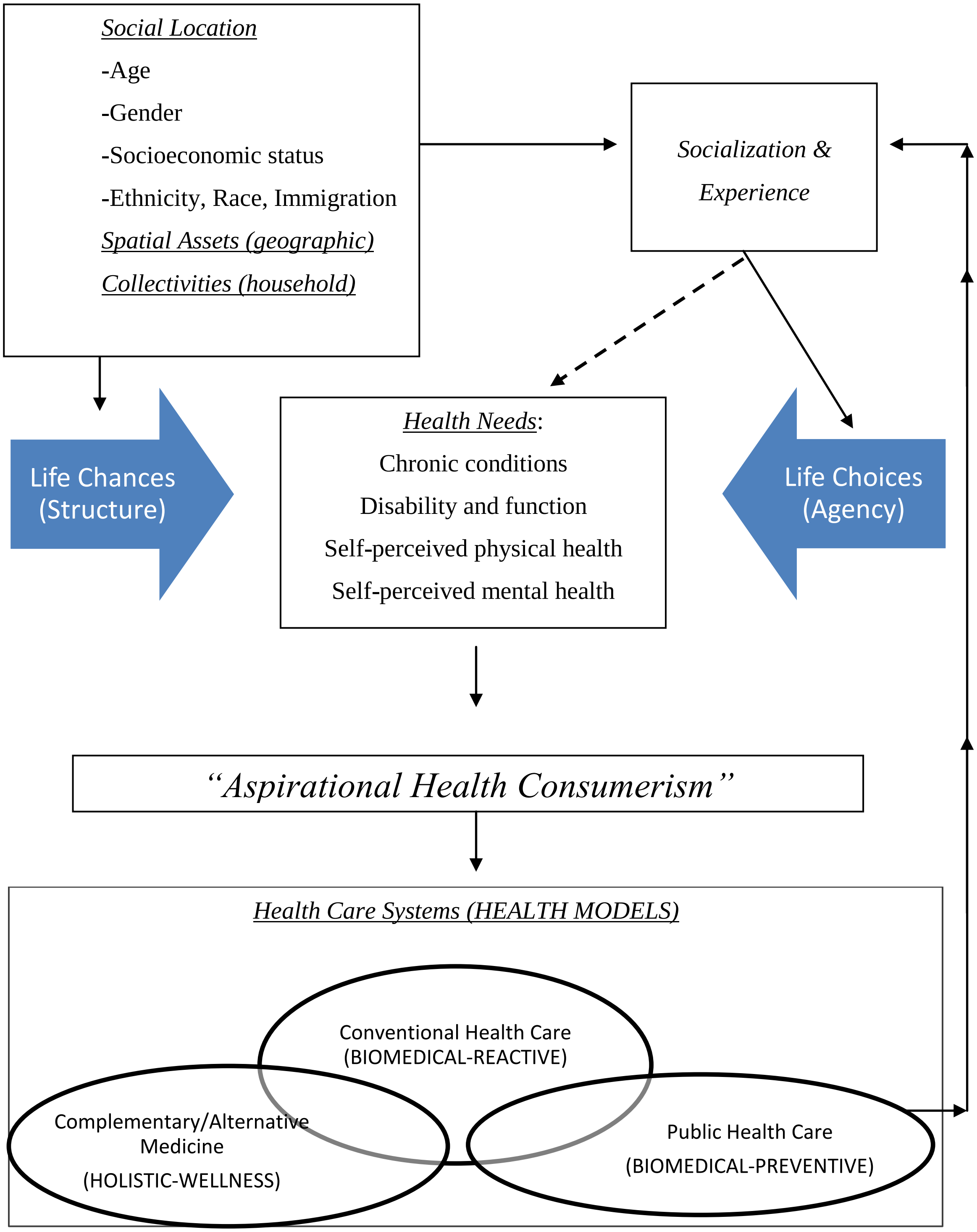
Given the limitations of both the Andersen-Newman (1973, 1995) and Cockerham (2005) frameworks for understanding health behaviours in the current health care climate—or 'new medical pluralism'—an alternative theoretical framework is proposed. This framework, referred to as a medical pluralism paradigm, takes as its starting point Cockerham's (2005) health lifestyle theory[4], notably the dualistic relationship between structure and agency in determining health practices. It adds health-related needs and health care systems to Cockerham's framework and uses the concept of 'aspirational health consumerism' (Scambler, 2007) to link the two.

Consistent with the health lifestyle model (and to a large extent with the Andersen-Newman model, only with different terminology), the medical pluralism paradigm (see Figure 1) suggests that social location (indexed by factors such as age, socioeconomic status, gender, race, and immigration), spatial assets related to place (e.g., urban/rural residence and province), and collectivities related to household (e.g., marital status and household size), affect life chances (structure). Through socialization and individual experiences, which are bound by ideology and institutionalized discourse, the scope of life choices (agency) is determined.

---

[4] Permission to use and adapt the Health Lifestyle Model in this dissertation was granted by Dr. William Cockerham, as per email correspondence in May 2011.

Figure 1.Research framework: the Medical Pluralism Paradigm



Adapted from: William C. Cockerham (2005). Health Lifestyle Theory and the Convergence of Agency and Structure. *Journal of Health and Social Behaviour*, *46*(March): 51-67.

Where the medical pluralism paradigm in Figure 1 departs the most from Cockerham's framework is the addition of health needs and health care systems (health paradigms). This is where elements of the Andersen and Newman model are helpful, as, in their framework, health related needs play a central role in influencing service use. Use of discretionary health care is seen as a choice that an individual makes, based on real and/or perceived health-related need. Yet, in the medical pluralism paradigm, both choice and need are influenced by social structure.

Health care choices are seen as embedded in but not necessarily always influenced by social context (Cockerham et al., 1986; Cockerham et al., 1997; Cockerham, 2000). Therefore the collective behaviour of individuals in a social group—or what social psychologists call descriptive norms—guides what is deemed normative health behaviour. Normative behaviour is relative, however, as what is 'normal' behaviour for one social group is not normal behaviour for another and can be judged by that individuals' location within the social group (i.e., their age, gender, race, ethnicity and socioeconomic status). For example, in a small scale study of men aged 18-78, Mahalik, Burns and Syzdek (2007) found that the health behaviours of these men were guided by perceptions of masculinity and the 'normality' of other men's behaviours. Similar findings were reported by Lawton (2002) in her examination of the normative health behaviours of older adults who were making decisions about 'normal' health behaviour based on the actions of others their own age coupled with perceived future health risk.

The medical pluralism paradigm also views the broader social context (outside of and related to social networks) as structuring both perceived and objective health-related need. In particular, theorists contend that for the last several decades, North Americans have been living in a 'risk society' (Beck, 1992; Ekberg, 2007; Elliot, 2002; Giddens, 1991). The risks generated by living in a modern globalized society are seen as encroaching on all aspects of public and private lives. Today, 'risk is part of your life' and anxieties about risk are translated into current health practices (Lupton & Tulloch, 2002). Thus, in the context of a risk society, coupled with neoliberal agendas and welfare reform, responsibility for health is primarily up to the individual (Fuchs & Zeckhauser, 1987; Lupton, 1994). These perceptions of health risk and responsibility contrast sharply with past perceptions wherein "disease and its causation were understood in fatalistic ways" (Brandt, 1997 as cited in Lawton, 2002: pg.715). Therefore, health-related need in the present context of a risk society could be seen as being generated by social constructions of perceived rather than objective need for health services.

The health lifestyle model is further adapted in the present study by adding elements from Scambler's (2007) progressive research programme for the sociology of health inequalities. These include using Scambler's concept of 'spatial assets' to describe what Cockerham (2005) calls 'living conditions', as the former term suggests that individuals who are better qualified and more affluent are able to choose the areas in which they live, as shown to be the case in area-based research (Galobardes, Shaw, Lawlor, Davey Smith, & Lynch, 2006). The implication is that if spatial assets are strong, then this predisposes individuals to good health, although of course health may yet be less than good if other health-bestowing asset flows such as biological, psychological, social, cultural and above all material, are weak.

In the medical pluralism paradigm, individual health needs and health care utilization are linked through ‘aspirational health consumerism’, a concept also borrowed from Scambler (2007). It is used here to illustrate how the culture-ideology of consumption embedded in Western society is based on ‘ideals’ of what a healthy citizen is and how individuals strive or aspire to these ideals through health care consumption (Fox et al., 2005; Frank, 2002). The concept of aspirational health consumerism also captures elements of wellness care and ‘smart consumerism’ (Kelner & Wellman, 1997), which could be interpreted as primarily agentic health practices, given that service use may be based on ‘realized’ risk of the likelihood of a health event occurring. At the other end of the health spectrum, individuals may be aspiring to a ‘sick role’ similar to that outlined by Parsons and as a result be consuming large shares of health services in response to the socially conditioned role that their illness demands.

Before the discussion turns to the social and health factors related to service use, it is important to note that the medical pluralism paradigm is not exhaustive and does not include all potentially important influences and relationships. For instance, biological (maternal and genetic) and environmental factors that are likely to affect disease causation (including type and onset), and ability to (successfully) manage disease progression (House, Lantz, & Herd, 2005; Link & Phelan, 1995) are not captured. Though these other effects manifest as inequities in disease and wellbeing, and therefore are important as distal factors in the relationship between social and health factors and medical pluralism, an explicit focus on the embodied consequences of structured inequalities in access to health care is useful for explaining health practices at the individual level (Krieger, 2008).

3.3.1: **Social Factors and Health Service Use**

3.3.1.1: Social Location

The medical pluralism paradigm directs attention to the role of social location factors as important determinants of medical pluralism. These include a broad range of distinguishing characteristics that are either ascribed at birth or are achieved in life. In line with the social location perspective, it is argued in this study that a person's position or location in society (i.e., status/roles) is designated by the social demographic characteristics that are used to describe them. Individuals can be ranked hierarchically according to socially desirable characteristics such as income, education, occupation and prestige (Emirbayer & Mische, 1998; Sewell, 1992). As outlined by Link and Phelan's (1995) fundamental cause hypothesis, among others (Evans & Stoddart, 1990; Mirowsky & Ross, 2008), better positioned individuals have better health outcomes.

The importance of age as a social structural dimension influencing type (and extent) of service use within and across health care systems was considered earlier (see Section 2.2.1). Other major dimensions include gender, socioeconomic status, ethnicity, race, immigration status, and, to a lesser degree, where one lives and with whom.

3.3.1.1.1: Gender

Both cross-sectional (Cecile, van Wijk, Huisman, & Kolk, 1999; Macintyre, Hunt, & Sweeting, 1996; Nabalamba & Millar, 2007; Statistics Canada, 2001; Verbrugge, 1985) and longitudinal analyses (Green & Pope, 1999) provide support for the view that women are more likely to seek medical consultation and do so more often than men. Women also use PHC services more often (Statistics Canada, 2001; Taylor, Larson, & Correa-de-Araujo, 2006) and on a more regular basis (Bolen, Adams, & Douglas, 2007; Nabalamba & Millar, 2007).

Gender differences in CAM use appear less conclusive, depending upon whether the focus is on services or products. Some studies indicate no gender difference in the propensity to use CAM when services only are considered (Arcury et al., 2007; Astin, Pelletier, Marie, & Haskell, 2000; Foster et al., 2000; Najm, Reinsch, Hoehler, & Tobis, 2003). Still others find that women are more likely to use CAM services than men (Barnes et al., 2004). Research specific to CAM product use, however, typically finds that gender is an important predictor among individuals of all ages with women being more likely to use CAM products and to use more of them than men (Gardiner et al., 2007; Ipsos Reid, 2005; Ramsey, Spencer, Topolski, Belza, & Patrick, 2001; Singh & Levine, 2006; Troppmann et al., 2002; Troppmann, Johns, & Gray-Donald, 2002). Within older populations, women are often reported to use more products and to use them more often than men (Arcury et al., 2007; Kuo, Hawley, Weiss, Balkrishnan, & Volk, 2004; Raji, Kuo, Al Snih, Sharif, & Loera, 2005).

Biological, socialization and materialist explanations for the apparent gender differentials in health care use have been proposed. From a biological perspective, because women generally live longer than men do, they are said to have more years in which to contact health care providers (and to use health products) (Arber & Cooper, 1999; Green & Pope, 1999; Taylor et al., 2006; Verbrugge, 1985). Women are also said to be more prone to pain-related and disabling illnesses, such as arthritis or migraines that require ongoing, management strategies (Arber, 1997; Cecile et al., 1999). They are also more likely to interact with formal health care providers for reasons related to the female reproductive system (i.e., menopause, hormone replace therapy).

It is also possible that women's greater use of a variety of services and products within and across health care systems results from socialization processes. Some researchers suggest that women are socialized to be more responsive to bodily symptoms early in life and that these practices are carried over into mid and later life (Green & Pope, 1999; Mustard, Kaufert, Kozyrskyj, & Mayer, 1998; Verbrugge, 1985). Mustard and colleagues (1998) suggest that social roles influence service use. As women are more often primary care givers (to children and to aging spouses, siblings and parents), they have more frequent contact with care providers and therefore, more opportunities to seek out professional treatment. Additionally, the health care system is structured so that sex-specific screening services target men and women in different age groups. Therefore, the effect of gender on health care utilization may vary at different stages of the life course, but particularly between late middle-age and later life, as late middle-aged men and women and men are socialized to be responsible for (and responsive to) early detection of disease relative to their older counterparts for whom cancer screening is less often recommended (Balducci, 2006).

Finally, materialist explanations suggest that women experience material deprivation more often than men do (i.e., differential exposure) and that this leads to greater stressors in life and, in turn, poorer health status (Denton, Prus, & Walters, 2004; Green & Pope, 1999; Macintyre et al., 1996). For instance, widowed and divorced women are over-represented in low income groups (Arber, 1997; Sorensen, 1994). Additionally, women who work outside of the home may be more susceptible to stress (i.e., differential vulnerability) due to role accommodation as these women try to balance responsibilities of being in the paid and unpaid sectors of the economy simultaneously (Arber & Cooper, 1999). The materialist explanation would also take note of the fact that women tend to have lower incomes and thus be less likely to be able to afford private health care services, such as most CAM and some PHC services. In this regard, materialists might be interested in the intersection of socioeconomic status and gender.

3.3.1.1.2: Socioeconomic status

The importance of socioeconomic status (SES) for access to and utilization of health services is widely acknowledged (Coburn, 2004; Galobardes et al., 2006; Kaplan & Lynch, 1997; Lynch, 2001; Oakes & Rossi, 2003). However, debate is ongoing regarding the relative importance of its components (e.g., education and income). For example, Mirowsky and Ross (2008) suggest that education has more of an impact on health and health practices than all other dimensions of SES. They see the opportunities afforded by education as creating “cascading sequences” or pathways that impact positively or negatively on health and health practices. Through processes of “structural amplification”, well-educated individuals amass advantages in life that are amplified by being situated in better social structural locations. Less educated individuals, on the other hand, accumulate disadvantages over the life course, which leads to decreased control over health and health practices. For instance, over the life course, lesser ability to access or interpret health information and how (and when) to access health services may lead to mistreatment, delayed or interrupted health service use and poor health may result.

People who are in the old-old age (85+) cohorts today may be particularly disadvantaged when it comes to health service use and the ability to interpret or seek out health information relative to late middle-aged (50-64), young-old (65-74), and mid-old (75-84) individuals. Educational attainment varies widely by birth cohort with fewer years of education being reported by earlier cohorts (pre-1930s) and later cohorts (post-1930s) reporting more years of education (Lauderdale, 2001). Therefore, the 'democratization' of health knowledge that is apparently fuelling the health consumerism movement is not an experience shared equally across age cohorts (Duncan & Smith, 1989; Gilleard & Higgs, 2002; Higgs & Gilleard, 2006; McPherson & Wister, 2008).

Others argue that the relationship between SES and health practices has less to do with educational levels than it has to do with actual material resources such as income (Cockerham et al., 1986; Galobardes et al., 2006; Herd, Goesling, & House, 2007; Lynch, 2001; Phelan & Link, 2005; Williams, 2003). These arguments see income working directly on utilization by enabling individual access to health services and products based on one's ability to pay for them (Galobardes et al., 2006; Lynch, Kaplan, & Salonen, 1997). Proponents of this perspective view income as primarily acting indirectly on utilization by fostering the necessary material conditions for good health (Evans &

Stoddart, 1990; Herd et al., 2007; Lynch, 2006; McQueen & Siegrist, 1982; Phelan & Link, 2005; Williams, 2003).

Also in line with the materialist argument, individuals over their lifetimes are exposed to varying levels of positive and negative stressors that accumulate to produce health outcomes in middle and later life (Dannefer, 2003; House et al., 2005). If an individual has the necessary material resources to eliminate or buffer negative stressors shown to predict poor health (e.g., poor housing, poor diet, poor hygiene, lack of social support, etc.), throughout life, then this individual may have better health overall relative to someone who has experienced lifelong disadvantage. Therefore, any apparent variation in health service use between these two hypothetical individuals may reflect fundamental differences in their baseline health status. Subsequently, health care for the 'advantaged' person may focus on wellness and chronic illness prevention, while for the 'disadvantaged' individual, health care may be in response to illness with less concerted efforts spent on prevention.

However, as the distribution of income is unequally shared across gender, due to the patriarchical structure of most Western societies that favours the male wage, many women, particularly those who are over the age of 75 today, have had fewer opportunities to be in the paid labour force than women who are currently in their 50s and 60s and are more likely to be disadvantaged. To capture these gender differences, household income is a better measure of material resources than individual income, particularly when research includes women who are old today (Sorensen, 1994). Furthermore, measures of household income should take into consideration elements of living arrangements in order to capture how income is distributed within households based on the cost of living, particularly insofar as poverty tends to be concentrated among older women living alone (Arber, 1997).

The funding structure of the Canadian health care system has important implications for medical pluralism in association with SES because using services across health care systems depends in large part on an individual's ability to pay for them. In addition, they influence the extent to which the individual is educated about which services are publicly funded and which are not. In Canada, all three models of health are incorporated into the funding structure of mainstream health care, to varying degrees. Conventional health care (biomedical-reactive model) is universally funded through federally mandated legislation that sets the terms for public health insurance called the Canada Health Act (or Medicare). Under Medicare, medically necessary services (i.e., doctors, hospitals, some pharmaceutical treatments) are publicly insured services for all Canadian citizens. However, as the provinces and territories administer health services, which services are deemed medically necessary and which are not varies across the country.

Some CAM services, such as chiropractic and massage therapy, are considered to be supplementary health benefits under most provincial health plans (Shah, 1998). Chiropractic was one of the first CAM services to be introduced as an insured benefit into the federally funded health care system in 1972 (Coburn & Biggs, 1986). Presently, coverage varies by province and is typically only offered as a subsidized benefit for individuals and families with low incomes (Tuohy, 2002). Some private health insurers through employer-sponsored health benefit plans also have begun to offer limited coverage for select CAM services (Millar, 2001). In such cases, individuals with employer-sponsored health benefit plans beyond that of provincial medical plans may be more inclined to use CAM because they have better coverage and less to pay out of pocket. For many, however, CAM services (and products) are mostly out of pocket expenses (Bishop & Lewith, 2008; Eisenberg et al., 1998; Park, 2005), accounting for billions of dollars spent annually in the United States (Eisenberg et al., 1993) and in Canada (Boon et al., 2006).

Finally, most public health care services are included under the Canada Health Act and require few to no out of pocket expenses. Routine screening for breast and cervical cancers are universally funded services across Canada. Flu shots are usually financed privately, unless one is aged 65 or older in situations where there is national concern leading to mass immunization (e.g., H1N1 vaccination, 2009). Or else flu shots may be incorporated into employee-sponsored health clinics.

Given that Canada's national health insurance plan covers medically necessary and most public health services for its citizens, one would expect that the socioeconomic gradient in access to health care has been reduced or eliminated. While this appears to be the case for primary care services within CHC, there is evidence of inequality in terms of access to specialist care. Specifically, research evidence indicates that even with similar levels of health-related need, use of at least one visit to a medical doctor (i.e., general practitioner) is independent of income (Dunlop, Coyte, & McIsaac, 2000); however, differences are apparent when looking at the intensity of service use following initial contact, with lower income groups having higher volume of use (visits) conditional on use (Blackwell, Martinez, Gentleman, Sanmartin, & Berthelot, 2009; Curtis & MacMinn, 2008; Dunlop et al., 2000). However, lower income individuals are also more likely to have less contact with medical specialists (Asada & Kephart, 2007). Relationships between lower SES and lower use of public health care services (i.e., flu shots and routine cancer screening) are also noted (Katz, Zemencuk, & Hofer, 2000; Kwong et al., 2007; Qi et al., 2006). Others (Clarke et al., 2003; Clarke, Arnold, Everest, & Whitfield, 2007; Edwards & Jones, 2000) suggest that public health care is a health service directed to and used by specific markets, including the middle-class. Therefore, while income may not necessarily impede initial access to medical doctors in Canada, differential access to specialist care and public health services across income groups is apparent.

3.3.1.1.3: Ethnicity, race and immigration status

Canada has long been described as having a mosaic of ethnic and racial groups (Chen, Wilkens, & Ng, 1996; Porter, 1965). Yet, the demographic structure of Canada is rapidly changing. According to Statistics Canada (2007), one in five Canadians is foreign born and this is the highest proportion seen in over 75 years. Furthermore, the immigrant profile is changing with more South Asian and Asian immigrants arriving in Canada each year relative to the 1970s and earlier when immigrants were mainly of Anglo-Saxon origin. Therefore, it is important to consider ethnicity, race and immigration status as components that may predict medical pluralism. These inequalities may interact and shape inequities in access to health services.

Evidence for differences in CHC service use (medical, specialist visits, hospital use) by race or ethnicity is somewhat contested but appears to point toward a general under servicing of individuals by race and among immigrants. For instance, Laroche (2000) found that there were no significant differences in access (and therefore use) of CHC services when comparing use of medical doctors and specialists across ethnic groups in Canada over two time periods (1985 and 1991). That is, ethnic groups (identified in this study by ancestral ethnicity), did not have health utilization patterns that were significantly different from those of individuals who claimed to have a 'Canadian' ethnic identity.

Yet differences in CAM use according to race and ethnicity have been reported. Grzywacz and colleagues (2007) detected weak support for race as a predictor of CAM service use in a nationally representative sample of Americans, with individuals who reported belonging to a visible minority group being less likely to use CAM services relative to Native-born Americans. These differences were apparent in the population aged 18 and over (Gardiner et al., 2007) and specifically among older adults (Arcury et al., 2007; Najm et al., 2003; Raji et al., 2005). Individuals who self identified as belonging to a visible minority and/or who were not born in the host country (USA) were more likely to use CAM products than their White Native-born counterparts. Similar findings are seen in Canadian research (Lai and Chappell, 2007). Although that study did not compare across race, it did find that among older Chinese immigrants living in seven urban cities across Canada, the majority of non-native born Canadians used Traditional

Chinese Medicine in conjunction with CHC relative to a minority of older Chinese immigrants who used only CHC.

Ethnic and racial differences in use of PHC have also been noted, leading to speculation that visible minorities are relatively under-serviced (McDonald & Kennedy, 2004; 2007). In the older adult population, foreign born and visible minority women are least likely to be up to date with screening for cancers and flu shots, according to standards established by North American federal health agencies (Bolen et al., 2007; Oxman-Martinez, Abdool, & Loisell-Léonard, 2000; Saldov, 1991), once again suggesting that these groups are relatively under-serviced compared to their native born counterparts.

Yet, the evidence is not conclusive. In the United States, for example, there was a reported increase in preventive service use by visible minorities aged 65 and older between the years 1997 and 2004 (Shensen et al., 2007). The same trend is seen in Canada. Among women aged 50 to 69, those born outside of Canada were more likely to have initiated use of mammography two years after their first screening compared to Canadian-born women (Bancej et al., 2005). However, it is not known if the increased likelihood of initiation among these non-Canadian born women will translate into continued adherence with mammogram programs, in which case, patterns of under-service by non-Canadian born women may continue.

Some researchers suggest that in addition to racial and ethnic diversity, studies of health should consider immigration status (Kobayashi, Prus, & Lin, 2008; Newbold, 2005; Newbold, 2009). Specifically, length of time in the country may influence utilization patterns. In what is being called 'the healthy immigrant effect', research indicates that recent immigrants tend to be healthier than native-born citizens upon arrival to the host country but with time the health advantage decreases and health status levels converge toward those of the native-born population (Chen et al., 1996; Dunn & Dyck, 2000; Gee, Kobayashi, & Prus, 2003; Oxman-Martinez et al., 2000).

This may not be the case among older populations however. Gee, Kobayshi and Prus (2003) found that Canadian immigrants aged 65 years and older have poorer overall health compared to native-born citizens, however, the disadvantage disappears after various social and health factors are controlled for. Generally, it is believed that where there is a health advantage, it tends to decrease over time as new immigrants assimilate the health practices (e.g., diet, lifestyle) of the host country. Therefore, over time, the life chances and subsequently, the life choices of longer-term immigrants come to mirror those of native-born residents.

Newbold (2009) found that many immigrant groups in Canada are under-serviced in terms of physician and hospital visits relative to native-born men and women. While he found distinct age differences in service use in that the percentage of foreign born individuals aged 50-64 used fewer services than those aged 65 and over, he did not find significant differences in service use between foreign born and native-born Canadians overall. He speculates that even though there were no significant differences between the two groups, the fact that foreign born individuals had a marked decrease in health status in the period after arrival and no resultant increase in physician or hospital use suggests that immigrants are experiencing barriers to access. McDonald and Kennedy (2007) also found that Canadian immigrant women had relatively low rates of PAP tests upon arrival to Canada, relative to Canadian-born women of the same age. However, with increasing years since migration, immigrant women had higher rates of PAP testing than their female Canadian-born counterparts. Therefore, examinations of service use by non-native born populations should consider that length of time in the country may serve as a proxy for acculturation and adoption of 'non-traditional' health services (Wade, Chao, & Kronenberg, 2007). In the long-term, the health service patterns of immigrants may mirror those of native-born Canadians.

There are a number of explanations for why there appear to be differences in health care utilization associated with ethnicity, race and immigration. Structural barriers related to language (if English is not the first language), cultural compatibility, and access to culture-specific health information are commonly noted in relation to conventional health care use (Lai & Surood, 2010; Saldov, 1991). Different cultural belief systems and approaches to healing and health may also impact on motivations for use (Newbold, 2005; Olafsdottir & Pescosolido, 2009). These include but are not limited to views about the use of doctors, preventive health services (i.e., diagnostic services or flu shots), and alternative medicines (or indeed even what constitutes alternative medicine, as to some, Western medicine is alternative). Finally, differentials in access to health care by immigration status could also be due to the structure of Canada's health care system. There may be gaps in health coverage for recent immigrants to Canada (Newbold, 2009). Provincial health policies often require recent immigrants to observe a waiting period (six months or less) before universal health coverage begins. To bridge the gap, some immigrants may purchase third-party (private) insurance, while others go without any insurance at all. Consequently, new immigrants may restrict their use of health care for reasons unrelated to health need.

3.3.1.1.4: Spatial Assets

Canada is a vast country, diverse in geographical and demographic features. Due to this diversity, any study of health care utilization should account for differential access to health care services related to urban/rural environments and province of residence. As noted, in Canada, the allocation of health care resources is under provincial jurisdiction, in keeping with the principles outlined in the Canada Health Act (Shah, 1998). Therefore provincial variations in service type and availability will likely influence opportunities for medical pluralism.

There is usually a greater concentration of medical doctors and specialists (Statistics Canada, 2001), CAM providers (Millar, 2001; Park, 2005) and PHC clinics (Kwong et al., 2007) in urban than rural areas of the country. In situations where supply is higher in urban cores, it appears that utilization of these health care systems is also higher (Esmail, 2007; Hirschkorn, Andersen, & Bourgeault, 2009; Nabalamba & Millar, 2007). In addition to health provider (practice) supply, other spatial assets that may influence demand for health services include transportation systems, advertising, and network opportunities, all of which tend to be more prominent in urban areas relative to rural areas.

One explanation for regional variations in health service use is that there are more CAM providers in urban cores. For example, chiropractors tend to practice near the colleges they graduated from (Manga, 2000; Shekelle, Markovich, & Louie, 1995). There is also a greater number of acupuncturists, Ayurvedic practitioners, among other types of ‘non-Western’ medicine, in urban cores with high ethnic and cultural diversity (Baer et al., 1998; Kelner et al., 2000). As a result, living in an urban area characterized by a greater supply of CAM providers can lead to greater opportunities to try CAM, both initially and subsequently. Research suggests that once one is involved in the CAM network, there is a greater likelihood of trying other types of CAM (Sirois, 2008).

Provincial variations have also been noted in CAM use (Esmail, 2007; Millar, 1997; 2001). Publicly funded coverage for select CAM services varies by province (Tuohy, 2002). For instance, up until 2010, chiropractic service was a universally insured benefit for residents of Alberta, yet in British Columbia, chiropractic service has been a means-tested supplementary health benefit since 2001. Furthermore, Verhoef and Sutherland (1995) found regional differences in the rate of physician referral to CAM practitioners. For instance, Ontario physicians were more likely to refer to CAM practitioners than were Alberta physicians.

Others have suggested that there is a regional culture of CAM use resulting in higher use patterns in Western regions compared to Atlantic or other regions. Astin (1998) found higher concentrations of CAM users (of both services and products) living on the West coast of the US when compared to Midwest and Eastern parts of the country. He suggests that the inclination to use CAM in addition to (or in place of) CHC is related to different beliefs and values that are unique to individuals living on the West coast of the US relative to other parts of the country. In Canada, similar concentrations of CAM use in Western Canadian provinces have been reported (Hirschkorn et al., 2009; Millar, 2001; Park, 2005).

Research also indicates that there are provincial variations in use of influenza vaccinations (Kwong et al., 2007) and mammography (Kwong et al., 2007; Qi et al., 2006), with some provinces having more comprehensive disease screening programs than others. For example, British Columbia has the longest running provincial Breast Cancer Screening Program (Bancej et al., 2005; Canada Public Health Agency, 2005). Ontario is one of the few provinces to offer a universal flu vaccination program (Kwong et al., 2007). Therefore, more established PHC programs will likely increase the extent to which an individual has knowledge of and access to these services.

3.3.1.1.5: Collectivities

Marital status represents one dimension of a kinship network, shown in research to have an important influence on the likelihood of using health care services. Spouses may encourage (or potentially discourage) their partners to seek formal health care. This encouragement may take any number of forms, such as driving a spouse to an appointment, reminding them about appointments, and monitoring overall health (Joung, Van Der Meer & Mackenbach, 1995).

Divorced and widowed individuals appear to have less contact with and to use fewer CHC services than married people do (Curtis & MacMinn, 2008; Dunlop et al., 2000; Verbrugge, 1979). Joung and colleagues (1995) also found that never married people have lower utilization of CHC services and that this relationship remained after controlling for health status. Conversely, based on available studies, marital status appears to have no significant impact on whether or not an individual uses CAM services within the population aged 18 and older (Tindle et al., 2005) and among individuals aged 65 and older (Astin et al., 2000; Cheung, Wyman, & Halcon, 2007; Foster et al., 2000; Tindle et al., 2005). Yet, being married appears to increase the likelihood of being up to date with vaccinations and cancer screening for women aged 50 and older (Bolen et al., 2007; Edwards & Jones, 2000). However, McFall and Davilla (2008) ascertained that marital status did not have a significant influence on mammography use among older adults (aged 65+).

Another aspect of collectivities related to marital status is the number of people who live in a household. Household size may serve as a proxy for information diffusion about health models and systems. As the number of people in a household increases, so does the size of the individual's personal/social network, which facilitates information diffusion about health practices (Egede, Zheng, Ye, & Silverstein, 2002; Levy-Storms & Lubben, 2006). Family, friends, and acquaintances serve as predominant referral sources for CAM within the broader lay referral network (Kelner & Wellman, 1997; Sharma, 1992; Sirois, 2008). The number of persons living in the household also serves as a crude proxy for support networks; assuming that household members may assist or encourage individuals to seek or use health care services in much the same way as does marital status.

3.3.2: **Health Factors and Health Service Use**

In addition to highlighting how social location structures opportunities for individuals to use one or more health care systems, the medical pluralism paradigm also directs attention to how health factors or needs influence health service use, through socialization processes and experiences. Health-related needs may be related to disease states (acute or chronic), disability, and self-rated health. The importance of these health factors in shaping utilization within and across health care systems is particularly pertinent among late middle-aged and older adult populations as it these age cohorts that are either experiencing the onset of chronic disease and/or are delaying the progression of existing ones (Martel et al., 2005).

Sociologists have studied illness behaviour for more than half a century. The term ‘illness behaviour’ was first introduced in 1961 by Mechanic and Volkart and was used to describe “the way in which symptoms are perceived, evaluated, and acted upon by a person who recognizes some pain, discomfort or other signs of organic malfunction” (as cited in Young, 2004: pg.2). The bulk of social and health science literature accumulated since that time generally finds that there is a ‘need’ for health care before use will take place (Andersen, 1995; Millar & Hull, 1997; Statistics Canada, 2001; Young, 2004). This need may be ‘real’ and/or ‘perceived’ (Andersen, 1995).

Many physiological systems show substantial losses with advancing age, yet there is variation in the degree of loss (McPherson & Wister, 2008) and the degree to which the loss leads to functional impairment (Lawton, 2003; Pierret, 2003). However, the meaning and consequences of chronic illness vary widely by social location (Young, 2004) and individual experience (Pierret, 2003). Thus, whether and the extent to which individuals use health care appears to depend upon how disease is perceived and the resultant manifestation of symptoms and impairments (Mechanic, 1995; Suchman, 1965).

Disability is the term used to describe the end state of a biological and social process linking disease to individual function. It describes the extent to which an individual's ability to function in daily life, work and recreation is compromised. The disablement process, as conceptualized by Verbrugge and Jette (1993), suggests that disability is not a characteristic of the individual but rather is a "gap between personal capability and environmental demands" (pg.1). The functional impairment that leads to disability is typically multidimensional in nature (Lawton, 2003: Young, 2004). Therefore, researchers recognize the need to incorporate different measures of health that include function and disability.

Research suggests that having more than one chronic condition creates a complex interaction among disease states and inevitably leads to multi-system impairment (Fried, Ferrucci, Darer, Williamson, & Andersen, 2004; Fries, 2001; 2005). There is strong empirical support for the link between multiple chronic conditions and health care use. Wolff, Starfield and Andersen (2002) found that among Americans aged 65 and older who used Medicare fee-for-service medical consultations and inpatient services, the intensity of health service use was much greater among individuals with four or more chronic conditions than individuals with fewer than four conditions. Thus, it would appear that, particularly among individuals aged 65 and older, increasing comorbidity leads to greater use of health services.

In addition to the number of chronic conditions an individual may have, type of disease has also been shown to be an important influence on the type and extent of health service use. Acute cardiovascular disease, for instance, typically requires a great degree more biomedical intervention than diseases like arthritis, which may impede quality of life and function but are not fatal. Evidence of this relationship between disease type and health care use is seen in patterns of CHC use, where much of the research shows that fatal diseases (acute or chronic) tend to be accompanied by greater intensity of care while the treatment for non-fatal chronic disease is associated with less contact and intensity (Blaum et al., 1994; Freeborn et al., 1990; Korten et al., 1998; Kuhlmey et al., 2003; Leon-Munoz et al., 2007; Linden, Horgas, Gilberg, & Steinhagen-Thiessen, 1997; Wolinsky, 1978; Wolinsky et al., 1983) and CAM use (Park, 2005; Spence & Ribeaux, 2004). However, this relationship is not typically seen in PHC use (Nelson et al., 2002), where the health care system is primarily used for prevention.

Alternatively, disability may be represented in terms of the degree of activity limitation arising from the impairment(s). Fried and colleagues (2004) suggest that disability and comorbidity are different but somewhat overlapping concepts. They note that an older individual may be in a comorbid state *independent of* disability and that differences in utilization patterns may result. In a study of disability and health care use, Tomiak, Berthelot and Mustard (1998) found that older 'disabled' Manitobans used more health care than their 'nondisabled' counterparts, even after controlling for chronic conditions. They conclude, as do Fried and colleagues (2004), that utilization studies need to include measures of disability in addition to measures of comorbidity, as both impact service utilization differently.

Outside of measures of function and chronic conditions, almost all utilization studies include some measure of overall health status, often relying on subjective or self-report measures. In fact, examining the relationship between poor self-perceived health and CHC use is how many researchers approach health care utilization, given the (mostly acute) disease orientation of the biomedical paradigm (Fries, 2005; McKinlay & Marceau, 2002; Millar & Hull, 1997). Self-rated health has been shown to be an independent predictor of health care utilization (Benyamini et al., 2003; Johnson & Wolinsky, 1993; Lafortune, Beland, Bergman, & Ankri, 2009; Zack, Moriarty, Stroup, Ford, & Mokdad, 2004). Research also suggests that ratings of self-perceived health decline with age, with older adults, both male and female, being more likely than younger adults to report poor health (Benyamini et al., 2003; Shooshtari, Menec, & Tate, 2007; Zack et al., 2004).

Self-perceived mental health is not typically included in utilization studies of discretionary health services, mostly because in scientific medicine the focus is on physical health and mind-body dualism (i.e., separating the mind from the body when treating health). Yet, Sharpe and Carson (2001) suggest that psychological health is equally important in medical treatments and its lack of inclusion in both the medical encounter and health research may explain why some patients present with unexplained somatic symptoms to their medical doctor. Somatisation occurs when patients present with symptoms that cannot be explained by existing medical criteria. In epidemiological terms, the rising incidence of ‘unexplained’ diseases or somatisation reflects a shift in mortality and morbidity patterns in industrialized countries (McKinlay & Marceau, 2002; Olshansky & Ault, 1986; Omran, 1971).

The increasing incidence of somatisation is believed by some to be one reason why interest in and use of CAM has grown in the latter quarter of the twentieth century. As noted, the foundation of the holistic health model to which CAM ascribes is to treat the mind-body-spirit (Kaptchuk & Eisenberg, 2001b). As interest in CAM grew and national studies were being published in prominent academic journals (see Eisenburg et al., 1993), researchers began to question not only who was using CAM, but whether it was being used to supplement or replace CHC. Researchers approached the issue with the premise that individuals were dissatisfied with CHC care and treatments for specific (namely chronic) health problems and were turning to CAM for symptom relief and cure instead (Astin, 1998; Fulder & Munro, 1985; Paramore, 1997; Verhoef & Sutherland, 1995). Therefore, use of health care for some may be due to health needs that are 'perceived' and have not been validated in the mainstream medical model.

Another health care phenomenon being attributed to the rise in popularity of CAM is that of wellness care. Unlike illness behaviour that has and continues to be widely studied, wellness care is a relatively new area of study. Some argue that wellness care is a socio-cultural phenomenon that parallels growth in (and supply of) CAM and PHC services (Armstrong, 1995; Crawford, 2004; Fuchs & Zeckhauser, 1987; Goldstein, 2002). Yet, others question the emergency of wellness care as new, arguing instead that it has been around much longer than illness behaviour, as lay medicine and self-care in particular were precursors to scientific medicine (Saks, 1992; Starr, 1982). Consequently, there is no clear or agreed upon definition of wellness care. Most often, the term wellness is used to describe health activities undertaken by apparently healthy individuals for purposes of maintaining health and preventing illness (Crawford, 1980; Crawford, 2006; Fuchs & Zeckhauser, 1987; Millar & Hull, 1997; Nitcher & Thompson, 2006).

Indications that there was a 'wellness' trend in North America came from two population-based trend studies in the US and Canada. First, there were the landmark Eisenberg (1993) and follow-up studies (1998). In the follow-up study, Eisenberg and colleagues (1998) used nationally representative data to show that the number of CAM users who did not report any specific illness almost doubled in the 1990s in the US. Thus, otherwise healthy individuals were using health care services for reasons related to health maintenance, rather than in response to illness. The same trend was found in Canada, with more Canadians reporting wellness care as a reason for visiting a range of CAM providers between 1997 and 2006 (Esmail, 2007).

However, there appears to be more convincing evidence that poor health and disability are also reasons for using CAM (Astin, 1998; Astin & Astin, 2000; Druss & Rosenheck, 1999; Eisenberg et al., 1993; 1998; Goldstein, 2004; Harris & Rees, 2000; Millar, 2001; Paramore, 1997; Spence & Ribeaux, 2004; Tindle et al., 2005). For example, use of CAM has been linked with comorbidity, poor physical and mental health (Barnes et al., 2004; Bishop & Lewith, 2008; Crabb & Hunsley, 2011; Ni, Simile, & Hardy, 2002; Paramore, 1997).

While, conceptually, PHC is modelled on preventive health care, there are few studies that link PHC use with good health. For example, there are only a few studies on the prevalence and predictors of PHC that even include a measure of overall health (with the exception of Bolen et al., 2007; Edwards, 2000; McFall et al., 2008; Potvin et al., 1995). Hulka and Wheat (1985) speculate that the use of preventive medicine may not be influenced by the same factors as other types of utilization; rather they point to characteristics of the individual (e.g., income, education, regular source of care) as better predictors of PHC use than individual health needs. Consequently, it appears that most researchers consider motivations for using PHC services to be less tied to overall health status than do researchers who examine use within CHC or CAM where health needs are seen as (and therefore studied as) the primary predictors of service use.

In summary, early medical sociological studies first introduced the notion that there is variation in the way that similar diseases are expressed among individuals. That there was a definitive link between CHC and poor overall health was soon well-established, in research and policy. Studies continue to find a strong relationship between increasingly complex health states related to chronic conditions and disability and contact with CHC service providers. The relationship between poor health and CHC use is often magnified in later life, owing to the biological processes of aging, coupled with the social context of the disablement process. However, while a substantial amount of evidence points to a strong association between complex health needs and service use, particularly in later life, a growing trend toward wellness care indicates that for some, health needs are changing.

3.4: Statement of the Problem

The above-noted review of social and health science literature reveals a pattern of rising use within all three systems of health care (i.e., conventional, complementary and alternative, public health) in the North American population as a whole during the past 40 years that varies as a function of social and health factors. Similar trends are evident among cohorts aged fifty and older. Less well known is whether service use is concentrated in one health care system or is spread across the three systems. Consequently, we also know little about the social and health factors that may explain pluralistic health care use. Accumulated evidence about the social and health predictors of use *within* health care systems is mixed and has not been empirically validated as predictors of use *across* health care systems. Therefore, if utilization within and across CHC, CAM and PHC is seen as a proxy for access, then the degree to which medical pluralism in Canada fosters equal and equitable health care access is unclear.

Medical pluralism on the whole is understudied in sociology and this may be related to a lack of theoretical development in utilization research in general, and by extension, a medical model bias that reflects the interests of the dominant (conventional) medical system and its supporters (Baer, 2008; Bates, 2002; Gold, 1977). Conversely, one could also argue that a medical model bias within sociology stems from a pre-occupation with critiques of medicalization (Acheson, 1990; Conrad, 1975; 2007; Lowenberg & Davis, 1994; McKinlay & Stoeckle, 1988; Navarro, 1986).

The normative perspective (medical model bias) is also evident in traditional health care utilization models used since the 1970s. When these models (notably the Andersen and Newman model) were developed, medical monism was prevalent. Health at that time was defined by the absence of illness (the biomedical model) and its treatment took place within one system (conventional health care). Discretionary health care was primarily delivered by medical doctors to individuals seeking expert care in response to illness. Therefore, it is not surprising that the normative perspective is reflected in traditional utilization models.

In the present day, however, there is a pluralistic range of health services delivered by providers other than and including medical doctors (Cant & Sharma, 1999). Health is defined much more broadly and there is an increasing emphasis on individual responsibility for maintaining it (Crawford, 2007). Indeed, the prevailing ideology in Western society positions health as an individual responsibility (Coburn, 2004; Crawford, 2004; Navarro, 1999; Scambler, 2007). Older adults, in particular, are encouraged by the state to have the “will to health” (Higgs et al., 2009). Underlying the discourse of health consciousness is the assumption that because health needs tend to increase with advancing age, by extension, more demands will be placed on public (and family) resources, relative to all other age groups (Estes et al., 2003; Gee & Gutman, 2000). In this context, active pursuit of health that includes ‘appropriate’ use of health care is seen as a civic duty of ‘healthy agers’ (Estes et al., 2003; Gallagher & Sionean, 2004; Katz & Marshall, 2003; Kickbusch, 2004). Certainly, the market share of health providers has increased parallel to the demand for services, presumably making access to services less of a barrier, if considering only supply and demand outside of other social and health factors shown to influence use.

There are few published studies on medical pluralism in North America and most are limited in a number of regards. To begin with, apart from a few Canadian studies on dual-use of CHC and CAM ranging from small sample (Esmail, 2007; Kelner &

Wellman, 1997; Millar, 1997; 2001; Northcott & Bachynsky, 1993; Park, 2005; Shapiro, 1983; Sirois, 2008; Wellman, Kelner, & Wigdor, 2001), to provincial (Northcott & Bachynsky, 1993; Shapiro, 1983) to national level surveys (Millar, 1997; 2001; Park, 2005), the bulk of medical pluralism research using nationally representative data is situated in the United States (Druss & Rosenheck, 1999; Eisenberg et al., 1998; Najm et al., 2003; Ness, Cirillo, Weir, Nisly, & Wallace, 2005). Yet, utilization studies conducted in the United States should not be taken as representative of health care use in Canada, primarily because the funding structures of the health care systems are different, in addition to other relevant differences between the two countries.

According to the medical pluralism paradigm, there are a meaningful patterns related to service use that can be explained by a number of social and health factors. The number of health care systems used and the form these patterns take are expected to vary because of differential access to opportunities for medical pluralism, due to socially produced inequalities (i.e., age, gender, SES, race/cultural origin, and immigration status) and associated health-related needs. Whether these same health inequalities exist when use is examined across health care systems has yet to be empirically validated.

Age as a predictor of service use has been extensively examined. Yet the research is concentrated within CHC rather than across health care systems (Blaum et al., 1994; Chi et al., 2009; Deeg et al., 2002; Finlayson et al., 2005; Freeborn et al., 1990; Heinrich et al., 2008; Kuhlmey et al., 2003; Link et al., 1982; Roos, Havens, & Black, 1993; Stump, Johnson, & Wolinsky, 1995). These studies indicate that there is a positive linear relationship between age and use of medical and specialist visits.

Results from other studies that examine use within one health care system, such as CAM or PHC, do not consistently report the same linear relationship between age and service use as found in CHC research. Rather, older adults appear to use CAM (chiropractic visits or other CAM provider) and PHC services related to cancer screening (mammogram, PAP test, PSA test) less often. Partly, these age differences are explained as arising from socialization processes and experiences as they relate to CAM and PHC. Also, older people tend to be excluded from routine screening regimes due to their age. As a consequence, CAM and PHC service use appears to be concentrated within late middle aged cohorts (aged 50 to 64). Furthermore, recent trends suggest that late middle aged Canadians are using CHC more often than the generation before them did (McPherson & Wister, 2008; Wister, 2005).

Given the evidence generated from the literature reviewed here, a normative perspective (medical model bias) on health care views discrete use of CHC as the 'norm'. And the norm in CHC is that there is a linear relationship between age and discretionary service use; as age increases, so too does health service use. However, it is also apparent that when looking 'within' other health care systems—CAM and PHC, specifically—a different pattern emerges. Instead, use of services associated with those two systems tends to be concentrated within late-middle aged groups. In order to bring these separate bodies of research together, what is needed is a pluralistic view of service use across health care systems. A pluralistic research lens would highlight and potentially explain age differences across service use and potentially redirect the discussion about rising service use away from the normative perspective.

None of the studies that purport to examine medical pluralism have an explicit focus on middle-aged and older adults. Currently, there is no published research that describes the social and health profiles of individuals aged 50 and older who use (or do not use) more than one health care system, or that assesses the significance of direct and interacting social and health effects on medical pluralism.

Furthermore, in the few medical pluralism studies that have been conducted to date, the focus tends to be on women (Downey et al., 2009; Wade et al., 2007; Wade et al., 2008). An exclusive focus on the use patterns of women is likely due to their greater involvement with formal health care systems across the life course (Verbrugge, 1985). On the one hand, a gender focus highlights the unique health needs of females. Cecile and colleagues (1997) speculate that because of their reproductive systems, females have and respond to more "internal host information" or bodily (somatic) symptoms than males. Yet, a gender focus may inadvertently perpetuate the medicalization of the female body and further validate the existence of "universal female excess morbidity" (Macintyre et al., 1996). It may also serve to exclude the aging experience of men, which some argue is noticeably absent from the social gerontology literature (Calasanti & King, 2005). A more balanced investigation of medical pluralism, therefore, would include separate analyses of sex-specific health service use (such as mammograms for women and prostrate screening for men) with common aspects of service use (e.g., flu shots) examined across both sexes for comparative purposes.

Substantial research supports the existence of a socioeconomic gradient in use of CHC and PHC services, but its direction is not entirely clear in CAM. Most CAM studies show inconsistent associations between income or education and use.

While some medical pluralism research is characterized by a gender focus, other aspects of inequality such as ethnicity or race are completely ignored. There is a lack of research on pluralistic health care use among racial and ethnic groups, and immigrant populations, barring the Wade et al. (2007) study noted above, and a similar deficiency in the number of studies on medical pluralism for these populations in relation to age.

Perhaps the strongest evidence in the case for medical pluralism comes from understanding how our concept of health and what constitutes health-related needs is changing. Therefore, medical pluralism may result as individuals seek out the best health care system for their specific needs; with specific aspects of health best treated differently in each of the three systems. The foundation of CHC, as conceptualized in this study, is the biomedical-reactive model and is well suited to respond to sickness using curative, often reactive, treatments. Therefore exclusive use of CHC, or medical monism, may characterize the health service patterns of 'unhealthy' individuals, as indicated by health measures such as comorbidity, disability, and poor overall health status, who are seeking health care in response to illness.

CAM (holistic health model) and PHC (biomedical-preventive model) systems, on the other hand, have theoretical paradigms that include primary and secondary prevention or wellness care, although CAM may also include elements of tertiary care (i.e., the state of *dis*'ease' experienced prior to restoring balance through wellness care).

Although there is no agreed upon definition of wellness care, some argue that it is an activity undertaken by apparently ‘healthy’ individuals for purposes of maintaining existing health and preventing illness (Crawford, 1980; 2006; Fuchs & Zeckhauser, 1987; Millar & Hull, 1997; Nitcher & Thompson, 2006). Wellness care is under-studied in health service utilization research, making the extent of it unclear. However, there appears to be some indication of a trend towards wellness care specifically in CAM and PHC systems (Bolen et al., 2007; Edwards & Jones, 2000; Eisenberg et al., 1998; Esmail, 2007; McFall & Davila, 2008; Popay & Williams, 1996; Potvin et al., 1995; Spence & Ribeaux, 2004). Therefore use within and across CAM and PHC may be related to wellness care sought out by otherwise ‘healthy’ individuals.

Conversely, evidence for the association between poor overall health and CAM use is strong, suggesting that medical pluralism may be driven by demand for alternatives to either substitute or complement CHC. The inappropriate fit between a health care system that is dominated by a biomedical-reactive health model and health-related needs that are chronic in nature reflects the evolution of disease from acute infectious to chronic degenerative disease, as initially outlined by Omran (1971) in his epidemiological transition theory, and since revisited by Olshanksy and Reed (1986), and McKinlay and Marceau (2002). Therefore, the degree to which these patterns reflect patient-consumers in search of wellness or an expression of need by the sick due to the changing nature of disease, or a combination of the two, certainly warrants further examination.

In summary, an understanding of medical pluralism in Canada is lacking. Current research is largely confined to a normative view of health care as occurring within one (conventional) health care system. Rarely do researchers take a pluralist perspective to health service use and examine use across CHC, CAM and PHC, despite observed differences in use within each by social location and health factors.

3.5: Research Objectives and Hypotheses

To address issues related to a lack of research on medical pluralism, the present study has two main objectives. The first objective is to examine the nature and prevalence of patterns of medical pluralism among Canadians aged fifty and older. More specifically, the purpose is to examine if there are distinct dimensions or configurations of service use found within and across conventional, complementary and alternative medicine, and public health care systems. The second objective is to address relationships between major social and health factors identified as important determinants of health service use within the medical pluralism paradigm and in previous research literature (i.e., age, gender, SES, race/cultural origin, immigration status, chronic conditions, functional status and perceived health status). In particular, the following hypotheses are tested:

First, I test an *age-medical pluralism hypothesis* to examine if there are distinct age-related patterns associated with service use across health care systems. This hypothesis holds that, all other things being equal, there is greater diversity in health service patterns (in terms of the number of patterns and type of services used) among late middle-aged adults (50-64) than among older adults (65+). The rationale for this hypothesis stems from previous research on the relationships between age and CHC use (positive, increasing use with age), CAM use (curvilinear, greater use in middle age), and

PHC use (curvilinear, greater use in middle age). It is not well understood if these same age-utilization patterns hold when examining use across health care systems.

Secondly, I test a *gender-medical pluralism hypothesis*. This hypothesis holds that females will use a greater variety of types of health care than males, based on literature indicating that they use more health care services and products across all three health care systems than do their male counterparts. The gender trend appears in use of CHC (Arber & Cooper, 1999; Macintyre, Hunt & Sweeting, 1996; Ross & Bird, 1994; Verbrugge, 1985); CAM (Eisenberg et al., 1998; Foster et al., 2000; Kelner & Wellman, 1997; McFarland, Bigelow, Zani, & Kaplan, 2002; Millar, 2001) and PHC (Bloom, Stewart, Koo, & Hiatt, 2001; Kwong et al., 2007; McFall & Davila, 2008; Shensen et al., 2007).

Thirdly, I test a *socioeconomic gradient-medical pluralism hypothesis* to examine whether health consumerism is stratified by socioeconomic status, as reflected in research demonstrating the effect of socioeconomic status on the uptake of some services but not of others. This hypothesis holds that if opportunities to engage in medical pluralism are related to levels of income and education, then use of a variety of services will be more likely within groups characterized by higher incomes and education. Research supports the existence of a socioeconomic gradient in CHC and in PHC, with lower income and education associated with differential access to some CHC services (Blackwell et al., 2009; Curtis & MacMinn, 2008; Dunlop et al., 2000); and less use of PHC services (flu shots and routine cancer screening) (Katz et al., 2000; Kwong et al., 2007; Qi et al., 2006). The association between income and education and CAM use is not conclusive, however (Spence & Ribeaux, 2004), and requires further examination.

Fourthly, I test two hypotheses related to racial origin and immigration status on medical pluralism. The *race-medical pluralism* hypothesis holds that individuals who self-identify as being White will use more diverse types of health care services than will individuals who self-identify with any other racial category. Given the longstanding history of medical dominance in Canada and predominately White composition of the Canadian population and the social institution of health care itself, it is expected that non-White individuals may use fewer services related to CHC and established CAM services, such as chiropractic, both of which are culturally embedded in the Canadian health care system. It is also expected that non-White individuals will use fewer PHC services due to cultural differences in the perceived utility of vaccinations and diagnostic screening.

The *immigration-medical pluralism* hypothesis maintains that recent immigrants to Canada (compared to native-born Canadians and long-term immigrants) will use fewer types of health services given limitations on access as well as their more recent orientation to health care systems and models in Canada. Research evidence indicates that greater length of time in a host country will increase opportunities for medical pluralism through acculturation processes and increased familiarity with health care systems (Kobayashi et al., 2008; McDonald & Kennedy, 2007; Olafsdottir & Pescosolido, 2009). This is particularly relevant for immigrants who may have different cultural traditions around what constitutes ‘traditional’ medical practices.

Finally, I explore a *health-needs medical pluralism hypothesis* regarding the relationship between individual health needs and medical pluralism. The literature reports mixed findings concerning whether health care utilization varies by health status (e.g., chronic conditions, disability, and perceived health). Consequently, this research explores (rather than tests) the relationship between health related-need and use across health care systems, but expects to find the following themes. On the one hand, it is expected that 'unhealthy' adults aged 50+ with poor or fair self-rated physical and mental health with disabling chronic conditions will engage in medical pluralism. Research indicates that chronic health needs and disability status is often associated with dual use of CHC and CAM (Astin, 1998; Eisenberg et al., 1998; Ni et al., 2002; Spence & Ribeaux, 2004; Wolsko, Eisenberg, Davis, Ettner, & Phillips, 2002). It is also expected that the likelihood of tri-use (use of CHC and CAM and PHC) may be greater among 'unhealthy' individuals, for example, as flu shots tend to be recommended for 'vulnerable' populations (i.e., the chronically ill and frail).

On the other hand, the *health-needs medical pluralism hypothesis* also holds that if patterns of medical pluralism are related to health needs then 'healthy' individuals (e.g., those with good, very good or excellent self-rated health with or without chronic conditions) will be more likely to be pluralistic users of health care. Support for this hypothesis stems from evidence of distinct concentrations of service use within CAM (holistic health model) and PHC (biomedical-preventive model) by 'healthy' individuals.

The next chapter outlines the study design and methods used to establish the health care patterns and the analytical procedures used to test the social and health hypotheses outlined above.

Chapter 4: Methods

This chapter describes the study design and methods. It begins with an overview of the main conceptual and methodological strategies for identifying patterns in health care utilization. It continues with a description of the data sources, the samples, and the study variables. It concludes with a description of the analytical procedures used to identify patterns in this study and to test hypotheses regarding the predictors of these patterns.

4.1: Study Design

Social and health science researchers typically examine health care use *within* conventional health care systems. Few researchers examine use *across* health care systems. Those that do use either deductive (researcher defined) or inductive (data-defined) strategies to determine whether patterns exist (Muthén & Muthen, 2000; Whiteman & Loken, 2006). Recognizing that there are strengths and weaknesses associated with using either strategy, the present study incorporated both in order to design a fully comprehensive and holistic analysis of health care use.

4.1.1: Strategies for Identifying Patterns in Health Care Use

4.1.1.1: Deductive strategies

A common approach researchers take to identify patterns in health care use is to assigns individuals to different health care groups using subjective and/or pre-defined categorization criteria. The approach is therefore deductive in the sense that there is some prior knowledge as to what the categories should look like (Furr & Funder, 2004). According to Whiteman and Loken (2006), the goal of deductive methods is to "capture associations among variables by representing the data as composed of a finite set of subtypes" (pg. 1371). This goal can be achieved by defining and then testing patterns *a priori* theoretically or empirically.

This type of deductive strategy has been used in dual-use studies of CHC and CAM among adults aged 18 and over (Eisenberg et al., 1998; McFarland et al., 2002; Najm et al., 2003; Ness et al., 2005; Sirois, 2008) and among older adults aged 65 and over (Najm et al., 2003; Ness et al., 2005). For example, Druss and Roseheck (1999) used this strategy to pre-define four patterns of health care use among adults aged 18 and over across CHC, CAM and PHC. They included non-use (32%), dual use of CAM and CHC (7%), CAM only (2%) and CHC only (59%).

Wade et al. (2007, 2008) also used *a priori* defined patterns in two studies of medical pluralism, one involving American females (aged 18+) (Wade et al., 2008) and the other involving female immigrants to the United States (Wade et al., 2007). The first study defined four patterns of medical pluralism, similar to those identified by Druss and Rosenheck (1999): no treatment; treatment with no CAM; used CAM, no MD; used MD, no CAM. Unfortunately, the overall prevalence of each pattern was not reported. In the second study, Wade and colleagues also pre-defined four categories: nonusers, CAM use with Chinese herbs/acupuncture only; CAM use with acupuncture/other therapies; and other CAM therapies. The assumption was that all categories except for the non-use category represented dual use as respondents were selected based on medical visits that same year.

Alternatively, researchers may define patterns *a priori* using mathematical principles, such as frequencies or median cut-off points to group the data into meaningful patterns. For example, some approaches focus on the top and bottom ends of the sample distribution (i.e., median split) (Whiteman & Loken, 2006). With regard to the latter, Freeborn et al. (1990) used tertiles to differentiate low, medium and high categories of ambulatory service use among adults aged 65 and over. Similarly, Druss and Rosenheck (1999), in addition to defining *a priori* patterns of medical pluralism theoretically, also used categories to define patterns empirically by categorizing the intensity of medical visits among CHC users aged 18 and over. Finally, Downey, Tyree and Lafferty (2009) used a summary measure based on number of visits to identify three health care patterns: CHC use only, CAM use only, or a combination of CHC and CAM use.

There are advantages to using deductive strategies to identify health care utilization patterns. One advantage is that the patterns are easily identified (Whiteman & Loken, 2006). They can also be easily explained, as the use patterns were formed by the researcher along theoretically meaningful lines. In situations where prior knowledge of health care utilization is detailed enough to be able to designate specific cut-offs (such as median splits, clinical thresholds, or other systematic markers), the pre-defined groups are easily computed using mathematical criteria.

However, despite the advantages that deductive strategies may offer researchers, there are a number of limitations. Whiteman (2006) suggests that the potential for measurement error is high because of the subjective nature of researcher-defined patterns. For instance, in their study of medical pluralism, Druss and Rosenheck (1999) conceptualize CHC as including PHC services (e.g., flu shots, mammograms, PAP tests, PSA tests). Based on this conceptualization, they pre-define four health care patterns (dual use, use of CHC only, use of CAM only, and non-use). However, these authors may well be underestimating the extent of medical pluralism in their population by choosing not to pre-define categories for individuals who use PHC only and for those who use PHC in combination with CHC. By not isolating these two groups of users, the assumption is that they are homogenous across social and health factors.

Cohen (1983) suggests that deductive approaches that use specific cut-offs, such as median splits, to define groups may result in considerable loss of statistical power. Cases that fall very close to the median value, but on opposite sides, may be inappropriately categorized as being in one but not the other pattern when logically both cases could be in the same pattern. Take for instance, Freeborne and colleague's (1990) research on CHC service use among adults aged 65 and over. These researchers used tertiles to categorize older adults as low, medium, or high health care users, according to their intensity of CHC service use. Older adults in the upper third of the distribution (of ambulatory visits over a four year period) were classified as high users (26 percent of the sample). Had Freeborne and colleagues used any other numerical split on the distribution (e.g., categories), the results may have indicated more or fewer high users in the sample. Arguably, any criteria used to classify groups even if theoretically informed are going to be problematic due to researcher bias (Furr & Funder, 2004; Kunh & Culhane, 1998).

There are statistical procedures that use probabilistic modelling to estimate parameters, however, and should be preferred over methods that have high potential for biasing the group classification.

Perhaps the most problematic issue with using deductive strategies is that researchers (knowingly or not) assume that all possible patterns in the data are captured in their classification. While this may be an accurate assumption, it cannot be empirically validated without explicitly modelling or observing the heterogeneity (Furr & Funder, 2004; Muthén & Muthen, 2000; Wagmiller, Lennon, Kuang, Alberti, & Aber, 2006). Therefore, deductive strategies, when used to establish health care use-patterns in populations, may be inaccurately assuming that heterogeneity exists (when it may not) and that it takes a certain form.

Alternatively, *a priori* identification of every single possible use-pattern (and therefore assumes a finite set of patterns in a population) can lead to extremely complex analyses. In such cases, sparse data or “exploding numbers of cells” are common, making it difficult to conduct rigorous and meaningful analyses (Clogg, 1995; Magidson & Vermunt, 2001; Whiteman & Loken, 2006: pg. 1380). To combat this problem with deductive strategies, researchers may limit the number of groups or dimensions by collapsing them into more manageable groupings (Chan & Goldthorpe, 2007; Whiteman & Loken, 2006). The disadvantage of this solution is that it artificially inflates the size of one group or pattern and masks the existence and form of heterogeneity in the population under study.

4.1.1.2: Inductive strategies

Whereas deductive strategies either group users *a priori* or impose mathematical constraints on the data to find and validate the existence of a finite set of patterns (Arminger, Clogg, & Sobel, 1995), most but not all inductive strategies use statistical procedures to explicitly model heterogeneity as it emerges from the data itself (Furr & Funder, 2004; Magnusson & Cairns, 1996; Muthén & Muthen, 2000).

Magnusson and Berman (1991), among others (Furr & Funder, 2004; Lubke & Muthén, 2005; Muthén & Muthen, 2000), refer to the use of inductive strategies as a "pattern" or "person centred" approach. Person-centred approaches emphasize subgroup heterogeneity. They do not assume that a population is homogenous. Rather, in a person-centred approach, population diversity is grouped into discrete classes using the person (or product or behaviour, etc.) as the organizing principle (Goodman, 1974; Lazarsfeld & Henry, 1968; Raftery, 2001). Therefore, the goal of pattern approaches is to break down a sample into distinct subpopulations, classes or clusters along single or multiple dimensions (Arminger et al., 1995; Goodman, 1974). The classes that emerge from the data are seen as mutually exclusive in that all cases (or persons) within a class are considered homogenous and accompanied by heterogeneity across the classes.

In the classic cluster model, several indices are used to determine the presence and number of clusters in the data. These include distance, shape and scatter measurements (Goodman, 1974). Distance measures are the most common. Researchers try to maximize the distance between *k* clusters and minimize the distance between cases within *k* clusters (Whiteman & Loken, 2006). The assumption is that observations (or points) that are close together should be in the same *k* cluster and the distance between *k* clusters should be far apart for identifying distinct clusters (Hagenaars, 1988; Lazarsfeld & Henry, 1968; Whiteman & Loken, 2006).

Cluster analysis has been applied in a number of health care utilization studies. Most of this research examines conventional health care service utilization across a wide population of users from a health science perspective (Huang, Weng, Lai, & Hu, 2008; Rhodes, Fischer, & Ebert, 1993; Rosenberg, Handler, & Furner, 2004; Sewitch, Leffondre, & Dobkin, 2004; Wilson, Robinson, & Turk, 2009). Pescosolido (1992) provides one of the earliest (and only) sociological examinations of medical pluralism using cluster analysis. The focus of her study was on the help-seeking patterns (which may or may not include formal services) of Americans aged 18 and over during an illness episode. Results revealed seven distinct health patterns or clusters that involved consultation with physicians alone or in conjunction with the use of home remedies, or consultation with family, coworkers and friends, as well as a separate cluster for non-use.

Cluster analyses, while bringing a holistic perspective to the phenomena or behaviour under study, also are limited in a number of respects. Firstly, cluster analyses are subject to the same measurement errors as deductive methods since cluster analyses depend on the researcher to determine what the best cluster solution is (Kunh & Culhane, 1998). Although there are mathematical criteria for selecting the best or optimal solution, these criteria are only guidelines and ultimately, the researcher determines what solution makes the most theoretical and substantive sense. Related to this issue is the problem of determining how many clusters to define in advance (i.e., there are aids to help with this but ultimately it is also up to the researcher). Secondly, conventional cluster analyses are exploratory due to the descriptive nature of the method and therefore cannot be used to predict membership. Thirdly, sometimes the emergent clusters are not theoretically meaningful and this can make interpretation difficult. Finally, different measurement indices may produce different results. For example, cluster analyses based on distance may produce five clusters but when scatter measurements are applied only three clusters emerge (Whiteman & Loken, 2006).

Many of the limitations posed by conventional cluster methods have been addressed in newer ‘second-generation’ classification techniques. The basic premise of second generation methods is that they are model-based. They use probabilities to model the number and type of clusters (classes) and to determine and predict class membership (Arminger et al., 1995; Clogg, 1995; Magnusson & Cairns, 1996). Second-generation classification techniques offer distinct advantages because they can determine patterns and predict membership all in one model. The number and size of the classes is determined first (i.e., classification model) and then predictive models are used to investigate the association between the classes and selected independent variables (Vermunt & Magidson, 2003; Vermunt, 2010). By comparison, first generation classification techniques are one step models. Clusters (or classes) are identified and if explanatory modelling is desired, the researcher must build prediction models using the clusters (classes) as the dependent variable in regression-based models.

One of the more widely used second generation techniques is latent class analyses (Clogg, 1995; Furr & Funder, 2004; Magidson & Vermunt, 2001). While latent class analyses are growing in popular use in the social sciences, notably within psychology and addictions research (Vermunt & Magidson, 2003), there are relatively few applications within health care utilization research. Lafortune and colleagues (2009) used latent class analysis to model heterogeneity and classify community dwelling older adults. They found four substantively meaningful health profiles and then estimated the effects of the four health profiles on the use of conventional health care services. Hong (2010) also used latent class analyses to identify and examine patterns of health care service utilization among informal caregivers of community-dwelling older adults (aged 65+).

Researchers who have used latent class methods suggest that these methods reveal complexity in patterns not easily discernable in non-latent class methods, owing in large part to the inductive nature of latent class analyses[5]. For instance, Whiteman and Loken (2006) compared three analytic strategies (*a priori*, cluster analysis, and latent class analysis) to classify sibling relationships. They detected two new groups using latent class analyses that were not detected (or defined) using either *a priori* or cluster analysis strategies. Following their use of latent class methods to examine drug use and abuse

---

[5] Latent class analysis (LCA) can be compared to factor analysis. The main goal of LCA is to find groups of individuals who are similar using a categorical latent variable. The main goal of factor analysis is to find the smallest number of factors (or dimensions) that can explain the relationships among a set of observed variables using continuous latent variables (Muthén & Muthen, 2000). Although there are similarities between the two methods, for instance, data generated by an *m*-dimensional factor analysis model can be fit perfectly with a latent class model with *m*+1 classes (see (Bartholomew, 1987): pp.36-38), the two methods are fundamentally different in terms of data scale (e.g., categorical versus continuous indicators).

among American veterans with and without HIV, Green et al. (2010) also suggested that latent class methods can minimize the potential for measurement error, bias, or oversimplification (i.e., problems associated with *a priori* or researcher defined examinations of patterns).

The results of latent class methods may present challenges to researchers if the number and size of the classes is theoretically or conceptually difficult to interpret, however. Some researchers may find that the distinction between classes is sometimes so small as to be meaningless (Green et al., 2010). For instance, a five class solution may best fit the data, yet the difference in prevalence between the fourth and fifth classes may be only about one or two percent, making interpretation challenging.

Vermunt (2010) observes that difficulties can arise when latent class methods are used to build predictive models, especially when the number of independent variables is large. Each time a covariate is added or removed, not only the predictive model but also the measurement model needs to be respecified. The researcher must then decide whether the number of classes is based on the measurement model or the predictive model. In such cases, the scope of results is especially large and this does not make for parsimonious research.

In summary, this section has outlined two main methods for identifying patterns in health care utilization. The most common approach is a deductive variable-oriented approach. Alternatively, researchers may use inductive pattern or person-centred approaches which *identify* rather than assume that there are a finite number of patterns and estimate the proportion of the population that falls into each group. To date, only one sociological study of pluralistic use of health care has used an inductive approach (see Pescosolido, 1992). However, this study was restricted to illness care and to only one type of formal care provider (physicians), in relation to use of home remedies, CAM products, and personal consultations. To my knowledge, there are no medical pluralism studies that have used second generation inductive strategies to identify patterns of medical pluralism in relation to use of provider-based health care services.

This study draws on both methods, not to test the merits of each, but rather to determine if there are differences in the number and form of patterns when the patterns are defined by the researcher (i.e., heterogeneity is observed) or are modelled from the data (i.e., heterogeneity is unobserved) using statistical criteria. Comparing the results of the two methods also serves to validate the number and form of medical pluralism patterns within this sample.

4.2: Data Sources and Sampling

The present study is a secondary analysis of two cycles (cycle 2.1 [2003] and cycle 3.1 [2005]) of the Canadian Community Health Survey (CCHS) administered by Statistics Canada [6]. These particular datasets were selected because they contain content

[6] It is not possible to combine earlier CCHS surveys (pre-2003) or later CCHS surveys (post-2005) with the CCHS 2003 (Cycle 2.1) and CCHS 2005 (Cycle 3.1) as surveys earlier than 2003 do not include flu shots as common content and surveys after 2005 do not include questions regarding utilization of CAM providers in common or optional content.

related to this study's focus on the health care use patterns and predictors among late middle-aged and older Canadians. Specifically, the CCHS is a national survey that provides cross-sectional data on a wide range of measures of health status, determinants of health and health care utilization. The survey represents approximately 98% of the Canadian population aged 12 or older living in private dwellings in the ten Canadian provinces and three territories. The sampling frame excludes individuals living on First Nations Reserves and on Crown Lands, institutional residents, full-time members of the Canadian Forces, all residents (military and civilian) of Canadian Forces bases, and residents of certain remote areas (Statistics Canada, 2007).

In each cycle, approximately 75% of the data were collected by Computer Assisted Telephone Interviews (CATI) and approximately 25% were collected by Computer Assisted In-Person Interviews (CAPI) [7] (Statistics Canada, 2007). Data for cycle 2.1 were collected from January through December 2003 (Statistics Canada, 2005). Data for cycle 3.1 were collected from January through December 2005. Adjustments were made to both cycles to reduce potential bias from seasonal effects. These were done so that the sum of the weights of all respondents interviewed during one of the four

---

[7] Statistics Canada conducted a study on the data collection mode in the CCHS 2.2. The purpose of the mode study was to understand differences created by interview mode (Computer Assisted Telephone Interview vs. Computer Assisted Person Interviews). Results indicated few variations in data collection between the two approaches.

seasons (spring, summer, fall, winter) would represent exactly 25% of the total sum of weights (Beland, Dufour, & Hamel, 2001).

Data for cycle 2.1 were collected in 126 health regions (123 health regions in ten provinces and three health regions in three territories) out of a possible 146 regions in Canada[8]. Data for cycle 3.1 were collected in 125 health regions overall (122 health regions in ten provinces and three health region in three territories) out of a possible 150 regions in Canada. The difference in number of health regions included in the CCHS between the two cycles (i.e., 126 health regions vs. 125 health regions) was related to boundary changes in the province of Quebec (e.g., 17 health regions in 2003 and 16 health regions in 2005). These boundary changes have no impact on the present analyses because, in this study, analyses were conducted at the provincial level (i.e., province is an independent variable and not health region).

The University of Victoria Human Research and Ethics Board approved this research. Data access was granted following review of a proposal submitted to the Social Sciences and Humanities Research Council of Canada (SSHRC) and Statistics Canada Research Data Centre (RDC) joint initiative. All analyses were conducted within the secure environment of the Statistics Canada RDC at the University of Victoria. As is standard practice when using Statistics Canada master data files, the output files were vetted by a Statistics Canada data analyst for disclosure concerns (i.e., respondent

[8] Source: http://www.statcan.gc.ca/pub/82-402-x/2005001/4067028-eng.htm

anonymity and confidentiality) prior to release. Therefore, the results presented conform to the Statistics Canada requirements that: (i) the data be weighted using weights designed specifically for the CCHS, to account for the complex sampling frame used in that survey; and (ii) the analyses do not contain any cells with fewer than five observations.

4.2.1.1: Pooling data sources

The two cross-sectional cycles of data were pooled at the micro-data level, resulting in one dataset. Pooling several data sources increases sample size and statistical power (Thomas & Wannell, 2009). According to Umphrey, Kendall and McNeil (2001) the factors that enhance pooling of data sources are: similar sampling designs; almost identical wording for relevant questions; same data collection agency; similar data collection methods (e.g., CAPI and CATI); and well-documented methods which allow for informed judgements on variations in approach.

In the present study, it was feasible to pool cycle 2.1 and cycle 3.1 because the sampling frames and methodologies were similar and the wording of the questions from each survey year was almost identical, with two exceptions. In cycle 2.1, bronchitis and chronic pulmonary disorder were listed as two separate variables in the chronic conditions section of the survey. In cycle 3.1, however, bronchitis and chronic pulmonary disorders were grouped into one variable. In the second case, also in cycle 2.1, Aboriginal status was included as one category of a 10 category variable on cultural/racial origin; in cycle 3.1 it was a separate question (i.e., Do you consider yourself to be Aboriginal in cultural/racial origin?). For analysis purposes, these variables were recoded so as to be consistent.

4.2.2: Data Quality: Response Rates

There were 166,222 households selected to participate in CCHS cycle 2.1. A household response rate (HHRR) of 87.1% was obtained. In total, 144,826 individuals (one per household) were selected to participate and among those individuals, there was an overall person-level response rate (PPRR) of 92.6%. The number of respondents interviewed was 134,072. A combined response rate for Canada was 80.7%.

In CCHS cycle 3.1, 168,464 households were invited to participate in the survey with an overall household response rate of 84.9% (143,076 households). From the participating 143,076 households, one individual per household was selected to participate, out of which 132,947 individuals responded resulting in an overall person-level response rate of 92.9%. At the national level, the combined (HHRC and PPRC) response rate was 78.9%. The combined response rate in Maritime Canada ranged from 83% (Prince Edward Island) to 86% (Newfoundland). The combined response rate was 77% for Ontario and 76% for Quebec. The combined response rate in the Prairie provinces ranged from 82% (Alberta) to 83% (Manitoba). The combined response rate in British Columbia was 77% and in the Territories it was 83% (combined).

4.2.3: Study Samples

One sample was used to examine health service use within the late middle-aged and older adult population as a whole (full sample) and two subsamples (female subsample and male subsample) were used to examine use of sex-specific health services related to cancer screening.

The full sample includes only individuals aged 50 and older at the time of the survey, which required excluding all other individuals from analyses (the CCHS includes respondents aged 12+). The restriction of age resulted in an unweighted sample size of 117,824 men and women.

To account for sex-specific public health care services (e.g., mammography, PAP tests for female respondents), a sub-sample of only female respondents was created. There are 61,889 females (unweighted) in the female-only subsample.

A second subsample was created that included only those males who completed the PSA topic modules asked in cycle 2.1 and cycle 3.1 (CCHS, 2005). Provincial and municipal governments had the option to purchase CCHS topic modules depending on their need for health information. There were 11,796 males (unweighted) in the sample aged 50 and older who completed the PSA topic modules in both cycles.

To test if this male subsample (n=11,796) was significantly different from the full male sample (n=44,139), a series of independent *t*-tests were run to compare the means for select characteristics across the two groups (see Appendix A). The two samples differed significantly in terms of household income adequacy (t=9.64, df=42, 641, $p<0.001$), number of chronic conditions (t=5.28, df=55, 914, $p<0.001$), province (t=22.04, df=55, 883, $p<0.001$) and urban/rural residence (t=13.69, df=55, 933, $p<0.001$). Therefore, given that the male subsample differs significantly from the full male sample in terms of income level, number of chronic conditions, province of residence and urban/rural residence, the male subsample should not be seen as representative of the larger population of Canadian males.

4.3: Measurement

4.3.1: Focusing on Discretionary Health Care Use

A number of health care variables were selected to represent services commonly associated with conventional health care, complementary and alternative medicine, and public health care systems. The health service variables do not represent an exhaustive list of available services. However, they do represent a broad range of services widely available to and commonly used by individuals within the public-private structure of Canada's health care system.

Recognizing that health care can take many forms, further caveats are necessary. The present study was restricted to an examination of discretionary health services (i.e., medical doctors, medical specialists, chiropractors, acupuncture, massage therapy, homeopathy, naturopathy, energy healers or other CAM therapy, influenza vaccination, mammogram, PAP test, PSA test). Therefore, this study did not examine hospital or institutional care or services related to these institutional environments. It also did not examine the use of health services associated with health problems that require complex long-term care (home care, palliative care, outpatient services), mental health care (psychiatrists, psychologists or social worker), and oral health care (dentists). Nor did it examine the use of health products (pharmaceutical medications, over-the-counter products, and natural health products including vitamins, minerals, herbals and dietary supplements).

Restricting the present study to the discretionary health services outlined above made it possible to examine health care utilization as it relates to wellness (preventive) and illness (symptomatic) care among community dwelling adults.

4.3.2: Dependent Variables

4.3.2.1: Deductive Pattern Identification

The dependent variable for the deductive pattern analysis is a nominal six category multinomial variable representing six discrete patterns of service use across the three health care systems (CHC, CAM, and PHC). The operational definition of PHC varies across the three samples, as not all PHC services are used by both sexes. In the full sample, PHC service is defined by flu shots. A broader definition is used for the female subsample (i.e., flu shots, mammogram, and PAP test) and male subsample (i.e., flu shots and PSA test).

4.3.2.1.1: Full sample

A six category multinomial dependent variable was computed based on whether the respondent reported use or non-use of a specific health service within the last year or more. The six categories are: non-use (=0); CHC-only use (=1); non-CHC single or dual use (=2); PHC-only use (=3); non-CAM dual use (i.e., CHC + PHC use) (=4); and tri use (=5).

Initially, the dependent variable in the deductive pattern analysis was pre-defined using eight categories, to capture every possible discrete pattern of service use: non-use (=0); CHC-only use (=1); CAM-only use (=2); PHC-only use (=3); non-PHC dual use (i.e., CHC + CAM use) (=4); non-CAM dual use (i.e., CHC + PHC use) (=5); CAM single or dual use (i.e., CAM or CAM + PHC or CAM+CHC) (=6); and tri-use (i.e., CHC + CAM + PHC) (=7). Due to sparse data, however, it was necessary to combine two of the eight categories (#2 and #6) as categories (2) and (6) had frequency counts of 1% or less than 1% respectively (see Appendix B for frequency distribution). Conceptually, it made sense to collapse category (6) into category (2) as the new combined category still excludes CHC use.

CHC use is represented by visits to a medical doctor and/or medical specialist. CCHS respondents were asked "In the past 12 months, how many times have you seen or talked with a general practitioner/family physician". They were also asked "In the past 12 months, how many times have you seen or talked with another medical doctor (such as a surgeon, allergist, gynaecologist, psychiatrist)". Responses to the two variables were combined and coded into two categories: no visits (0=non-use) and 1 or more visits (1= at least one visit). The coding was done in this way so that the measures (CHC, CAM and PHC use) would be consistent, as the CCHS only asks about use or non use of CAM providers, rather than number of visits per year. Further, the focus of this study is on propensity (i.e., contact) and not intensity of service use.

CAM use is represented by visits to a chiropractor (0=no visit; 1= 1 or more visit(s)) *and/or* any other CAM provider (0=no, 1=yes). In the CCHS, respondents were asked "In the past 12 months, how many times have you seen or talked with a chiropractor?" Other CAM providers were listed separately and may include any one of the following practitioners: massage therapist, acupuncturist, naturopath/homeopath, energy or reflexology/ spiritual or religious healer, or other CAM provider. However, it was necessary to use a combined CAM provider variable, as the frequency counts for most individual CAM practices were less than 5% (see Appendix C). Once again, responses to the two variables were combined and coded into two categories: (0) no visits; and (1) at least one visit.

Finally, PHC was measured by lifetime flu shot use (0=never had; 1= in last year or more). The CCHS asks respondents "Have you ever had a flu shot?"

4.3.2.1.2: Female subsample

The multinomial dependent variable for the female subsample is also a six category variable, constructed exactly the same as the dependent variable for the full sample with one exception. The definition of PHC was expanded to include the following: mammogram (0=never had; 1= in last year or more); *and/or* PAP test (0=never had; 1= in last year or more); *and/or* flu shot (0=never had; 1= in last year or more). Female respondents were asked "Have you ever had a mammogram" and "When was your last mammogram". The same questions were asked about PAP testing. "Have you ever had a PAP test?" and "When was your last PAP test?"

In this study, the decision to examine lifetime rather than recent use of mammogram and PAP test was done for two reasons. First, the frequency of use within the last year would have reduced the frequency of the PHC only category to less than five percent creating inefficient estimates (see Appendix D). Second, the guidelines established by the Canada Public Health Agency recommend mammograms for females every two years and PAP tests every three years. Selecting only those female respondents who had mammograms or PAP tests in the last year would exclude women who use PHC services but the survey year did not fall in their 'annual' screening rotation.

4.3.2.1.3: Male subsample

The six category multinomial dependent variable is exactly same as the dependent variable for the Full Sample with the exception of the PHC variable. For analyses of this subsample, the definition of PHC was expanded to include: PSA test (0=never had; 1= in last year or more); *and/or* flu shot (0=never had; 1= in last year or more).

4.3.2.2: Inductive pattern identification

In the inductive analyses, the dependent variable is operationalized using multiple indicators (see Table 1). The number of indicator variables varies across the three samples from five to seven. This is once again due to the fact that not all respondents receive the same PHC services.

4.3.2.2.1: Full sample

In the full sample, PHC services only include flu shots. Consequently, there are only five health service indicators. CHC indicators include self-reported use in the last year of both (i) a medical doctor/general practitioner (0=no visit; 1= 1 or more visit(s)); and/or (ii) medical specialist (0=no visit; 1= 1 or more visit(s)). CAM indicators include self-reported use in the last year of both (iii) a chiropractor (0=no visit; 1= 1 or more visit(s)); and/or (iv) another CAM provider (0=no; 1= yes). Finally, PHC use is assessed based on self-reported lifetime use of: (v) flu shots (0=never had; 1= in last year or more).

4.3.2.2.1: Female subsample

In the female subsample, seven health service indicators are used. CHC and CAM use are measured using the same indicators as used in analyses of the full sample. However, PHC indicators include self-reported lifetime use of: (v) mammograms (0=never had; in last year or more); (vi) PAP tests (0=never had; 1= in last year or more); and (vii) flu shots (0=never had; 1=in last year or more).

4.3.2.2.2: Male subsample

In the male subsample, six health service indicators are used. Once again, CHC and CAM use draw on the same indicators used in analyses of the full sample. In contrast, PHC indicators include self-reported lifetime use of: (v) PSA tests (0=never had; 1=in last year or more); and (vi) flu shots (0=never had; 1=in last year or more).

Table 1. Descriptive statistics for the dependent variables

		Full sample		Female subsample		Male subsample	
Variable		n	%	n	%	n	%
Conventional Health Care (CHC)							
Medical Visits							
	No visit	18,407	15.71	8,017	13.05	1,823	15.51
	>=1 visit/yr	98,744	84.29	53,416	86.95	9,936	84.49
Specialist Visits							
	No visit	79,436	67.59	40,647	65.88	8,204	69.64
	>=1 visit/yr	38,096	32.41	21,048	34.12	3,577	30.36
Complementary and Alternative Medicine (CAM)							
Chiropractor Visits							
	No visit	105,118	89.33	54,995	88.98	10,625	90.18
	>=1 visit/yr	12,561	10.67	6,821	11.02	1,157	9.82
Any CAM Provider [a]							
	No visit	105,150	89.31	53,376	86.30	11,050	93.73
	>=1 visit/yr	12,590	10.69	8,470	13.70	739	6.27
Public Health Care (PHC)							
Flu Shot							
	Never had	41,212	36.37	20,402	34.07	4,378	38.99
	Had in >= 1 yr	72,108	63.63	39,481	65.93	6,851	61.01
Mammogram							
	Never had	--		8,099	13.57	--	
	Had in >= 1 yr	--		51,592	86.43	--	
PAP Test[b]							
	Never had	--		6,268	10.57	--	
	Had in >= 1 yr	--		53,029	89.43	--	
PSA Test [c]							
	Never had	--		--		3,794	35.60
	Had in >= 1 yr	--		--		7,155	65.40

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files. *Note:* CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care [a] Includes visits to massage therapist, acupuncturist, homeopathic/naturopathic doctor, energy or reflexology/ spiritual or religious healer or other CAM provider. [b] PAP Test=Papanicolaou Test. [c] PSA Test= Prostrate Serum Antigen Test.

4.3.3: Independent Variables

The medical pluralism paradigm and hypotheses being investigated within this study provided the framework for the selection of independent variables for use in modelling health service patterns among Canadians aged 50 and older (see Table 2). The paradigm proposes that the decision to use one or more than one health care system (medical pluralism) is influenced by a number of social location factors (age, gender, SES, cultural/racial origin, and immigration status); individual level factors related to conventional measures of place or spatial assets (urban/rural location, province); measures of social networks or collectivities (marital status, household size); and health factors (chronic conditions, functional ability, perceived physical and mental health). In this study, social location and health factors are the primary independent variables while place or spatial assets and social networks or collectivities are included as control variables. Variable selection was further limited by the data available in the CCHS.

Table 2. Description of the independent variables

Variable	Description
Social Location	
Age	Number of years.
Gender	Male (=1); Female (=2).
Household income	The variable income adequacy consists of four categories (low, lower middle, upper middle and high). The categories represent various combinations of household income (using categories defined by the CCHS) and household size.
Income missing	Income is not reported (=1); income is reported (=2).
Respondent education	High school not completed (=1), high school completed (=2), some/completed post-secondary (=3).
Race	White (Caucasian race) (=1); Non White (Chinese; South Asian; Black; Filipino; Latin American; Southeast Asian; Arab; West Asian; Japanese; Korean; Aboriginal; Other) (=2).
Immigration status	Native-born (Canada) (=1); Recent immigrant (> 20 years in Canada) (=2); Long-term immigrant (>=20 years in Canada) (=3).
Immigration time[a]	Number of years since immigration to Canada.
Spatial Assets	
Urban and rural location	Urban (=1) and rural (=2). CCHS defines urban as a population > 1,000 and a population density of 400 per km.
Province	Maritime (Newfoundland, Labrador, New Brunswick, Prince Edward Island, Nova Scotia)/ Yukon/ Territories (North West Territory, Nunavut) (=1); Quebec (=2); Ontario (=3); Prairies (Manitoba, Saskatchewan) (=4); Alberta (=5); British Columbia (=6).

Variable	Description
Collectivities	
Marital status	Married/common law (=1); Widowed, separated, divorced (=2); Single or never-married (=3).
Household size	Number of persons living in the household.
Health Factors	
Self-rated physical health	Perceived overall physical health assessed as fair/poor (=1); good (=2); very good (=3); excellent (=4).
Self-rated mental health	Perceived overall mental health assessed as fair/poor (=1); good (=2); very good (=3); excellent (=4).
Chronic conditions	Number of health problems from a list of 22 conditions, with CCHS respondents offered the opportunity to list 'other' conditions not on the list.
Musculoskeletal disorder [b]	Respondent has back problems excluding fibromyalgia and arthritis; and/or arthritis or rheumatism; and/or fibromyalgia (=1); all else (=0).
Endocrine or metabolic disorder [b]	Respondent has food allergies; and/or allergies other than food; and/or; diabetes; and/or thyroid condition (=1); all else (=0).
Circulatory disorder [b]	Respondent has high blood pressure; and/or heart disease; and/or suffers from the effects of a stroke (=1); all else (=0).
Functional restrictions [b]	A measure of restricted function in work, live or other daily activities. Never restricted (=1); sometimes restricted (=2) and often restricted (3).

[a] = Immigration time is only included in the analyses of the immigration only subsample
[b] = Type of chronic condition is only included in the analyses of chronic condition by type
.

4.3.3.1: Social Factors

Ten social factors were included as independent variables in the study. In the medical pluralism paradigm, these social factors are categorized as social location, spatial assets, and collectivities.

4.3.3.1.1: Social Location

Age was included as a continuous variable measured in years with responses truncated at 75+ (male subsample) and at 85+ (full sample and female subsample) to account for outliers. The age variable was also transformed using a quadratic function (age^2) to test for non-linearity in health service use. Gender was coded as male (=1) or female (=2).

Socioeconomic status (SES) was represented by variables measuring income adequacy and education. A measure of household income adequacy was developed based on total reported household income (i.e., "Can you estimate in which of the following groups your household income falls? Was the total household income less than X or X and more?") and the number of individuals in the household to create the following four categories: low income (=1); lower middle income (=2); upper middle income (=3); and high income (=4) [9].

---

[9] The low income category included those with: a household income of less than $15,000 per year and 1-2 people living in the household, or a household income of less than $20,000 per year and 3-4 people living in

Individuals' level of education was a derived variable based on four questions asking respondents about the highest level of education they had obtained (i.e., What is the highest grade of elementary or high school you ever completed? Did you graduate from high school? Have you received any other education that could be counted towards a degree, certificate or diploma from an educational institution? What is the highest degree, certificate or diploma you have obtained?). The CCHS four category variable was collapsed into three categories for this study as follows: less than secondary school graduation (=1); secondary school graduation (=2); some or graduated post-secondary (=3). It was necessary to collapse the 'some' or 'graduated' post-secondary into one category as the 'some' post secondary category was less than five percent. Combining some with completed post-secondary has its limitations; yet it can be assumed that entrance requirements to post-secondary institutions are the same regardless of whether an individual completes or does not complete the program.

---

the household, or a household income of less than $30,000 per year and 5+ people living in the household. The lower middle income category included one of three scenarios: a household income of $15,000 to $29,999 per year and 1-2 people living in the household, or a household income of $20,000 to $39,999 per year and 3-4 people living in the household, or a household income of $30,000 to $59,999 per year and 5+ people living in the household. The upper middle income category included one of three scenarios: a household income of $30,000 to $59,999 per year and 1-2 people living in the household, or a household income of $40,000 to $79,999 per year and 3-4 people living in the household, or a household income of $60,000 to $79,999 per year and 5+ people living in the household. The highest income category included one of two scenarios: a household income of more than $60,000 if 1-2 people living in the household or a household income of more than $80,000 if 3+ people living in the household.

Racial origin is a binary nominal variable operationalized as White (=1), or non-White (=2). In the CCHS, respondents are read a list of categories and asked “People living in Canada come from many different cultural and racial backgrounds. Are you....White; Chinese; South Asian; Black; Filipino; Latin American; Southeast Asian; Arab; West Asian; Japanese; Korean; Aboriginal; Multiple origin; Other...? It was necessary to dichotomize the race variable into White and non-White categories, as of the 13 race categories, 12 had frequency counts less than three percent each with the one category (White) capturing 90 percent of responses in the full sample. Similar issues occurred when exploring the frequency of the ethnicity variable. These limitations as well as additional exploratory analyses are discussed in detail in Chapter 6.

Immigration status is used to capture elements of nativity and assimilation based on whether the individual is an immigrant to Canada. The immigration variable is an ordinal variable that was grouped into three categories: Canadian-born (=1); recent immigrant (<20 years) (=2); and long-term immigrant (20+ years) (=3). Initially, the immigration variable was computed based on a 10-year cut off to distinguish between recent and long-term immigration status, as recommended by previous researchers (e.g., see (Dunn & Dyck, 2000; Gee et al., 2003). However, the frequency distribution for recent immigrants (<10 years in Canada) was small (less than 2%). Thus, it was necessary to create a 20-year cut-off instead. To further explore medical pluralism within the immigrant population, without being forced into dichotomous categorizations of immigration status (recent/long-term), a continuous variable measuring number of years since immigrating to Canada is used in analysis of the immigration subsample only. It is based on the question "In what year did you first come to Canada to live?" The year of immigration to Canada was subtracted from the survey year and reported in number of years.

4.3.3.1.2: Spatial Assets

Spatial assets are conceptualized as structural factors pertaining broadly to access to basic utilities, medical and other health services, public health agencies, neighbourhood quality, and other characteristics of space and place that impact positively or negatively on health and health practices (Cockerham, 2005; Scambler, 2007).

Two spatial assets were included in this study. The first measures urban and rural residence. It is a Statistics Canada derived variable based on enumeration area (EA), which is the geographic area representing unique census metropolitan area (CMA). Statistics Canada notes that EAs are the smallest geographic areas for which census data are reported (Statistics Canada, 2002). Respondents' postal codes were used to determine individual EAs. In situations where there was more than one postal code per EA, Statistics Canada used a "most probable EA approach" (pg.6). The respondents' EA was then matched with a CMA, according to population size and density of the EA. Statistics Canada (2005) classifies an urban area as a population greater than 1,000 and a population density of 400 or more per square kilometre based on previous census. Therefore, an EA with less than 400 individuals and a population density smaller than 400 km^2 was classified as a rural area. For Cycle 2.1, the 1996 census was used to calculate the census metropolitan area (CMA). For Cycle 3.1 the 2001 census was used to calculate the CMA.

In the present study, the urban/rural residence variable had two categories (urban =1, rural =2). According to du Plessis and colleagues (2001), the size of Canada's rural population depends upon which definition is being used. They recommend the rural and small town definition as the benchmark for rural and urban measures because it includes communities outside of the commuting zone of urban centres. However, the rural and small town definition was not available in the CCHS and the census-rural definition described here is. To examine differences in rural definitions, du Plessis and colleagues (2001) compared the rural and small town definition and the census-rural definition and found that both classify the size of Canada's rural population the same (at 22%). Therefore, it is reasonable to conclude that the census-based definition of urban and rural selected for use in this study likely provides a comparable and valid measure of urban and rural residence.

The second spatial asset variable is province of residence. All ten provinces and three territories are included in the CCHS. From the list of 13 provinces/territories, a six-category nominal variable was computed as follows: Maritime/Yukon/Territories (=1); Quebec (=2); Ontario (=3); Prairie Provinces (=4); and British Columbia (=5). The decision to collapse the 13 provinces into six categories was made based on the lack of sufficient respondents in some provinces/territories. Alternatively, for analyses of the male subsample, three categories were used: Maritime/Territories (=1); Eastern provinces (=2), and Western provinces (=3). This was necessary because only some of the provinces (including Newfoundland and Labrador, Prince Edward Island, Nova Scotia, New Brunswick, Yukon, Northwest, Nunavit Territories, Ontario, Manitoba, Saskatchewan, most but not all of Alberta and British Columbia) participated in the PSA module.

4.3.3.1.3: Collectivities

Cockerham (2005) defines collectivities as collections of actors linked together through particular social networks, such as kinship, and by social institutions, including but not limited to work, religion, politics and health care (pg.59). In this study, there are two collectivities variables.

The first collectivities variable is marital status. CCHS respondents were asked “What is your current marital status?” From the seven possible responses, a three category nominal variable was created by collapsing the categories into meaningful groups as follows: married or common-law (=1); widowed, separated, or divorced (=2); and single or never-married (=3).

The second collectivities variable is household size, a continuous variable with number of people as the units. This is a derived variable calculated using a count of the number of personIDs (i.e., respondent identifier) in each sampleID (i.e., household identifier) obtained from the household roster dataset. In its original form, the variable was skewed (skewness=1.76, SE=.007; kurtosis=5.67; SE=0.014). Therefore, a decision was made to truncate responses at the upper end of the distribution to five or more persons (skewness=1.03, SE=.007; kurtosis=0.69; SE=0.014).

4.3.3.2: Health Factors

This study uses four independent variables to represent health needs.

4.3.3.2.1: Chronic Conditions

The CCHS defines chronic conditions as those lasting longer than six months. In the present study, chronic conditions were measured as a continuous variable that was computed using a count of positive responses (1=yes) to the question "Do you have X?", where X represents up to 25 different types of diseases and one category that captures any "other" diseases not in the list. The list of conditions includes food allergies, asthma, fibromyalgia, arthritis/rheumatism, back problems, high blood pressure, migraine headaches, diabetes, epilepsy, heart disease, cancer, stomach or intestinal ulcers, effects of a stroke, urinary incontinence, bowel disorder, Alzheimer's disease or other dementia, cataracts, glaucoma, thyroid disease, Parkinson's disease, multiple sclerosis, chronic fatigue syndrome, multiple chemical sensitivities, chronic bronchitis, emphysema, or chronic pulmonary obstructive disorder. In all analyses, a truncated count variable was used with a range of 0 to 6 or more chronic conditions (skewness=0.52, SE=0.007; kurtosis=-0.75, SE=0.014), as the distribution of the truncated variable was an improvement over the original untruncated variable (skewness=1.31, SE=0.007; kurtosis=2.54, SE=0.014).

To capture the qualitative component of chronic conditions, the 26 different diseases were also grouped into categories based on type of disease using the International Classification of Diseases Version Nine (ICD-9) developed by the World Health Organization. The top three (of nine – see Appendix E) disease categories were included in the analyses: musculoskeletal (does not have =0; has =1);

endocrine/metabolic (does not have =0; has =1); and cardiovascular conditions (does not have =0; has =1).

4.3.3.2.2: Disability

Functional ability was included as a measure of disability. The impact of restrictions on home, work, school, and other activities due to chronic or long-term conditions lasting longer than six months was assessed using individuals' reports of being never (=1) sometimes (=2) or often (=3) restricted in participating in work- or other life-activities.

4.3.3.2.3: Self-Perceived Physical Health

Respondents were asked "In general, would you say your health is (excellent, very good, good, fair or poor)?" In the present study, the five category ordinal variable was recoded to account for low frequencies in the fair and poor categories as follows: fair or poor (=1), good (=2), very good (3), excellent (=4).

4.3.3.2.4: Self-Perceived Mental Health

Respondents were also asked "In general, would you say your mental health is (excellent, very good, good, fair or poor)?" This five category ordinal variable was once again recoded to account for low frequencies in the fair and poor categories as follows: fair or poor (=1), good (=2), very good (3), excellent (=4).

4.3.3.3: Descriptive Statistics of the Independent Variables

Descriptive statistics for the independent variables used in analyses of each of the three samples are presented in Table 3.

The average age of respondents in the full sample is 64 years and over one-half of the sample is female. Just over ten percent of respondents are classified in the low income adequacy category. The majority of respondents (63%) are spread out over the two middle income adequacy quartiles and just over one quarter of respondents (27%) in the highest income adequacy category. It is a highly educated sample, with more than one-half of respondents reporting having some or completed postsecondary education. The sample is predominately White. Of the one quarter of respondents who immigrated to Canada, most could be considered long-term immigrants, as they have lived in Canada for twenty years or more. The mean number of years since immigration to Canada was 36.0 years. Almost three quarters of the sample is married or in common-law relationships and this is reflected in the household size of the respondents, as there is an average of at least two people in households across Canada. Most of the respondents reside in urban areas. The majority of respondents are from Quebec and Ontario. In terms of health, respondents have, on average, three chronic conditions. Despite this, more than one-half of those in the full sample report never having their functional ability restricted by chronic conditions. Almost one-half of respondents also report their physical and mental health as very good or excellent.

Turning to the female subsample (also shown in Table 3), we see that the mean age of females is slightly higher than the overall sample with an average age of 64 years (range 50-102). These women are mostly college and/or university educated with middle levels (lower middle and upper middle) of income adequacy. Relatively few women are categorized as being in the low income adequacy category. Ninety percent of the female respondents self-identify as being White and most were born in Canada. Of the one-quarter who were not, most immigrated to Canada twenty or more years ago. The majority of women are currently married or in common-law unions and few are single or never-married. Almost one-half of the women live with a spouse or partner. The remainder either live alone or with a spouse or partner and child. Most live in an urban rather than rural area. In terms of health, the women studied have on average three chronic conditions. However, few report restrictions to function as a result of chronic conditions and many report their physical and mental health as being very good or excellent.

The average age of male respondents was 63 years (see Table 3). Almost 70% of the male subsample is categorized within the upper middle or high income adequacy range. More than one-half are highly educated; however, almost one-quarter report not having completed high school. Most identify themselves as White. Of the one-quarter of respondents who immigrated to Canada, almost all moved to Canada twenty or more years ago. The majority are married or in common-law relationships and this is reflected in their living arrangements, with more than three quarters living with a spouse/partner or with a spouse/partner and another relative. Almost three quarters of the male respondents in this subsample live in an urban area. Province of residence is not equally distributed since selected health regions within provinces and territories opted to buy into the PSA topic module. As a result, none of the Quebec and Alberta health regions are included. Males have an average of two chronic conditions; most report that their function is never restricted by chronic conditions and that they are in good or excellent health.

Table 3. Descriptive statistics for the independent variables used in the analysis of medical pluralism among Canadian females and males aged 50+

	Full sample (n=117,824)		Female subsample (n=61,889) [a]		Male subsample (n=11,796) [b]	
Variables	n or (Mean)	% or (SD)	n or (Mean)	% or (SD)	n or (Mean)	% or (SD)
Social Location						
Age (yrs)	(63.50)	(10.20)	(64.14)	(10.65)	(62.70)	(9.74)
Gender						
Male	55,935	47.47	--	--	--	--
Female	61,889	52.53	--	--	--	--
Household income adequacy						
Low	9,203	10.44	6,062	13.31	729	7.18
Lower middle	21,966	24.91	12,528	27.51	2,101	20.69
Upper middle	33,538	38.04	16,739	36.76	3,584	35.28
High	23,469	26.62	10,204	22.41	3,743	36.85
Respondent education						
Less than grade 12	34,007	29.90	19,181	32.04	3,089	26.94
Completed grade 12	18,789	16.52	11,005	18.38	1,869	16.30
Some/All post-secondary	60,959	53.59	29,689	49.59	6,508	56.76
Race						
White	101,960	90.24	53,986	90.79	10,170	88.19
Non-White	11,027	9.76	5,474	9.21	1362	11.81
Immigration status						
Canadian-born	85,529	75.06	45,416	75.83	8,508	73.69
< 20 years in Canada	5117	4.49	2,495	4.17	592	5.13
20>= years in Canada	23,296	20.45	11,979	20.00	2,446	21.19
No. years of immigration [c]	(35.99)	(16.25)	--	--	--	--
Spatial Assets						
Urban and rural location						
Urban	93,848	79.65	50,065	80.89	8,689	73.66

	Full sample (n=117,824)		Female subsample (n=61,889) [a]		Male subsample (n=11,796) [b]	
Variables	n or (Mean)	% or (SD)	n or (Mean)	% or (SD)	n or (Mean)	% or (SD)
Rural	23,976	20.35	11,824	19.11	3,106	26.33
Province						
Maritime/Yukon/Territory	9,563	8.10	4,998	8.08	2,543	21.61
Quebec	30,020	25.50	15,888	25.69	--	--
Ontario	44,383	37.70	23,444	37.91	5,270	44.79
Prairies	7,762	6.60	3,509	5.67	206	1.75
Alberta	10,002	8.50	5,694	9.20		--
British Columbia	16,093	13.60	8,315	13.45	3,749	31.86
Collectivities						
Marital status						
Married/common law	84,022	71.42	38,591	62.46	9,809	83.26
Widow/separated/divorced	26,884	22.85	19,715	31.91	1,431	12.15
Single/never married	6,746	5.73	3,477	5.63	541	4.59
Household size	(2.26)	(1.03)	(2.13)	(1.01)	(2.45)	(1.05)
Health Factors						
No. of chronic conditions	(2.53)	(2.20)	(2.91)	(2.30)	(2.19)	(1.95)
Musculoskeletal condition						
No	61,649	52.44	28,592	46.31	6,556	55.70
Yes	55,903	47.56	33,151	53.69	5,215	44.30
Endocrine/ metabolic cond.						
No	68,793	58.54	31,515	51.04	7,685	65.39
Yes	48,725	41.46	30,229	48.96	4,067	34.61
Circulatory condition						
No	71,472	60.84	36,998	59.92	7,230	61.51
Yes	46,009	39.16	24,746	40.08	4,524	38.49
Functional restrictions						
Never	64,950	55.48	32,968	53.65	6,438	54.85
Sometimes	25,204	21.53	13,865	22.56	2,595	22.11
Often	26,916	22.99	14,614	23.78	2,705	23.04

Variables	Full sample (n=117,824) n or (Mean)	% or (SD)	Female subsample (n=61,889) [a] n or (Mean)	% or (SD)	Male subsample (n=11,796) [b] n or (Mean)	% or (SD)
Self-rated physical health						
Poor/Fair	23,572	20.00	12,801	20.71	2,371	20.12
Good	38,938	33.00	20,536	33.22	3,930	33.34
Very good	36,149	30.70	18,814	30.44	3,610	30.62
Excellent	19,004	16.10	9,654	15.63	1,876	15.92
Self-rated mental health						
Poor/Fair	5,959	5.10	3,295	5.50	624	5.56
Good	26,438	22.40	13,916	23.23	2,773	24.71
Very good	39,138	33.20	20,980	33.90	3,704	31.40
Excellent	41,832	35.50	21,723	35.10	4,128	35.00

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files.

a=Female and male subsample totals do add up to full sample total as the male subsample is a sub-sample of the full sample based on gender and on optional topic for the PSA test in the CCHS survey.

b=Male subsample is a subsample of the full sample.

c=Among immigrants only. Calculated for full sample only.

4.4: Data Analytic Procedures

4.4.1: Univariate and Bivariate Analyses

A number of descriptive and bivariate analyses were undertaken to describe the variables and to provide a preliminary test for associations among variables. The bivariate tests were different for the deductive and inductive patterns.

In the deductive pattern approach, for categorical variables, chi square analyses were computed to examine associations between the six-category multinomial dependent variable (*medical pluralism*) and each of the 14 independent variables. Only zero-ordered associations (i.e., two-way tables) were examined. Significance tests[10] were used to assess the likelihood that any association between the dependent variable and independent variables was due to chance (i.e., testing the *null hypothesis of independence*).

In the inductive pattern strategy, bivariate analyses were based on prior probabilities of class membership to the k_x class, which is the probability that a randomly

[10] In situations where the data were nominal, Pearson's chi square test was reported. Where the data are ordinal, Kendall's tau b was reported. Tests of the strength of association for nominal and ordinal variables were carried out using the Cramer's V statistic for chi-square measures. It is recommended for testing the strength of association between categorical variables when contingency tables are larger than 2X2. This is the case in the present study given that the dependent variable is a six category nominal variable. In situations where the data are continuous (i.e., age, number of chronic conditions, household size, and time since immigration), Pearson's correlation coefficients were reported.

chosen person will be in each class. While an individual has a probability of membership in all of the latent classes, theoretically, they belong to one true class; that which has the highest prior probability of occurrence (Vermunt & Magidson, 2003; Vermunt, 2010).

4.4.2: Latent Class Analysis

The main analytical tool used to identify patterns inductively is a statistical approach called latent class analysis (LCA). LCA is a technique capable of detecting and measuring structural relationships among categorical variables. The underlying principle of LCA is that the structural relationships (which can be observed or measured) represent an underlying categorical latent variable (which cannot be observed or measured directly) (Clogg, 1995; Hagenaars, 1988; Magnusson & Cairns, 1996). LCA defines homogeneity (or similarity) in terms of probability distribution (Magidson & Vermunt, 2001; Magnusson & Cairns, 1996; Vermunt & Magidson, 2003). These structural relationships comprise discrete subgroups of cases or latent classes, formed based on similarities among the cases for the behaviour under study (Arminger et al., 1995). That is, individuals (or cases) in the same latent class are similar to each other because their responses are generated by the same probability distribution. Therefore it is not the indicator that is creating the categories but the individual's probability of belonging to the most likely class of indicators.

In the present study, the latent construct is medical pluralism, meaning that medical pluralism per se is not directly observable (i.e., latent) but rather, is represented by a collection of indicators deemed to represent the latent construct. The assumption is that the population of adults aged fifty and older comprise a mixture of distinct classes or subgroups defined by their health care use patterns in a given year or more. Therefore, based on this research we can assume that this population of adults in late middle-age and older is not a homogenous group, in terms of their health care use patterns.

The goal of LCA is to seek out K latent classes with both the number and form of these K latent classes not known *a priori* (Magidson & Vermunt, 2001). There are two main steps in that process (Clogg, 1995). In step one, a classification model is identified and in step two a prediction model is tested[11]. With a classification model, inactive covariates are used to describe class membership according to posterior probabilities. With a prediction model, active covariates are used to explain or predict class membership on the model probabilities using an error term.

In the first step, a classification model estimates: (i) the number of K classes in the sample and their relative size (i.e., latent class probabilities) and (ii) the probability of

---

[11] One of the advantages of using second-generation latent class models is the feature of building prediction models. However, due to a number of constraints with building a prediction model in this study, the second step was not employed. The following is a description of what the second step would have entailed. The second step in latent class analysis is to build a prediction model, once a suitable model has been identified. Prediction models are used to explain or predict class membership into K latent classes using model-based parameters (Magidson & Vermunt, 2001; Magnusson & Cairns, 1996). This goal is achieved by regressing the latent variable (represented by K latent classes) against select independent variables or covariates. Covariates in LC models can be treated as inactive or active, depending upon whether a classification or prediction model is being built. When covariates are treated as active and included in the LC model the equation then becomes

$$f(\boldsymbol{y}_i|\boldsymbol{z}_i,\theta) = \sum_{k=1}^{K} \pi_{k|\boldsymbol{z}_i} \prod_{j=1}^{J} \quad f_k\left(\boldsymbol{y}_{ij}\middle|\, \boldsymbol{z}_i\,, \theta_{jk}\right). \tag{1}$$

In equation (3), $\boldsymbol{z}_i$ represents i's covariate values. The probability of belonging to class k given covariate values $\boldsymbol{z}_i\,, \pi_{k|\boldsymbol{z}_i}$ is restricted to a multinomial logit model, with one category of the logit model reserved for each k of the K-class model.

class membership (i.e., conditional probabilities) (McCutcheon, 1998) for a group of indicators (i.e., dependent variable) and covariates (i.e., independent variables). Latent class probabilities are the proportions of the population that are associated with each of the *K* classes and these must sum to one. Conditional probabilities enable one to characterize the nature of the types defined by each latent class and to describe the structure of the latent variable. If there are three classes defined in the LCA, for example, then there will be three sets of conditional probabilities.

The basic LC classification model takes the mathematical form (Banfield & Raftery, 1998):

$$f(y_i|\theta_k) = \sum_{k=1}^{K} \pi_k \, f_k \, (y_i|\theta_k) \tag{2}$$

In equation (2), y_i represents an individual case on a set of observed indicator variables, *K* is the number of classes, and π_k represents the prior probability of belonging to latent class *k* (or, equivalently the size of class *k*) (Vermont & Magidson, 2002). The way in which the *y*s are distributed, given the model parameters θk and $f(y_i|\theta_k)$, is assumed to be a mixture of class-specific densities $f_k(y_i|\theta_k)$.

An iterative process is used to estimate LC model parameters. Most LC programs use maximum likelihood estimation to find the optimal solution that will efficiently and accurately define the model. Common algorithms used include the expectation maximum likelihood (EML or EM) and Newton-Raphson (NR) algorithms.

Modal probability is used to allocate cases into discrete classes—where each case is assigned to a class with the highest (modal) posterior probability of being in that class. The 'best' classification model is selected based on the Bayesian information criterion (BIC)[12.] The BIC and other information criteria (such as the Akaike Information Criteria) are log-likelihood statistics. They weight the fit and the parsimony of the model (Clogg, 1995; Magnusson & Cairns, 1996). Specifically, Rijmen and De Boeck (2003) describe the BIC as "a parsimony index that weights the goodness of fit of the model (-2 X log-likelihood) against its parsimony (by adding a penalty term that increases with the number of estimated parameters)" (pg.224). Lower values of the BIC indicate better class solutions, and, therefore good model fit, which indicates that the correct number of latent classes is identified (Magidson & Vermunt, 2001; Vermunt & Magidson, 2003).

In addition to determining model fit according to number of latent classes identified, classification statistics help identify the degree of model fit by determining how well the latent classes are separated (LG technical guide, 2007). Classification statistics for ordinal indicator variables include the estimated proportion of classification error (*E*), which assesses how well the latent classes are separated, with 'good' separation between classes occurring when the *E* is low.

---

[12] Defined as $BIC_{L2}= L^2\text{-log (N) df}$. (or: BIC = (- 2 X log-likelihood) + (number of estimated parameters) * log (sample size).

A lack of fit of occurs when the local independence assumption is violated. The local independence assumption is the condition where relationships observed among indicators are found to be zero within the categories of some other variable (Lazarsfeld & Henry, 1968; McCutcheon, 1987). In such cases, K=1, which is a latent variable with a single latent class, which is the equivalent of finding dependence among the observed variables with respect to the latent concept. Technically K=1 is not a 'real' latent class but a model in which independence of the responses is assumed (Clogg, 1995; Goodman, 1974). A good solution to the problem of dependence is to increase the number of classes until a model with an acceptable fit is obtained.

In the present study, LCA was used to estimate three classification models (i.e., K-class models) based on the full sample, and female and male subsamples. The health care indicators (e.g., medical visit, specialist visit, chiropractic visit, CAM provider visit, flu shot, mammogram, PAP test, PSA test) are treated as nominal variables. The covariates are initially treated as inactive. Household size, age, respondent education, household income adequacy, number of chronic conditions, functional ability, perceived physical health, and perceived mental health are treated as numeric (ordinal or continuous) variables. The remaining covariates (i.e., gender, race, immigration status, province of residence, urban/rural residence and marital status) are treated as nominal variables.

The bivariate results present class-specific means for categorical covariates treated as ordinal and/or continuous. Prior to plotting the class-specific means, the continuous covariates (household size, age, number of chronic conditions), are re-scaled to always lie within the 0-1 range. In the latent class analyses, scaling of these "0-1 Means" is accomplished by default through subtracting the lowest observed value from the class-specific means and dividing the results by the range, which is simply the difference between the highest and the lowest observed value (Magidson & Vermunt, 2001; Vermunt & Magidson, 2003). The advantage of such scaling is that these numbers can be depicted on the same scale as the class-specific probabilities for nominal variables, making the posterior probability of class membership more meaningful.

The LC models were unrestricted (i.e., the program was not told how many classes to find) but, as is the norm, a range of one through nine latent classes was requested (Magidson & Vermunt, 2001; Vermunt & Magidson, 2003). In all estimations, the LatentGold 4.5 default values for Bayes Constant (1), convergence limits for EM (0.01), iteration limits for EM (250) and for NR (50) were used. Default values were used for random seeds set at 10 and iterations values were set to 50. However, in order to reduce the likelihood of obtaining a local maximum rather than the global best solution, which is a problem that sometimes occurs in LCA (Clogg, 1995; Magnusson & Cairns, 1996), a series of repeated runs with random start values was used. This technique ensures that the optimal or best solution is found (as indicated by obtaining the same solution after several repeated runs) and not a local maximum (i.e., the best solution for that model based on the random start seed for that model) (Clogg, 1995; Vermunt, 2010). In addition, Bootstrap p values based on 500 replications were determined to assess model fit based on the L^2 statistic. If there was no difference in model parameters between the Bootstrap model and the original model, the optimal solution was considered to have been found.

A feature of latent class analysis is to name the *K*-classes, once the optimal solution is found (i.e., the classification model fit is good). In most latent class analyses, the names for the latent classes are generated by the researcher(s) according to how the dimension (or indicator) under study is distributed within classes (Magidson & Vermunt, 2001). The naming convention in this study involved creating a scale with a low and high distinction using (1...*K*) as the range. For instance, if a 5-class model is being named (where *K*=5) then there would be five categories ranging from 1 (high rank) to 5 (low rank). The scale categories for naming the *K*-classes are based on the conditional probabilities across indicators within each class and then compared *across* classes and ranked from high to low occurrence. Conditional probability shows the differences in response patterns that distinguish the classes (also shown graphically in profile plots). Thus, the latent classes are named based on relative and not absolute values; in which case, what constitutes low rank in one class may not correspond with what is low in another.

Once the classification model is identified and each *K*-class named, the modal assignment of the classes (i.e., clu #) serves as the dependent variable. Multinomial logit analyses can then be used to calculate the effects of each of the independent variables on various outcomes of Y[13].

All inductive pattern analyses were computed using LatentGold version 4.5 (Statistical Innovations Inc., Massachusetts, Boston) software.

4.4.3: Multinomial Logit Regression

The main analytical tool used to test relationships between the predictor variables and medical pluralism (with patterns defined either deductively or inductively) is multinomial logit regression[14]. Multinomial logit regression is appropriate when there is more than one outcome or response category (Boorah, 2001) and the outcomes or

---

[13] Following personal correspondence with Drs. Jay Magidson and Jeroen K. Vermunt (co-creators LatentGold software), a number of strategies were used to address the problem of estimating latent class prediction models with large numbers of covariates (Vermunt, 2010). One strategy was to estimate a number of different models by isolating covariate(s) by hypothesis and making only those covariates active in the model. For instance, for the age-medical pluralism hypothesis only the age covariate was active, all other covariates were inactive. This created eight prediction models each with varying class sizes and interpretation was unnecessarily complex. The second strategy was to run separate regression analyses with the modal assignment of the classes (i.e., clu#) as the dependent variable in traditional regression software. For purposes of this study, the second strategy was employed.

[14] Some statisticians and researchers distinguish between the terms 'logit model' and 'logistic regression' (Liao, 1994). One distinction involves calling models with categorical *x* variables logit models and models with categorical and continuous *x* variables as logistic regression models. Others make no such distinction. In this study, following Liao's (1994) suggestion, the term 'logit model' will be used to describe the regression models in the generalized linear model tradition.

responses are seen as discrete and polytomous (i.e., have more than two unordered categories (Liao, 1994). Multinomial regression, like all regression analyses, calculates parameter estimates based on probabilities pertaining to the likelihood of a specific event occurring (Y_k) (compared to not occurring) for each category of a nominal or ordinal independent variable (X) or unit of a continuous independent variable, while controlling for all other variables.

The multinomial logit model can be written as (Liao, 1994):

$$\text{Prob}(y = j) = \left(\sum_{e^{k=1}}^{K} \beta_{jk}\, x_k\right) \div \left(1 + \sum_{j=1}^{J-1} e^{\sum_{k=1}^{K} \beta_{jk} x_k}\right) \tag{3}$$

where y is the response variable (tri-use) and j = 1,2...J-1. If the dependent variable is seen as having J categories then what is required is the calculation of J-1 equations; one for each category relative to the reference category to describe the relationship between the dependent and independent variables, which creates J-1 non- redundant sets of β parameter estimates (Arminger et al., 1995; Boorah, 2001). Liao (1994) describes the β parameters as having two subscripts in equation (3), k is for distinguishing x (independent/explanatory) variables, and j for distinguishing response categories.

In line with existing medical pluralism studies, the health care use patterns were initially pre-determined by the researcher using a deductive or variable-oriented approach. For that approach, I estimated logit models with six contrasts: the probability of being in the "tri-use" category (reference), which is the J-1 response categories where j is: "non-use" or "CHC-only use" or "CAM single or dual use" or "PHC-only use" or "non-PHC dual use" or "non-CAM dual use" categories. As it pertains to the inductive or person-centred approach, the logit models were estimated so that the number of *k* classes corresponded with the number of contrasts. For example, with a 3-class model, a J-1 logit model was created where J represents each *k* of the *K*-class model, in which there is a *j* =2 model.

With the deductive analyses, there are 14 *x* (independent variables, K=14) (or 13 *x* in the Female and Male Sample, as gender is not an independent variable, K=13), including the intercept and 6 *j* response patterns in the deductive pattern, which makes for a total number of 70 parameter estimates ((*J*-1)K) in the Full sample, deductive approach and 65 parameter estimates in the female and male subsamples.

The reference category for the dependent variable may be selected based on theoretical relevance or for which category has the highest frequency (Allison, 1999). Given my interest in factors that predict medical pluralism, it made intuitive sense to use the most pluralistic pattern (high/tri-use) as the reference category, which in this case is not the category with the highest frequency. Reference categories for the independent variables were also based on the same selection criteria.

Results for the multinomial logit models include Beta coefficients (natural logs) and the exponential [Exp(Bk)] of the natural logs (Arminger et al., 1995). When Exp (B) is more than 1, increasing values of the variable correspond to increasing likelihood of the event's occurrence (Menard, 2000). When Exp (B) is between 1 and 0, decreasing values correspond to decreasing likelihood of the event occurring (Menard, 2000). For interpretation purposes, the equation [1- Exp (B)*100] was used to calculate the percentage of likelihood of the event occurrence.

For the three samples (full, female, and male), a staged approach was used to arrange the logit models. The primary independent variables were the social location and health variables and the spatial assets and collectivities were introduced as controls. As all of the independent variables were found at the bivariate level to have statistically significant associations with medical pluralism ($p<.001$, two-tailed), all were included in the multivariate regression models (Menard, 2000). For each set of regression analyses, the independent variables were entered into the logit models in blocks according to how they are conceptualized in the medical pluralism paradigm (see Figure 1). In the first block, the control variables (spatial assets and collectivities) were entered. The social location variables (i.e., age, gender, SES, race and immigration status) were entered in the second block with the control variables kept in. In the third and final block, health needs (i.e., chronic conditions, functional ability, and self-perceived physical and mental health) were entered alongside the control and social location variables.

In addition to examining the main effects of the control variables, social location and health factors on medical pluralism, related interaction effects were also assessed where relevant. Given the established finding that gender and age effects exist *within* use of health care, this study tested whether there is an effect of gender on pluralistic health service use that depends on age. Including an interaction term enhances the ability to examine if there is an interaction between X_1 (age) and X_2 (gender) in their effects on medical pluralism patterns (Y) (Allison, 1999). The interaction term (age*gender) was computed as the product of the two variables (X_1*X_2) already in the model and was entered separately in block two of the interaction model with the other social location variables after the main effects model was run.

The evidence in support of each of the five hypotheses (outlined in Section 3.4:) must meet a number of criteria. The first consideration is that the relationship between the hypothesized predictor (or control) variables and the categories/classes of medical pluralism meet the criterion for statistical significance. A stringent p value is selected given the large sample size (Arminger et al., 1995). The second consideration is that both the number and type of patterns serve as evidence for rejecting the null hypotheses. Specifically, in this study, medical pluralism is conceptualized as use of more than one health care system; therefore, use of two and three systems rather than non-use or use of one system constitutes evidence for medical pluralism. Third, the form of the patterns (i.e., types of services) must also be considered in evaluating whether to reject or accept the null hypotheses, where the null hypothesis is that the variable does not predict medical pluralism. This latter criterion is particularly important for interpreting regression models with the inductive pattern (i.e., *K* classes), as the probability of health service use is assessed. Consequently, in the inductive pattern, while it may appear that health service use occurs in all classes, there are variations in the extent to which there is a low, average or high probability of service use across the three health care systems. Specifically, an inductive pattern characterized mainly by high probability of service use across two or three health care systems constitutes *rejecting* the null hypothesis (i.e., the variable does not predict medical pluralism), while a pattern characterized mostly by low probability of service use in any two or all three of the health care systems is considered grounds for *retaining* the null hypothesis (i.e., the variable does not predict medical pluralism).

The design matrix of the multinomial logit model for explanatory variables is dummy coded. All data were prepared for analyses using SPSS Statistics Release Version 18.0 (SPSS Inc., an IBM Company, Chicago, Illinois).

4.4.4: Assumptions of the Data Analytic Procedures.

The two analytical procedures used in this study (latent class analysis and multinomial logit regression) have a set of assumptions regarding the modelling of data and the quality of data to be modelled. When violated, models may potentially produce inefficient, biased and inconsistent parameters. The assumptions that pertain to both procedures are related to the quality and distribution of the data. Assumptions specific to the data analytical procedures include multicollinearity (regression) and local dependence (latent class analysis).

A number of precautions were taken to ensure that the quality of the data used to represent the dependent variables (indicators) and social and health factors was high. The first precaution involved ensuring that the secondary data used in the analyses met the data quality assurance principles outlined by Statistics Canada (i.e., data collection, coding and entry are accurate, random sample procedures). It also involved complying with policies outlined by the Statistics Canada RDC to conducting analyses in their secured environment (see Section 4.2.2:).

The second precaution involved assessing variable distributions to assure that the data were normally distributed. For scale variables, visual assessments of the data determined if there were outliers. It was necessary to truncate variables that were highly skewed (and also to reduce the likelihood of zero cell counts in the bivariate and regression analyses). Number of chronic conditions (maximum of six or more) and household size (maximum of five or more) were two variables that were treated in this manner. Tests of skewness (data symmetry) and kurtosis (data 'peakedness') were also conducted to ensure that when collapsing ordinal variables that the integrity of the data was not jeopardized.

The third precaution involved testing the association between the variables at the bivariate and multivariate levels. The main concern here is the degree to which the assumption of multicollinearity is violated. Multicollinearity occurs when two or more independent variables in a regression analyses are highly correlated (Berry & Feldman, 1985; Boorah, 2001; Liao, 1994). Bivariate analyses provide an early indication that there may be a problem but they cannot be used to diagnose the degree of multicollinearity (Allison, 1999). Results from the bivariate tests of association between the independent variables used in this study suggest that these variables are not independent of each other, but the degree to which they are associated is not problematic.

Specifically, although all were significantly associated at the p<.001 level (two tailed)[15], the strength of the symmetrical relationships among the independent variables within each of the three samples was weak to moderate, as assessed using Cramer's V for nominal by nominal and nominal by ordinal variables (Arminger et al., 1995).

To diagnose and test for extreme or near-extreme multicollinearity, regression modeling was used. For categorical independent variables, tests for multicollinearity were computed using multinomial logistic regression. Linear regression was used for the four continuous variables (i.e., age, number of chronic conditions, household size and immigration years). Tolerance levels were calculated ($1 - R^2$) following the calculation of

---

[15] Turning first to the age and gender independent variables, age group and respondent education were weakly associated (χ^2=9749.53, df=14, p<.001; Cramer's V=0.21, p<.001), as were age group and marital status (χ^2=10,104.88, df=14, p<.001; Cramer's V=0.21, p<.001). The strength of the association between sex and marital status was also weak (χ^2=6136.04, df=2, p<.000; Cramer's V=0.23, p<.001). The two SES variables were significantly associated with each other, however, the strength of the relationship between respondent education and household income adequacy was weak (χ^2=10,028.33, df=6, p<.001; Cramer's V=0.24, p<.001). Household income was also weakly associated with marital status (χ^2=11,218.37, df=6, p<.001; Cramer's V=0.25, p<.000). The two independent variables representing cultural/racial origin and immigration status were significantly associated with each other and the strength of this association is moderate (χ^2=40180.19, df=4, p<.001; Cramer's V=0.42, p<.000). There was also a statistically significant relationship between immigration and province of residence, however, the relationship was weak (χ^2=9222.10, df=8, p<.001; Cramer's V=0.20, p<.001). The two collectivities variables were also significantly related to each other (χ^2=83,003.59, df=X, p<.001). The strength of the relationship between marital status and household size was moderate (Cramer's V= 0.30, p<.001). Turning last to the health independent variables, there were a number of associations among the four variables. The relationship between functional ability and self-perceived physical health was statistically significant and the strength of the association was weak (χ^2=22085.84, df=4, p<.001; Cramer's V=0.31, p<.001). The strength of association between functional ability and number of chronic conditions was slightly greater but still moderate (χ^2=24,565.06, df=8, p<.001; Cramer's V=0.32, p<.001). Self-perceived physical health and number of chronic conditions were also significantly and moderately associated (χ^2=23959.79, df=8, p<.001; Cramer's V=.32, p<.001). Finally, the association between self-perceived physical health and self-perceived mental health was also statistically significant and the strength of the association was moderate (χ^2=19,631.34, df=4, p<.001; Cramer's V=.29, p<.001).

(Pearson) R^2 by regressing all of the independent variables on each other (Allison, 1999), with tolerance values close to zero considered to be problematic. In this study, none of the variables had tolerance levels lower than 0.70. A second diagnostic involved ensuring that in the multinomial logit models none of the standard errors (SE) for Beta were close to 2.0 and that the 95 percent confidence intervals (CI) did not have overly large intervals. The occurrence of either high SE or broad CI ranges indicates multicollinearity is present (Allison, 1999); neither of which were an issue here.

For the latent class analyses, tests for the assumption of local independence among indicators were done by examining the bivariate residuals among the indicators with residuals substantially greater than 4.0 suggesting dependence (Magnusson & Cairns, 1996; Vermunt & Magidson, 2003). None of the bivariate relationships exceeded this criterion.

4.4.5: Missing Data

Missing data were treated using listwise deletion in cases where the amount of missing data for any given variable was less than five percent. More extensive missing data were recorded for income adequacy (21.0 percent) and PSA tests (7.5 percent). In such cases, it is advisable to impute values for the missing data, as it cannot be ascertained whether the data are missing at random (MAR) or if deleting data may lead to estimation errors and decrease representativeness (Arminger et al., 1995; Raftery, 2001). Median imputation was selected to treat missing data in this study. This involves replacing all missing values in a variable with the median of all known values for that attribute (Little & Schenker, 1995). This particular imputation method was selected because it has been shown to be more robust than mean imputation, particularly in cases where there are outliers or when distributions are skewed, as can be the case with income data (Little & Schenker, 1995). Only two variables required that the missing data be treated using median imputation and they are household income adequacy and PSA test (a variable exclusive to the Male subsample). The missing data for the PSA variable were imputed using mean and median imputation. As there were no differences between the two imputation procedures, in terms of distribution, the median imputation was selected for consistency (i.e., the same imputation procedure was used for the income variable).

Missing data for income is a special case in the social sciences. Little and Schenker (1995) suggest that income non-responders are different than responders in that individuals with higher incomes tend to report income information less frequently than those with middle incomes. Thus, the MAR assumption is violated. To explore whether there were significant differences between income responders and non-responders, a separate "missing income" variable was computed to account for non-responders and this variable was run in multinomial regression analyses in the place of the imputed income adequacy variable. The results revealed a statistically significant difference ($p<.001$) in terms of health service patterns between individuals who reported income and those that did not. Specifically income responders were from 13 to 30 percent more likely to be non-users, CHC only users, CAM single or dual users and non-CAM dual users than they were to be tri-users. Given the link between high income and tri-use revealed in these analyses, one could speculate that in this case the income non-responders have higher levels of income.

4.4.6: Sample Weights

Sample weights were applied to the data to obtain an appropriate distribution of cases across subgroups (e.g., provinces, income groups, gender groups). The master weights provided by Statistics Canada and designed for use with the CCHS were used to produce population estimates (Statistics Canada, 2005). When combining cycles of the CCHS, it is recommended that weights be scaled by a constant factor $\alpha_i = 1/k$—where k is the number of surveys/cycles to be combined (Thomas & Wannell, 2009). It is necessary to do this because sample weights are only available for each cycle separately and using the sample weights without scaling would result in the total weighted population for the combined cycles representing roughly twice the Canadian population. As the present study combined two cycles of the CCHS ($k=2$), then $\alpha=0.5$. Thus, it was necessary to scale the full Master Sample weight (provided by Statistics Canada) by a factor of 0.5 to create a merged weight factor. To avoid inflating tests of statistical significance, which can occur with large sample sizes, the master weights were rescaled to the original sample size following the merger of the two CCHS surveys (cycle 2.1 [2003] and 3.1 [2005]) (Thomas & Wannell, 2009). A rescaled weight was calculated using the full Master Sample weight (provided by Statistics Canada) divided by the mean of the merged weight. The rescaled weight was applied to analyses of the full sample, and female and male subsamples.

4.5: Summary

In summary, the present study assessed the number and form of health service patterns within and across CHC, CAM and PHC. It also examined whether the effect of select social location and health variables shown to influence service use *within* health care systems also operate when service use is conceptualized as occurring *across* health care systems. The number and form of health patterns were derived using two different strategies: a deductive strategy that involved defining patterns *a priori* along theoretically meaningful lines into discrete categories; and an inductive strategy that drew on latent class analysis to establish discrete patterns (or classes) as they emerge from the data. Following pattern identification, multinomial logit models were used to test the predictors of both the deductive and inductive patterns. In this way, I examined whether there is heterogeneity in the number and types of medical pluralism patterns and outlined the social and health determinants that may explain it. The results of this examination are presented in the next chapter.

Chapter 5: Results

This dissertation research has two main objectives. First, it seeks to identify patterns of medical pluralism among Canadians aged 50 and older. Second, it addresses relationships between patterns of medical pluralism and major social and health factors identified in previous literature (i.e., age, gender, SES, race, immigration status, chronic conditions, functional ability, self-perceived physical and mental health). This chapter begins by presenting the results of descriptive analyses conducted to address the first objective. It then turns to the results of analyses (bivariate and multivariate) to address the second objective. It ends with a brief summary.

5.1: Objective One: Identifying Patterns of Medical Pluralism

5.1.1: Deductive Pattern Identification

Using a deductive strategy, I pre-defined six categories of medical pluralism according to a number of discrete combinations of variables representing service use (and non-use) within and across CHC, CAM and PHC. Frequency distributions for this dependent variable are shown in Table 4[16]. For all three samples, the most common

[16] Frequency counts of the continuous CHC and chiropractic variables show that among users, the average number of medical doctor visits per year was 3.76 (SD=6.07), the mean number of specialist visits per year was 0.98 (SD=3.57), and the mean number of chiropractic visits per year was 1.05 (SD=6.39).

pattern is the combined use of CHC and PHC but not CAM (i.e., non-CAM dual use), with almost one-half of all respondents reporting use of these services within the past year (CHC) or ever (PHC). This is followed by CHC-only use, tri-use, CAM use (with or without PHC), non-use of health services, and PHC-only service use. When flu shots were considered, almost one-half of all respondents reported use of these services within the past year (CHC) or ever (PHC). The relative distribution of these patterns varies somewhat, however, when gender-specific PHC services such as mammograms, Pap tests, and PSA tests were taken into account. In this case, the distribution of dual use was much higher in the female and male subsamples, with almost two-thirds of all respondents reporting use of these services within the past year (CHC) or ever (PHC).

In terms of other health care patterns, tri-use (i.e., use of CHC, CAM and PHC), medical monism (i.e., exclusive use of one health care system) and non-use were less common patterns, relative to dual use, which was the most common pattern reported in this study. The tri-use pattern captured about one in ten respondents in the full sample and male subsample and was almost double in the female subsample, with one in five female respondents reporting tri-use of health care systems. When medical monism was represented by exclusive use of CHC services or PHC services in a given year it was a less common pattern for the female and males subsamples than it was for the full sample. Approximately one in four respondents in the full sample and one in ten respondents in the male subsample used only CHC services in a given year, yet fewer than one in 100 respondents in the female subsample had this pattern. Exclusive use of PHC services was more common among respondents in the female subsample than it is for respondents in the full sample and male subsamples. It was not possible to gauge the true distribution of exclusive use of CAM as the category on its own had low frequency counts and it was necessary to combine it with other categories. Non-use of health services was a relatively uncommon pattern within the female subsample, but occured more frequently in the male subsample and full sample. Overall, however, medical monism and non-use of health services were less frequent patterns when gender-specific PHC services were taken into consideration.

Table 4. Frequency distributions in the dependent variable medical pluralism (deductive patterns), all samples, Canadians aged 50+, 2003/2005

	Full sample (N=117,824)		Female subsample (N=61,889)		[a]Male subsample (N=11,796)	
	N	%	N	%	N	%
Non-use	7,476	6.64	427	0.73	562	5.16
CHC only	25,589	22.74	512	0.87	1,098	10.08
CAM single or dual use [b]	8,745	7.77	958	1.63	364	3.34
PHC only [c]	5,307	4.72	4,910	8.37	760	6.98
Non-CAM dual use[d]	53,123	47.21	40,190	68.53	6,906	63.40
Tri- use[e]	12,282	10.92	11,652	19.87	1,203	11.04
Total[f]	112,521	100.00	58,649	100.00	10,893	100.00

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files.
Note: CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care
[a] The male subsample is a subsample of the full sample; therefore the female and male subsample N do not match the full sample N.
[b] Uses CAM only *or* uses CAM + PHC *or* uses CAM +CHC
[c] Uses PHC only (Full sample=flu shot; Female subsample=mammogram, and/or PAP test, and/or flu shot; Male subsample=PSA test and/or flu shot)
[d] Uses CHC + PHC only
[e] Uses CHC+CAM+PHC
[f]Totals do not match due to missing data.

5.1.2: Inductive Pattern Identification

Using the inductive pattern strategy, medical pluralism patterns were identified through latent class analyses (Furr & Funder, 2004; Muthén & Muthen, 2000).

Table 5 outlines the model fit and classification statistics obtained for the *K*-class models. According to statistical model fits[17], the optimal solutions for the full sample (five-class model), the female subsample (six-class model), and the male subsample (three-class model) were selected based on: (i) a low BIC, relative to other classes estimated *within* that sample; and (ii) bivariate residuals less than 4.0 in all two-way tables of the indicators (not shown). Further justification that optimal solutions were found is seen in the low classification error (*E*), relative to zero and relative to classes estimated *after* the optimal solution (determined post de-facto), for each sample. Thus, the proportion of classes expected to be misclassified is low and there is good separation between classes. Across the three samples, the degree of misclassification was lowest for the male subsample, in that only 14 percent of the male subsample is "misclassified" compared to 36 percent and 31 percent in the full sample and female subsample, respectively.

[17] In cases where the number of parameters is large (and/or the degrees of freedom are zero or close to zero) the p-value no longer serves as an indicator of latent class model fit (Vermunt & Magidson, 2003).

Table 5. Latent class model summary, all samples, Canadians aged 50+, 2003/2005

	Full sample (N=112,521)				Female subsample (N=58,649)				Male subsample (N=10,893)			
Model	BIC(LL)	NPar	df	*E*	BIC(LL)	NPar	df	*E*	BIC(LL)	NPar	Df	*E*
1 class	***542,510.80	5	26	0.00	***371,435.03	7	120	0	***63,633.96	6	57	0
2 class	***535,377.89	11	20	0.18	***364,444.40	15	112	0.14	***62,144.76	13	50	0.14
3 class	***531,859.25	17	14	0.17	***362,332.57	23	104	0.12	***61,971.85	20	43	#0.14
4 class	***531,807.13	23	8	0.33	***361,336.79	31	96	0.12	***62,013.70	27	36	0.17
5 class	*531,733.84	29	2	#0.36	***361,024.25	39	88	0.34	***62,049.88	34	29	0.38
6 class	531,798.78	35	-4	0.36	***360,921.41	47	80	#0.31	---			
7 class	---				***360,974.07	55	72	0.44	---			

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files.
E =proportion of classification error
#Indicates best model fit for that sample or subsample.
*p<.05; **p<.01; ***p<.001

5.1.2.1: Full sample

The parameters reported in Table 6 are the class proportions (row one) and the latent class-specific probabilities (the remaining rows) given the higher (yes=1) response for all health care indicators. The criteria for naming the *k*-classes are outlined in Section 4.4.2: but it is worth repeating here that the low, average and high distinction used to name the *k* classes in each *k*-class model is based on the relative probability of service use *across* classes and not the absolute probability of service use *within* classes. Therefore, the low, average or high probability distinction is relational among the health care indicators and does not reflect absolute values. For example, what may be considered 'low' probability of flu shot in one class may not reflect 'low' probability of chiropractic in another; that is, while the rank order is the same (both are low) the percentage of probability used to denote low may be different across indicators.

All five classes feature medical visits, whether the probability of use was comparatively low (Class 3), average (Class 5), high (Class 1, 2 and 4). What further distinguished the classes are the other services that tend to accompany medical visits. In Classes 1 and 4 it is specialists and flu shots. The class-specific probability for specialists was highest in classes 1 and 4. In Class 4, medical visits were also accompanied by visits to CAM providers and chiropractors, along with specialists and flu shots. In Class 2, it was flu shots. In Class 3, it was everything but with very small probability relative to the others, although medical visits continued to dominate this pattern, despite the small probability of service use across the health care indicators. In Class 5, it was everything with an emphasis on CAM and medical services. Figure 2 presents the overall pattern of the five-class solution.

The estimated latent class proportions in the five-class model and the criteria outlined in Section 4.4.2, led to the identification of five health care patterns, listed here in order of class size: (1) High CHC/PHC and low to average CAM (*n*=57,690, 51%); (2) Average CHC/PHC and low to average CAM (*n*=27,781; 25%); (3) Low CHC/PHC/CAM (*n*=13,840; 12%); (4) High CHC/PHC/CAM (*n*=9,531; 9%); and (5) High CAM and low CHC/PHC (*n*=3,691; 3%).

Table 6. Latent class conditional probabilities of the five-class model, full sample, Canadians aged 50+, 2003/2005

	Latent Class				
	1= High CHC/PHC and low-avg. CAM	2= Avg. CHC/PHC and low-avg. CAM	3= Low CHC/PHC/ CAM	4= High CHC/PHC/CAM	5= High CAM and low CHC/PHC
Class proportion (SE)	0.51	0.25	0.12	0.09	0.03
Conventional Health CARE (CHC)					
>=1 Medical visit[a]	0.93	0.82	0.44	1.00	0.69
>=1 Specialist visit	0.50	0.02	0.10	0.49	0.19
Complementary and Alternative Medicine (CAM)					
>=1 Chiropractic visit	0.08	0.09	0.05	0.35	0.33
>=1 CAM provider visit	0.04	0.00	0.03	0.71	0.78
Public Health Care (PHC)					
>=1 Flu shot[b]	0.75	0.66	0.15	0.69	0.31

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted.

[a] Service visits are within the last 12 months.

[b] Receipt of flu shot is within the last 12 months or more.

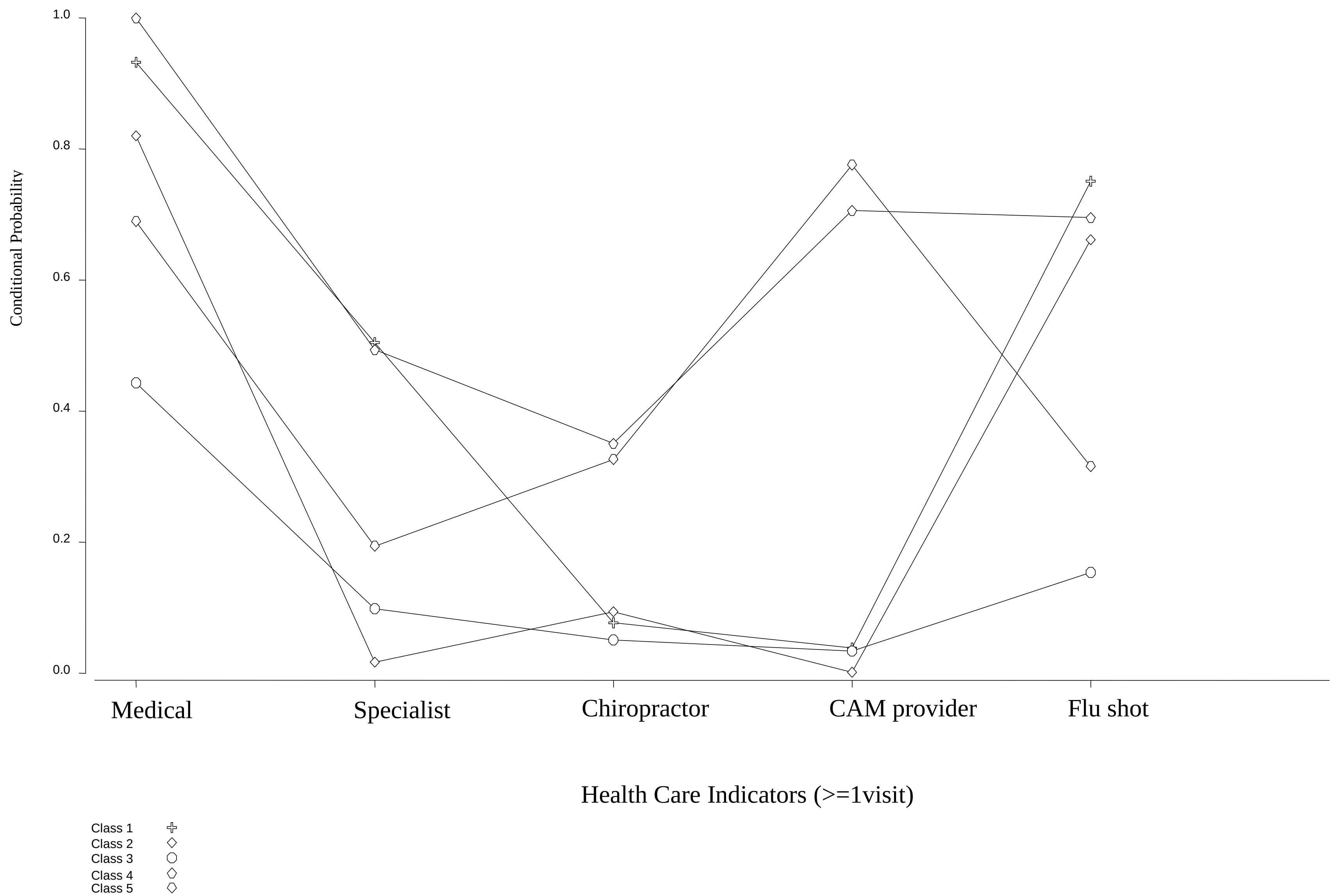


Figure 2. Health service patterns for the five-class model of medical pluralism, full sample, Canadians aged 50+, 2003/2005

5.1.2.2: Female subsample

Table 7 outlines the parameter estimates for the six-class model obtained for the female subsample. The parameter estimates are also plotted and displayed graphically in Figure 3. Similar to the five-class model that best fit the full sample data, the six class model for the female subsample also featured low (Classes 2 and 6) to average (Classes 4 and 5) to high (Classes 1 and 3) medical visits with distinct variations in the type of services that accompany this medical use. Classes 1, 2, 5 and 6 were all characterized by low to average probability of chiropractic use and CAM provider use, whereas Classes 3 and 4 had high probability of using both. Classes 5 and 6 also both had the lowest probability of using female-specific PHC services. Yet an important distinction was seen with regard to flu shots for these two classes. Class 6 had the lowest probability of flu shot across all classes and Class 5 has the highest. Overall, based on the parameters of the six-class model, it can be concluded that six health care types were evident in the Female Sample: (1) High CHC/PHC and average CAM (*n*=30,832; 53%); (2) Low CHC, average PHC, and low to average CAM (*n*=15,425; 26%); (3) High CHC/PHC/CAM (*n*=3,783; 6%); (4) Low to average CHC/PHC and high CAM (*n*=3,589; 6%); (5) Average CHC, low to high PHC, and low CAM (*n*=2,991; 5%); and (6) Low CHC/PHC/CAM (*n*=2,035; 4%).

Table 7. Latent class conditional probabilities for the six-class model (inductive), female subsample, Canadians aged 50+, 2003/2005

	Latent Class					
	1= High CHC/PHC and avg. CAM	2= Low CHC, avg. PHC, and low to average CAM	3= High CHC/PHC/CAM	4= Low to average CHC/PHC and high CAM	5= Avg.CHC, low to high PHC, and low CAM	6= Low CHC/PHC/CAM
Class proportion	0.53	0.26	0.06	0.06	0.05	0.04
Conventional Health Care						
>=1 Medical visit[a]	0.96	0.73	1.00	0.77	0.92	0.41
>=1 Specialist visit	0.45	0.15	0.56	0.28	0.22	0.04
Complementary and Alternative Medicine						
>=1 Chiropractic visit	0.10	0.05	0.38	0.31	0.04	0.02
>=1 CAM visit	0.06	0.01	0.95	0.65	0.04	0.06
Public Health Care						
>=1 Mammogram[b]	0.95	0.88	0.98	0.85	0.38	0.06
>=1 PAP test	0.96	0.89	0.98	0.95	0.35	0.56
>=1 Flu shot	0.78	0.51	0.71	0.31	0.88	0.11

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files.
[a] Service visits are within the last 12 months,
[b] Receipt of PHC services are within the last 12 months or more.

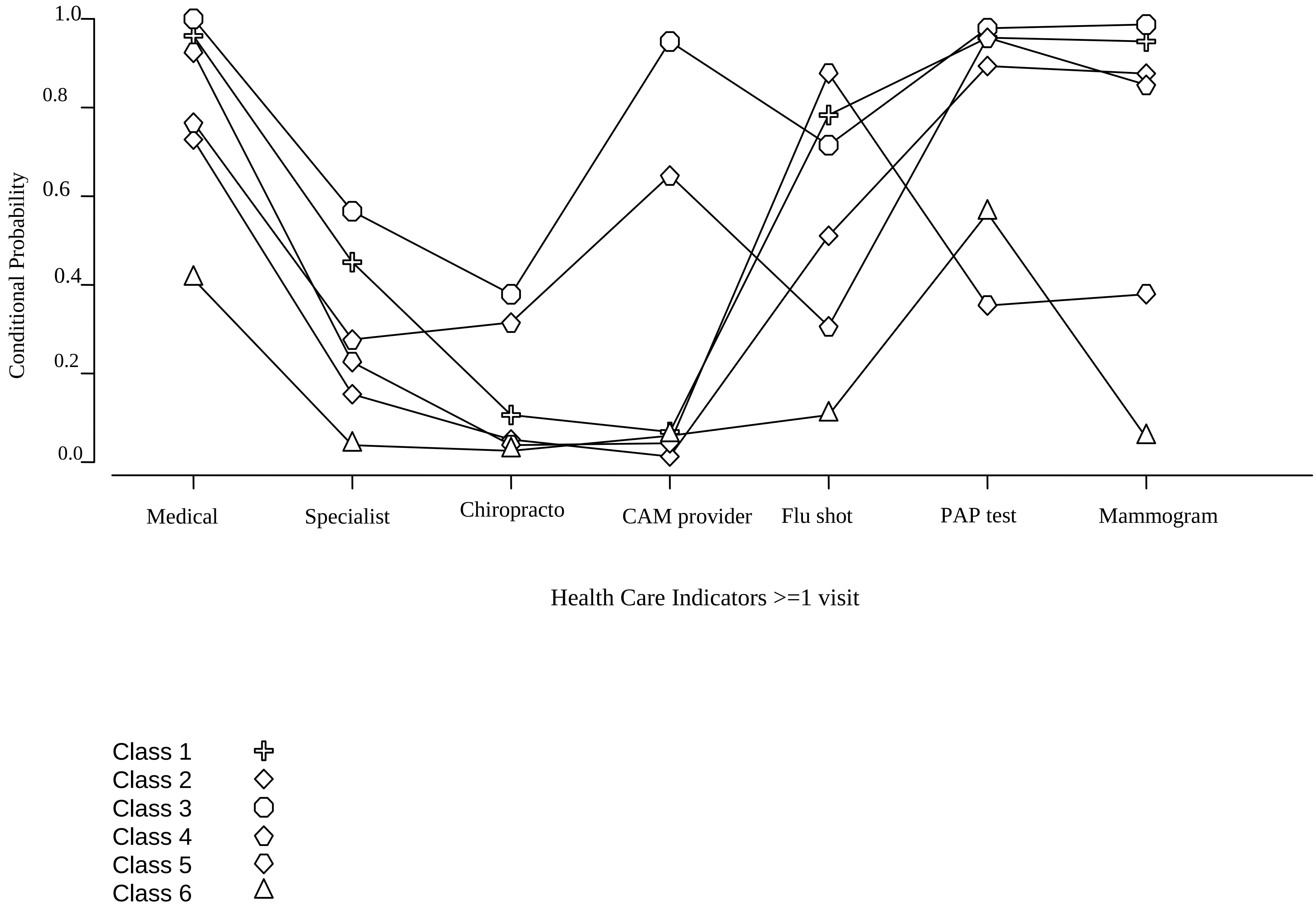


Figure 3. Health service patterns for the six-class model of medical pluralism (inductive), female subsample, Canadians aged 50+, 2003/2005

5.1.2.3: Male Subsample

Table 8 outlines the latent class probabilities for the three-class model (shown graphically in Figure 4). The three classes exhibit low (Class 3) average (Class 2) high (Class 1) probabilities of medical service use with distinct variations in the type of services that accompany this medical use. Class 1 had the highest probability of CHC use and average to high probability for PHC services but had low to average probability of CAM use. Class 2 had the lowest probability of use across all service indicators. Finally, Class 3 had an average to high probability of use across CHC, CAM and PHC services. It should be noted that although Class 3 had average CHC use (relative to class 1 which has high CHC use), and slightly lower probability of using flu shots than Class 1, overall, Class 3 had the greatest probability of service use across all three health care systems. Based on the parameters of the three-class model described in Table 8 and shown graphically in Figure 4, these three health care types were identified as: (1) High CHC/PHC and low CAM (*n*=7,056; 65%); (2) Low CHC/PHC/CAM (*n*=2,881; 26%); and (3) High CHC/PHC/CAM (*n*=955; 9%).

Table 8. Latent class conditional probabilities for the three-class model (inductive), male subsample, Canadians aged 50+, 2003/2005

	Latent Class		
	1= High CHC/PHC and low CAM	2= Low CHC/PHC/CAM	3= High CHC/PHC/CAM
Class proportion	0.65	0.26	0.09
Conventional Health Care (CHC)			
>=1 Medical visit[a]	0.96	0.53	0.91
>=1 Specialist visit	0.39	0.06	0.34
Complementary and Alternative Medicine (CAM)			
>=1 Chiropractic visit	0.00	0.06	0.94
>=1 CAM provider visit	0.05	0.04	0.21
Public Health Care (PHC)			
>=1 Flu shot[b]	0.72	0.31	0.71
>=1 PSA test	0.77	0.33	0.80

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files.
PSA=Prostate Specific Antigen test
[a] Visit in last twelve months
[b] PHC service use in last twelve months or more

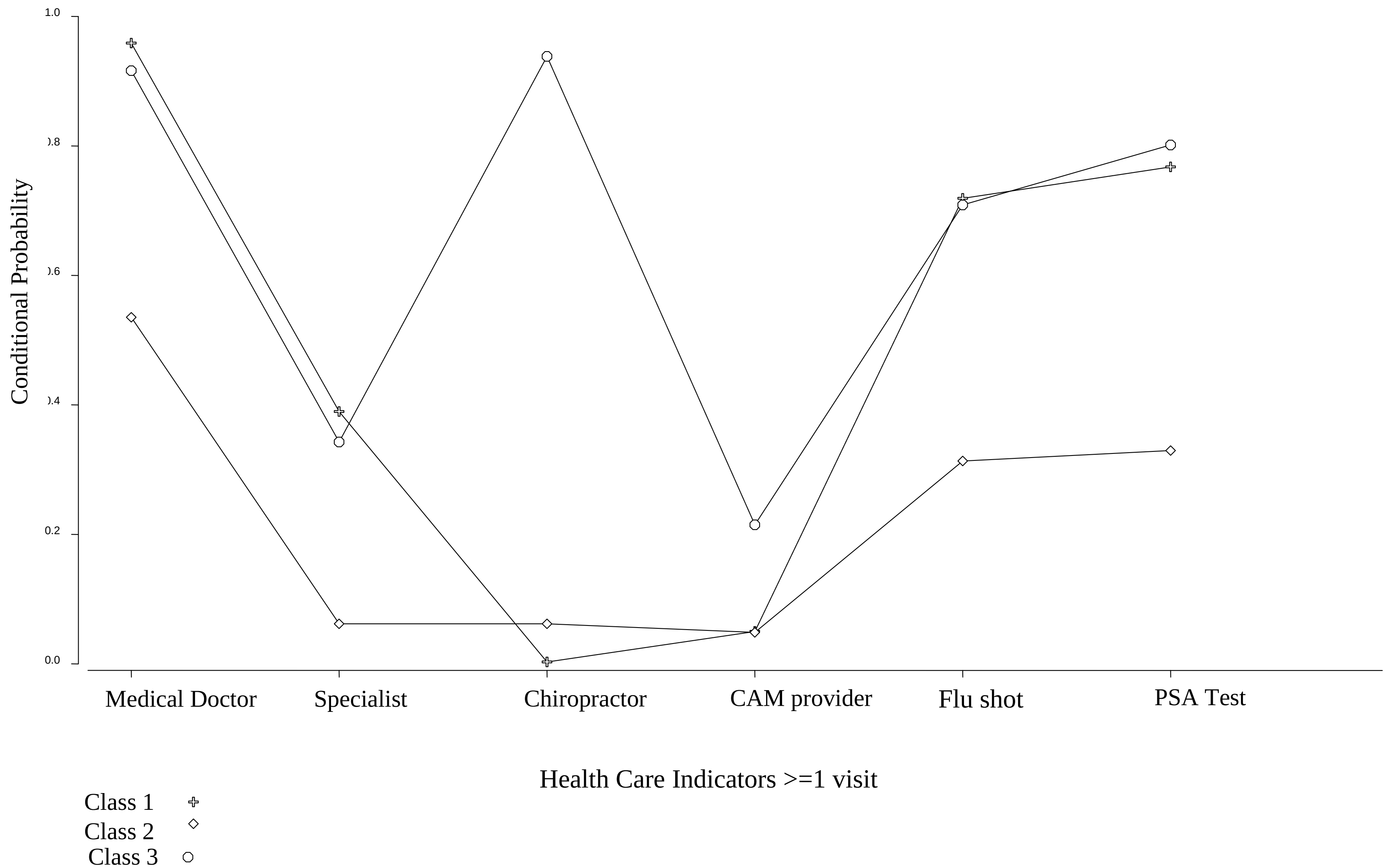


Figure 4. Health service patterns of the three-class model of medical pluralism (inductive), male subsample, Canadians aged 50+, 2003/2005

5.2: Objective Two: Examining Predictors of Medical Pluralism Patterns

5.2.1: Bivariate Results: Deductive Patterns.

All of the hypothesized predictor and control variables were significantly related to medical pluralism pre-defined as a six-category multinomial dependent variable within each of the three samples (see Appendix F for tables).

With regard to age, the proportion of responses in all categories except non-CAM dual use was higher in younger (50-79) compared to older age cohorts (80+). Although the association between age and medical pluralism was consistent in the full sample and male subsample, for the female subsample, non-CAM dual use, non-use and CHC-only use was slightly higher for older (80+) than younger cohorts. Thus, for these three samples, medical pluralism appears much more extensive among younger relative to older adults.

Gender differences were also evident. The proportion of non-use, CHC-only use and PHC-only use was higher for males compared to females. Conversely, females were more heavily represented among tri-users. Thus, males appear less inclined to pluralistic service while females tend to use more types of services across the three health care systems.

The association between the SES variables (household income adequacy and respondent education) and medical pluralism was consistent across the three samples. There appears to be a negative linear trend with regard to income adequacy and medical pluralism. Non-use or the use of only one system (e.g., PHC-only or CHC-only) was more common in low income groups. Tri-use and use of CAM either alone or in combination with PHC were much more common among upper middle and higher income groups than in lower income groups. The relationship between education and medical pluralism was somewhat similar across all three samples; yet differences in the proportion of responses per category were not as large for the male subsample as they were for the full sample and female subsample. Tri-use and use of CAM either alone or in conjunction with PHC were more frequent among those with higher compared to lower levels of education.

Differences were noted in medical pluralism by race. Across the three samples, individuals who identify as being White were more likely to be tri-users, to use only PHC, to use a combination of services (PHC and CHC) that does not include CAM or to use no health services at all. The exception was that for White respondents in the male subsample, non-use of CAM was a more common pattern than it is for non-White males. Therefore, evidence for racial variation in CAM use was seen only in the full sample and female subsamples but overall across all samples, non-Whites were less likely to have pluralistic health care patterns.

The analyses also indicate that recent immigrants (i.e., those with less than 20 years in Canada) were more frequently non-users and CHC-only users and less frequently PHC-only users and tri-users compared to Canadian-born and long-term (i.e., those with 20 or more years in Canada) immigrants.

Patterns of health service use were also associated with both wellness and sickness care. For example, the use of health services that are typically associated with wellness and preventive care, such as PHC and CAM, was more prevalent among individuals with very good and excellent (physical and mental) health, individuals reporting no or few chronic conditions, and individuals reporting that their function is never restricted due to chronic conditions. Paradoxically, however, exclusive use of CHC (a model conceptualized as being largely restricted to acute and sickness care) was also concentrated within groups of 'healthy' individuals. Conversely, across all three samples, tri-use was a more common pattern among individuals in fair/poor health, individuals with four or more chronic conditions, and individuals who report that their function is always restricted by their chronic conditions.

The control variables (spatial assets and collectivities) had significant albeit weak associations with medical pluralism. Persons living in Quebec were frequently non-users and CAM users and were least likely to be non-CAM dual users. Exclusive use of CHC services was more common for respondents living in the Maritimes, the Yukon or Northwest Territories. However, these people were also less likely to use CAM services. Tri-use was highest among people living in the Prairie Provinces and in British Columbia (and Ontario for the male subsample). Interestingly, non-use was more frequent in urban communities while tri-use was more frequent in rural communities. CAM use was slightly more prevalent in urban areas, as was exclusive use of CHC and of PHC. These patterns however were somewhat muted in the female subsample where there were few differences in the distribution of medical pluralism among those living in urban and rural regions.

Turning to the collectivities variables, single persons (compared to persons who are or who have been married or in a common law arrangement) were more likely to be non-users, or to use PHC or CHC exclusively, and least likely to be non-CAM dual users. That is, single persons used CAM less often than their married, divorced or widowed counterparts do. These patterns were almost the same across the three samples with the exception of tri-use in the female subsample; tri-use was a more common pattern among single females than it was among single males. Finally, when it comes to household size, the proportion of nonusers was highest in larger households (i.e., those with five or more people), whereas the opposite distribution was apparent for tri-use.

5.2.2: Bivariate Results: Inductive Patterns.

For the full sample, the latent class conditional probabilities for the five-class model across the 14 covariates are shown in Table 9. In each class, the probabilities sum to one and are expressed in column proportions. For continuous variables and for categorical variables treated as ordinal, means are presented. The class proportion, which establishes the proportion or size of the latent class, is outlined in the first row, summing to one across.

The oldest respondents were found in Classes 1 (High CHC/PHC and low –avg. CAM) and 2 (Avg. CHC/PHC and avg.-low CAM) and the youngest were in Class 5 (High CAM and low CHC/PHC). Females were the majority in Classes 1, 4 and 5. The only class in which males made up the majority is Class 3 (Low CHC/PHC/ CAM*)* and there was an equal proportion of males and females in Class 2. The mean levels of income adequacy and education were higher for Class 4 (High CHC/PHC/CAM) and Class 5 relative to all other health care types. The probability of belonging to any of the 5 classes was much greater for White versus non-White individuals. Among native-born Canadians, there was a greater probability of membership in all five Classes, relative to recent and long-term immigrants, but it was slightly higher in Classes 3, 4 and 5. In terms of spatial assets and collectivities, the probability of any combination of health service use was much higher in urban rather than rural areas. Regional differences were also noted by province with residents of Ontario and Quebec demonstrating the greatest proportion of users and thus the highest probability of health service use across Canada. The probability of belonging to any of the five Classes was greater among married individuals, compared to never- or no longer married individuals. For individuals in the largest households (i.e., an average 2.34 people per household), the probability of belonging to Class 3 was greatest. Conversely, for individuals with the smallest average size of household, membership was most likely to be in Class 1. Finally, in terms of health needs, Class 3 had the lowest average number of chronic conditions while Classes 1 and 4 had the highest averages, suggesting that comorbidity is associated with high and not low probability of service use. Membership in Classes 1 and 4 was also characterized by more functional restrictions and poor/fair self-rated health. By comparison, Class 3 included those with fewer chronic conditions, less functional restriction, and who rated their physical and mental health in positive terms. Similar results were evident for both the female and male subsamples (see Appendices G and H).

Table 9. Latent class conditional probabilities for the five-class model, full sample, Canadians aged 50+, 2003/2005

	Class				
	1=High CHC/PHC and low –avg. CAM	2= Avg. CHC/PHC and avg.-low CAM	3=Low CHC/PHC/ CAM	4=High CHC/PHC/ CAM	5=High CAM and low CHC/PHC
Class proportion	0.51	0.25	0.12	0.09	0.03
Social Location					
Age	64.19	63.62	60.26	61.03	58.84
Gender					
Male	0.47	0.50	0.55	0.36	0.40
Female	0.53	0.50	0.45	0.64	0.60
Household Income Adequacy					
Low	0.08	0.08	0.09	0.06	0.05
Lower middle	0.19	0.19	0.18	0.15	0.14
Upper middle	0.53	0.54	0.53	0.55	0.56
High	0.20	0.19	0.20	0.25	0.25
Mean	2.84	2.83	2.86	2.99	3.01
Respondent Education					
Less than secondary	0.29	0.31	0.29	0.19	0.18
Graduated secondary	0.16	0.17	0.17	0.14	0.16
Some/all post-secondary	0.53	0.49	0.51	0.64	0.63
Mean	2.25	2.19	2.23	2.46	2.46
Race					
White	0.88	0.86	0.86	0.88	0.88
non-White	0.09	0.09	0.09	0.09	0.09
Immigration status					

	Class				
	1=High CHC/PHC and low –avg. CAM	2= Avg. CHC/PHC and avg.-low CAM	3=Low CHC/PHC/ CAM	4=High CHC/PHC/ CAM	5=High CAM and low CHC/PHC
Not an immigrant	0.73	0.73	0.74	0.75	0.76
<20 years in Canada	0.04	0.04	0.05	0.04	0.04
>=20 years in Canada	0.20	0.19	0.18	0.19	0.17
Spatial Assets					
Urban/Rural					
Urban	0.81	0.79	0.77	0.80	0.78
Rural	0.19	0.21	0.23	0.20	0.22
Province					
Maritime/Territories/Yukon	0.09	0.08	0.08	0.06	0.05
Quebec	0.25	0.24	0.34	0.23	0.30
Ontario	0.40	0.38	0.30	0.37	0.29
Prairie Provinces	0.06	0.07	0.07	0.08	0.08
Alberta	0.08	0.09	0.08	0.11	0.11
British Columbia	0.13	0.14	0.12	0.17	0.16
Collectivities					
Marital Status					
Married/common law	0.71	0.71	0.72	0.73	0.74
Widowed/separated/divorced	0.23	0.23	0.21	0.22	0.20
Single	0.05	0.06	0.08	0.06	0.06
Household					
No. persons in household (mean)	2.21	2.25	2.34	2.26	2.32

	Class				
	1=High CHC/PHC and low –avg. CAM	2= Avg. CHC/PHC and avg.-low CAM	3=Low CHC/PHC/ CAM	4=High CHC/PHC/ CAM	5=High CAM and low CHC/PHC
Health Needs					
No. chronic conditions (mean)	2.63	2.08	1.49	2.85	2.13
Functional Ability					
Never restricted	0.52	0.62	0.71	0.48	0.59
Sometimes restricted	0.23	0.20	0.16	0.25	0.23
Often restricted	0.25	0.17	0.12	0.27	0.18
Mean	1.73	1.54	1.42	1.79	1.59
Perceived Physical Health					
Fair/poor	0.23	0.15	0.11	0.20	0.12
Good	0.34	0.33	0.30	0.34	0.30
Very good	0.29	0.33	0.35	0.32	0.35
Excellent	0.14	0.18	0.24	0.15	0.23
Mean	2.34	2.55	2.72	2.42	2.68
Perceived Mental Health					
Fair/poor	0.06	0.04	0.04	0.06	0.04
Good	0.24	0.23	0.21	0.23	0.21
Very good	0.34	0.35	0.34	0.36	0.36
Excellent	0.36	0.37	0.41	0.35	0.38
Mean	3.01	3.06	3.12	3.01	3.08

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files. Note: CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care. High (rank 1,2); average (rank 3); low (rank 4,5).

5.2.3: Regression Results: Deductive and Inductive Patterns.

This section presents results from a series of analyses which were run on the three samples by regressing (i) the six category medical pluralism dependent variable (derived using a deductive approach) on hypothesized predictor and control variables; and (ii) the *k*-Class medical pluralism dependent variable (derived using an inductive approach) on hypothesized predictor and control variables. There were six analyses in total. Each analysis had three blocks, with each block entered hierarchically into the regression model beginning with the control variables (block one), followed by the social location variables (block two) and the health variables (block three). This approach allowed for an examination of the relative contribution of each group of variables on medical pluralism. The reference category for each model was the tri-use category (deductive pattern) or the high CHC/PHC/CAM Class (inductive pattern), as theoretically, use of more than one health care system implies medical pluralism and therefore use (and high probability of use, as conceptualized using the inductive approach) of all three health care systems symbolizes the *greatest* form of medical pluralism.

As shown in Tables 10 and 11, model fit for all six analyses was good, as each of the three blocks and the overall models were statistically significant. The variance (Cox and Snell Pseudo R^2) explained ranges from 14.0 to 24.2 percent for the deductive approach (Table 10) and 16.0 to 21.0 percent for the inductive approach (Table 11). Tables 12 through 17 present block three of the regression analyses on medical pluralism (inductive and deductive approach). Table 12 is the main effects model and Table 13 is the interaction model. Blocks 1 and 2 for all analyses are in Appendices I through W.

Table 10. Model fit and percentage of explained variance for the multinomial logit regression on medical pluralism (deductive), all samples, Canadians aged 50+, 2003/2005

	Full Sample (N=117,824)			Female Subsample (N=61,889)			Male Subsample (N=11,796)		
Regression Block	Model χ^2	Pseudo R^2	df	Model χ^2	Pseudo R^2	df	Model χ^2	Pseudo R^2	df
One	***4,000.00	0.06	45	***4,000.00	0.03	45	***503.39	0.04	30
Two	***19,240.00	0.17	105	***4,287.00	0.07	90	***1,403.00	0.12	75
Three	***29,170.00	0.24	150	***8,319.00	0.14	135	***2,446.00	0.21	120

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files
Note: Block one (controls); Block two (controls + social location); Block three (controls + social location + health need). Pseudo R^2 is Cox and Snell.
***All blocks are significant at the p<.001 level.

Table 11.Model fit and percentage of explained variance for the multinomial logit regression on medical pluralism (inductive), all samples, Canadians aged 50+, 2003/2005

	Full Sample (N=117,824)			Female Subsample (N=61,889)			Male Subsample (N=11,796)		
Regression Block	Model χ^2	Pseudo R^2	(df)	Pseudo R^2	Model χ^2	(df)	Pseudo R^2	Model χ^2	(df)
One	***4,274.00	0.04	36	0.04	***4,743.00	45	0.03	***309.90	12
Two	***14,340.00	0.13	76	0.13	***8,003.00	95	0.09	***935.30	32
Three	***24,870.00	0.21	112	0.21	***13,180.00	140	0.16	***1,752.00	50

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files
Note: Block one (controls); Block two (controls + social location); Block three (controls + social location + health need). Pseudo R^2 is Cox and Snell.
***All blocks are significant at the p<.001 level.

Table 12. Final multinomial logit model of medical pluralism (deductive patterns) on hypothesized predictor variables, main effects model, full sample, Canadians aged 50+, 2003/2005

Multinomial Logit Regression Model (Vs.) Tri-Use[a]										
	Non- use		CHC only use		CAM single or dual use[b]		PHC[c] only use		Non-CAM dual use[d]	
Independent Variables	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*
Spatial Assets										
Urban/rural										
Urban	-0.21	***0.82	-0.02	0.98	-0.19	***0.82	-0.02	0.98	0.13	1.14
Rural (ref)	---	---	---	---	---	---	---	---	---	---
Province										
Maritime/Terr/ Yukon	1.11	***3.02	1.36	***3.89	0.10	1.11	0.81	***2.25	1.06	***2.88
Ontario	0.88	***2.42	0.71	***2.04	0.44	***1.55	0.69	***1.99	0.25	***1.29
Quebec	0.06	1.06	-0.20	***0.82	-0.40	***0.67	0.54	***1.72	0.27	***1.31
Sask/Manitoba	0.33	***1.40	0.23	***1.26	0.30	***1.34	-0.03	*0.97	-0.10	*0.90
Alberta	0.03	1.03	0.00	1.00	0.16	**1.18	0.16	1.17	-0.14	***0.87
British Columbia(ref)	---	---	---	---	---	---	---	---	---	---
Collectivities										
Marital Status										
Married/commonlaw	0.59	***0.55	-0.06	0.94	-0.07	0.93	-0.35	***0.71	-0.03	0.97
Widow/divorced	0.32	***0.73	0.01	1.01	-0.07	0.93	-0.21	**0.81	-0.09	0.92
Single (ref)	---	---	---	---	---	---	---	---	---	---
Household										
# Persons in house	0.06	***1.07	0.05	1.05	-0.02	0.98	0.03	1.03	0.04	**1.04
Social Location										
Age	-0.03	***0.97	-0.03	***0.97	-0.06	***0.94	0.02	***1.02	0.04	***1.04
Age-squared	-1.50	***0.22	-1.04	**0.36	-1.23	*0.29	-0.14	0.87	0.11	1.12
Gender										
Male	0.76	***2.37	0.38	***1.46	0.07	***1.07	0.57	***1.66	0.37	***1.45
Female (ref)	---	---	---	---	---	---	---	---	---	---

Multinomial Logit Regression Model
(Vs.) Tri-Use[a]

	Non- use		CHC only use		CAM single or dual use[b]		PHC[c] only use		Non-CAM dual use[d]	
Independent Variables	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*
Income adequacy										
Low	1.45	***4.25	0.83	***2.30	0.32	***1.38	1.16	***3.18	0.60	***1.82
Lower middle	0.93	***2.52	0.44	***1.56	0.15	**1.16	0.65	***1.92	0.35	***1.42
Upper middle	0.36	***1.43	0.13	***1.14	0.07	*1.10	0.25	***1.28	0.09	***1.10
High (ref)	---	---	---	---	---	---	---	---	---	---
Education										
Less than grade 12	0.87	***2.38	0.59	***1.81	0.30	***1.35	0.60	***1.81	0.36	***1.43
Completed grade 12	0.47	***1.60	0.41	***1.50	0.18	***1.20	0.32	***1.38	0.23	***1.26
Some/completed post-secondary (Ref)	---	---	---	---	---	---	---	---	---	---
Race										
White	0.20	**1.22	0.15	**1.16	0.05	1.05	-0.14	0.87	-0.03	0.97
Non-White (ref)										
Immigration Status										
Not an immigrant	-0.23	**0.80	-0.35	***0.71	-0.07	0.94	0.13	**1.14	-0.11	***0.89
Recent (<20 yrs)	0.04	1.05	0.31	***1.36	0.16	1.17	-0.28	*0.75	0.20	**1.22
Long (>=20 yrs) (ref)	---	---	---	---	---	---	---	---	---	---
Health Needs										
Chronic Conditions										
# chronic conditions	-0.76	***0.47	-0.32	***0.73	-0.19	***0.83	-0.45	***0.64	-0.12	***0.89
Functional ability										
Never restricted	0.70	***2.00	0.40	***1.49	0.12	**1.13	0.73	***2.08	0.33	***1.39
Sometimes restricted	0.13	*1.14	0.09	**1.10	0.11	**1.12	0.21	***1.24	0.05	1.05
Often restricted (ref)	---	---	---	---	---	---	---	---	---	---

Multinomial Logit Regression Model
(Vs.) Tri-Use[a]

	Non- use		CHC only use		CAM single or dual use[b]		PHC[c] only use		Non-CAM dual use[d]	
Independent Variables	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*
Perceived Physical Health										
Fair/poor	-0.48	***0.62	0.27	***1.31	-0.44	***0.65	-0.25	***0.78	0.41	***1.51
Good	-0.41	***0.67	0.05	1.05	-0.35	***0.71	-0.35	***0.71	0.21	***1.23
Very good	-0.28	***0.75	0.01	1.01	-0.22	***0.81	-0.30	***0.74	0.08	*0.16
Excellent (ref)	---	---	---	---	---	---	---	---	---	---
Perceived Mental Health										
Fair/poor	0.30	***1.36	0.14	*1.15	0.07	1.07	-0.11	0.89	-0.04	1.01
Good	0.11	*1.11	-0.01	0.99	0.18	***1.19	0.15	*1.16	-0.01	1.03
Very good	-0.10	*0.91	-0.09	***0.91	-0.01	0.99	-0.03	0.97	-0.07	**0.93
Excellent (ref)	---	---	---	---	---	---	---	---	---	---

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files
*p<.05 **p<.01 ***p<.000
Note: CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care. The reference category is tri-use. Models control for the effects of spatial assets (urban/rural; province of residence) and collectivities (marital status and household size). Unstandardized (Beta) and standardized coefficients (Exp(B)) are presented.
[a] Uses CHC+CAM+PHC
[b] Uses CAM only *or* uses CAM + PHC
[c] Uses PHC only (full sample=flu shot)
[d] Uses CHC + PHC only

Table 13.Final multinomial logit model of medical pluralism (deductive patterns) on hypothesized predictor variables, interaction model, full sample, Canadians aged 50+, 2003/2005

	Multinomial Logit Regression Model (Vs.) Tri-Use[a]									
	Non- use		CHC only use		CAM single or dual use[b]		PHC[c] only use		Non-CAM dual use[d]	
Independent Variables	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*
Spatial Assets										
Urban/rural										
Urban	-0.21	***0.82	-0.02	0.98	-0.19	***0.82	-0.02	0.98	0.13	1.14
Rural (ref)	---	---	---	---	---	---	---	---	---	---
Province										
Maritime/Terr/ Yukon	1.11	***3.02	1.36	***3.89	0.10	1.11	0.81	***2.25	1.06	***2.88
Ontario	0.88	***2.42	0.71	***2.04	0.44	***1.55	0.69	***1.99	0.25	***1.29
Quebec	0.06	1.06	-0.20	***0.82	-0.40	***0.67	0.54	***1.72	0.27	***1.31
Sask/Manitoba	0.33	***1.40	0.23	***1.26	0.30	***1.34	-0.03	*0.97	-0.10	*0.90
Alberta	0.03	1.03	0.00	1.00	0.16	**1.18	0.16	1.17	-0.14	***0.87
British Columbia(ref)	---	---	---	---	---	---	---	---	---	---
Collectivities										
Marital Status										
Married/commonlaw	0.59	***0.55	-0.06	0.94	-0.07	0.93	-0.35	***0.71	-0.03	0.97
Widow/divorced	0.32	***0.73	0.01	1.01	-0.07	0.93	-0.21	**0.81	-0.09	0.92
Single (ref)	---	---	---	---	---	---	---	---	---	---
Household										
# Persons in house	0.06	***1.07	0.05	1.05	-0.02	0.98	0.03	1.03	0.04	**1.04
Social Location										
Age	0.00	1.00	0.00	1.00	-0.01	1.00	-0.01	0.99	0.02	1.02
Age-squared	-1.47	***0.23	-0.93	0.40	*-1.20	0.30	-0.16	0.86	0.18	1.20
Gender										
Male	3.21	***24.77	1.34	***3.81	0.87	***2.39	2.18	***8.85	0.79	***2.21
Female (ref)	---	---	---	---	---	---	---	---	---	---
Age*Gender	0.04	***1.04	0.02	1.02	0.01	***1.01	0.03	***1.03	0.01	1.01

Multinomial Logit Regression Model
(Vs.) Tri-Use[a]

	Non- use		CHC only use		CAM single or dual use[b]		PHC[c] only use		Non-CAM dual use[d]	
Independent Variables	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*
Income adequacy										
Low	1.45	***4.25	0.83	***2.30	0.32	***1.38	1.16	***3.18	0.60	***1.82
Lower middle	0.93	***2.52	0.44	***1.56	0.15	**1.16	0.65	***1.92	0.35	***1.42
Upper middle	0.36	***1.43	0.13	***1.14	0.07	*1.10	0.25	***1.28	0.09	***1.10
High (ref)	---	---	---	---	---	---	---	---	---	---
Education										
Less than grade 12	0.87	***2.38	0.59	***1.81	0.30	***1.35	0.60	***1.81	0.36	***1.43
Completed grade 12	0.47	***1.60	0.41	***1.50	0.18	***1.20	0.32	***1.38	0.23	***1.26
Some/completed post-secondary (Ref)	---	---	---	---	---	---	---	---	---	---
Race										
White	0.20	**1.22	0.15	**1.16	0.05	1.05	-0.14	0.87	-0.03	0.97
Non-White (ref)										
Immigration Status										
Not an immigrant	-0.23	**0.80	-0.35	***0.71	-0.07	0.94	0.13	**1.14	-0.11	***0.89
Recent (<20 yrs)	0.04	1.05	0.31	***1.36	0.16	1.17	-0.28	*0.75	0.20	**1.22
Long (>=20 yrs) (ref)	---	---	---	---	---	---	---	---	---	---
Health Needs										
Chronic Conditions										
# chronic conditions	-0.76	***0.47	-0.32	***0.73	-0.19	***0.83	-0.45	***0.64	-0.12	***0.89
Functional ability										
Never restricted	0.70	***2.00	0.40	***1.49	0.12	**1.13	0.73	***2.08	0.33	***1.39
Sometimes restricted	0.13	*1.14	0.09	**1.10	0.11	**1.12	0.21	***1.24	0.05	1.05
Often restricted (ref)	---	---	---	---	---	---	---	---	---	---

Multinomial Logit Regression Model
(Vs.) Tri-Use[a]

	Non- use		CHC only use		CAM single or dual use[b]		PHC[c] only use		Non-CAM dual use[d]	
Independent Variables	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*
Perceived Physical Health										
Fair/poor	-0.48	***0.62	0.27	***1.31	-0.44	***0.65	-0.25	***0.78	0.41	***1.51
Good	-0.41	***0.67	0.05	1.05	-0.35	***0.71	-0.35	***0.71	0.21	***1.23
Very good	-0.28	***0.75	0.01	1.01	-0.22	***0.81	-0.30	***0.74	0.08	*0.16
Excellent (ref)	---	---	---	---	---	---	---	---	---	---
Perceived Mental Health										
Fair/poor	0.30	***1.36	0.14	*1.15	0.07	1.07	-0.11	0.89	-0.04	1.01
Good	0.11	*1.11	-0.01	0.99	0.18	***1.19	0.15	*1.16	-0.01	1.03
Very good	-0.10	*0.91	-0.09	***0.91	-0.01	0.99	-0.03	0.97	-0.07	**0.93
Excellent (ref)	---	---	---	---	---	---	---	---	---	---

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files
*p<.05 **p<.01 ***p<.000
Note: CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care. The reference category is tri-use. The model control for the effects of spatial assets (urban/rural; province of residence) and collectivities (marital status and household size). Unstandardized (Beta) and standardized coefficients (Exp(B)) are presented. Only the higher order product (age* gender interaction) is interpreted.
[a] Uses CHC+CAM+PHC
[b] Uses CAM only *or* uses CAM + PHC
[c] Uses PHC only (full sample=flu shot)
d Uses CHC + PHC only

Table 14. Final multinomial logit model of medical pluralism (deductive patterns) on hypothesized predictor variables, female subsample, Canadians aged 50+, 2003/2005

	Multinomial Logit Regression Model (Vs.) Tri-Use[a]									
	Non-use		CHC only use		CAM single or dual use[b]		PHC[c] only use		Non-CAM dual use[d]	
Independent Variables	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*
Spatial Assets										
Urban/rural										
Urban	-0.12	0.89	0.01	1.01	-0.11	0.89	0.00	1.00	0.18	***1.20
Rural (ref)	---	---	---	---	---	---	---	---	---	---
Province										
Maritime/Terr./ Yukon	1.77	***5.89	1.92	***6.81	-0.64	**0.53	0.77	***2.16	1.11	***3.03
Ontario	1.29	***3.63	1.04	***2.82	0.32	**1.37	0.54	***1.72	0.33	***1.34
Quebec	0.71	**2.04	-0.01	0.99	0.11	1.12	0.50	***1.64	0.37	***1.44
Prairies	0.32	1.38	0.28	1.32	-0.06	0.94	0.09	1.10	-0.02	0.98
Alberta	-0.99	*0.37	-0.07	0.94	-0.11	0.89	0.04	1.04	-0.19	***0.82
British Columbia(ref)	---	---	---	---	---	---	---	---	---	---
Collectivities										
Marital Status										
Married/common-law	-1.31	***0.27	-1.55	***0.21	-0.43	**0.65	-0.27	***0.76	-0.02	0.98
Widow/divorced	-1.38	***0.25	-0.89	***0.41	-0.41	**0.67	-0.16	0.86	-0.05	0.95
Single (ref)										
Household										
# Persons in house	0.22	***1.25	0.17	***1.19	-0.01	0.99	-0.08	***1.08	0.06	***1.06
Social Location										
Age	0.08	***1.09	0.07	***1.08	-0.01	0.99	0.03	***1.03	0.04	***1.04
Income adequacy										
Low	2.30	***9.97	1.85	***6.33	0.63	***1.89	1.23	***3.41	0.58	***1.78
Lower middle	1.83	***6.21	1.68	***5.37	0.56	***1.75	0.72	***2.06	0.37	***1.45
Upper middle	1.15	***3.16	1.19	***3.29	0.36	***1.43	0.34	***1.41	0.11	***1.11

	Multinomial Logit Regression Model (Vs.) Tri-Use[a]									
	Non-use		CHC only use		CAM single or dual use[b]		PHC[c] only use		Non-CAM dual use[d]	
Independent Variables	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*
High (ref)	---	---	---	---	---	---	---	---	---	---
Education										
Less than grade 12	0.96	***2.62	1.05	***2.86	0.48	***1.62	0.64	***1.90	0.41	***1.50
Completed grade 12	0.40	**1.49	0.58	***1.79	0.10	1.10	0.37	***1.44	0.26	***1.30
Some/completed post-secondary (Ref)	---	---	---	---	---	---	---	---	---	---
Race										
White	-0.17	0.85	-0.51	**0.60	0.02	1.02	0.14	1.15	0.06	1.06
Non-White (ref)										
Immigration Status										
Not an immigrant	-0.13	0.88	-0.44	**0.65	0.13	1.14	0.08	1.08	-0.10	***0.90
Recent (<20 yrs)	1.10	***3.01	1.22	***3.40	0.21	1.23	-0.47	***0.63	0.15	*1.16
Long (>=20 yrs) (ref)	---	---	---	---	---	---	---	---	---	---
Health Needs										
Chronic Conditions										
# chronic conditions	-1.16	***0.31	-0.43	***0.65	-0.30	***0.74	-0.46	***0.63	-0.13	***0.88
Functional ability										
Never restricted	0.14	1.16	0.48	***1.62	0.42	***1.52	0.85	***2.33	0.35	***1.42
Sometimes restricted	-0.54	*0.58	0.17	1.19	0.31	*1.36	0.24	***1.27	0.02	1.02
Often restricted (ref)	---	---	---	---	---	---	---	---	---	---
Perceived Physical Health										
Fair/poor	-0.75	**0.47	0.74	***2.10	-0.24	0.79	-0.20	0.82	0.42	***1.53
Good	-0.43	**0.65	0.39	*1.47	-0.33	**0.72	-0.28	***0.75	0.22	***1.25
Very good	-0.31	*0.74	-0.09	0.92	0.03	1.03	-0.21	***0.81	0.13	***1.14
Excellent (ref)	---	---	---	---	---	---	---	---	---	---

	Multinomial Logit Regression Model (Vs.) Tri-Use[a]									
	Non-use		CHC only use		CAM single or dual use[b]		PHC[c] only use		Non-CAM dual use[d]	
Independent Variables	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*
Perceived Mental Health										
Fair/poor	1.07	***2.92	0.42	*1.53	-0.60	*1.06	-0.11	0.89	-0.10	0.91
Good	0.10	1.10	0.22	1.24	0.24	*1.27	0.02	1.02	-0.05	0.95
Very good	-0.03	0.97	0.25	1.28	0.13	1.14	-0.01	0.99	-0.05	0.95
Excellent (ref)	---	---	---	---	---	---	---	---	---	---

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files
Model χ^2
*p<.05 **p<.01 ***p<.000
Note: CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care. The reference category is tri-use. Models control for the effects of spatial assets (urban/rural; province of residence) and collectivities (marital status and household size). Unstandardized (Beta) and standardized coefficients (Exp(B)) are presented.
[a] Uses CHC+CAM+PHC
[b] Uses CAM only *or* uses CAM + PHC
[c] Uses PHC only (Female Sample=flu shot and/or mammogram and/or PAP test)
[d] Uses CHC + PHC only

Table 15. Final multinomial logit model of medical pluralism (deductive patterns) on hypothesized predictor variables, male subsample, Canadians aged 50+, 2003/2005

	Multinomial Logit Regression Model (Vs.) Tri-Use[a]									
	Non- use		CHC only use		CAM single or dual use[b]		PHC[c] only use		Non-CAM dual use[d]	
Independent Variables	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*
Spatial Assets										
Urban/rural										
Urban	-0.38	**0.68	-0.05	0.95	-0.35	*0.70	-0.31	**0.73	-0.11	0.90
Rural (ref)	---	---	---	---	---	---	---	---	---	---
Province										
Maritime/Territory/ Yukon	0.79	***2.21	0.93	***2.53	-0.66	**0.52	0.57	***1.77	0.79	***2.21
Eastern	-0.03	0.97	-0.18	0.84	-0.47	***0.63	0.30	**1.35	0.12	1.12
Western (ref)	---	---	---	---	---	---	---	---	---	---
Collectivities										
Marital Status										
Married/common-law	-1.15	***0.32	-0.86	***0.42	-0.38	0.68	-0.57	*0.57	-0.07	0.94
Widow/divorced	-0.53	*0.59	-0.58	**0.56	-0.49	0.61	-0.32	0.73	-0.34	0.71
Single (ref)										
Household										
# Persons in house	0.04	1.04	0.13	**1.14	-0.03	0.97	-0.02	0.98	-0.04	0.96
Social Location										
Age	-0.04	***0.96	-0.04	***0.96	-0.04	***0.96	0.00	1.00	0.04	***1.04
Income adequacy										
Low	1.90	***6.65	1.49	***4.44	1.07	***2.92	1.97	***7.20	0.79	***2.20
Lower middle	0.75	***2.12	0.58	***1.78	0.25	1.28	0.89	***2.44	0.19	1.21
Upper middle	0.48	***1.62	0.35	***1.42	0.15	1.16	0.60	***1.83	0.20	**1.22
High (ref)	---	---	---	---	---	---	---	---	---	---
Education										
Less than grade 12	0.94	***2.57	0.70	***2.01	0.27	1.30	0.38	**1.47	0.37	***1.45
Completed grade 12	0.46	**1.59	0.40	***1.49	0.30	1.35	0.02	1.02	0.16	1.17
Some/completed post-secondary	---	---	---	---	---	---	---	---	---	---

Multinomial Logit Regression Model (Vs.) Tri-Use[a]										
	Non- use		CHC only use		CAM single or dual use[b]		PHC[c] only use		Non-CAM dual use[d]	
Independent Variables	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*
(Ref)										
Race										
White	0.00	1.00	-0.37	*0.69	-0.56	*0.57	-0.18	0.84	-0.28	*0.76
Non-White (ref)										
Immigration Status										
Not an immigrant	-0.25	0.78	-0.32	**0.72	0.42	*1.52	-0.12	0.89	-0.06	0.94
Recent (<20 yrs)	-0.25	0.75	0.42	1.53	0.12	1.12	-0.41	0.67	0.12	1.13
Long (>=20 yrs) (ref)	---	---	---	---	---	---	---	---	---	---
Health Needs										
Chronic Conditions										
# chronic conditions	-1.06	***0.35	-0.40	***0.67	-0.21	***0.81	-0.66	***0.52	-0.21	***0.90
Functional ability										
Never restricted	0.25	1.28	0.39	**1.47	0.49	**1.64	0.59	***1.81	0.27	**1.31
Sometimes restricted	-0.18	0.83	0.33	*1.39	0.27	131	0.54	**1.72	0.09	1.09
Often restricted (ref)	---	---	---	---	---	---	---	---	---	---
Perceived Physical Health										
Fair/poor	-0.15	0.86	0.80	***2.23	-0.40	0.67	-0.25	0.78	0.52	***1.68
Good	-0.01	0.99	0.54	***1.71	0.18	1.20	-0.16	0.85	0.35	***1.42
Very good	-0.17	0.84	0.24	1.28	0.14	1.15	0.03	1.03	0.12	1.13
Excellent (ref)	---	---	---	---	---	---	---	---	---	---
Perceived Mental Health										
Fair/poor	0.62	1.86	0.28	1.33	0.01	1.01	0.10	1.10	0.38	*1.46
Good	0.48	**1.61	0.20	1.23	0.50	**1.64	0.22	1.25	0.25	**1.29
Very good	0.21	1.23	0.01	1.01	0.08	1.08	-0.10	0.91	0.10	1.10
Excellent (ref)	---	---	---	---	---	---	---	---	---	---

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files. *p<.05 **p<.01 ***p<.001 *Note:* CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care. The reference category is tri-use. Models control for the effects of spatial assets (urban/rural; province of residence) and collectivities (marital status and household size). The age squared variable is not statistically significant so the models were re-run without it. Unstandardized (Beta) and standardized coefficients (Exp(B)) are presented.[a] Uses CHC+CAM+PHC;[b] Uses CAM only *or* uses CAM + PHC; [c] Uses PHC only (Male Sample=flu shot and/or PSA test)[d] Uses CHC + PHC only

Table 16. Final multinomial logit model of medical pluralism (inductive patterns) on hypothesized predictor variables, full sample, Canadians aged 50+, 2003/2005

	Multinomial Logit Model (Vs. Class 4= High CHC/PHC/CAM)							
	Class 1=High CHC/PHC and avg.-low CAM		Class 2=Avg. CHC/PHC and avg.-low CAM		Class 3=Low CHC/PHC/CAM		Class 5=High CAM and low CHC/PHC	
Independent Variables	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*
Spatial Assets								
Urban/rural								
Urban	0.10	***1.11	-0.12	***0.89	-0.19	***0.83	-0.23	***0.80
Rural (ref)	---	---	---	---	---	---	---	---
Province								
Maritime/Territory/ Yukon	0.85	***2.33	0.96	***2.61	0.91	***2.48	0.09	1.09
Ontario	0.22	***1.24	0.37	***1.45	0.89	***2.43	0.57	***1.77
Quebec	0.47	***1.61	0.17	***1.18	0.35	***1.42	-0.25	***0.78
Prairies	-0.03	0.97	0.20	***1.22	0.40	***1.49	0.11	1.12
Alberta	-0.13	**0.88	0.08	1.09	0.12	1.13	-0.18	*0.84
British Columbia(ref)	---	---	---	---	---	---	---	---
Collectivities								
Marital Status								
Married/common-law	0.00	1.00	-0.20	***0.82	-0.59	***0.55	-0.28	**0.75
Widow/divorced	-0.06	0.94	-0.09	0.92	-0.27	***0.77	-0.25	**0.78
Single (ref)								
Household								
# Persons in house	0.06	***1.07	0.07	***1.07	0.10	***1.10	0.00	1.00
Social Location								
Age	0.05	***1.05	0.01	***1.01	-0.01	***0.99	-0.04	***0.96
Gender								
Male	0.78	***2.17	0.81	***2.25	1.16	***3.20	0.27	***1.31
Female (ref)	---	---	---	---	---	---	---	---

Multinomial Logit Model (Vs. Class 4= High CHC/PHC/CAM)								
	Class 1=High CHC/PHC and avg.-low CAM		Class 2=Avg. CHC/PHC and avg.-low CAM		Class 3=Low CHC/PHC/CAM		Class 5=High CAM and low CHC/PHC	
Independent Variables	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*
Income adequacy								
Low	0.69	***1.99	1.07	***2.91	1.45	***4.27	0.67	***1.96
Lower middle	0.42	***1.52	0.58	***1.78	0.90	***2.45	0.32	***1.37
Upper middle	0.15	***1.16	0.22	***1.25	0.37	***1.45	0.19	***1.21
High (ref)	---	---	---	---	---	---	---	---
Education								
Less than grade 12	0.59	***1.80	0.93	***2.52	1.09	***2.98	0.30	***1.36
Completed grade 12	0.45	***1.57	0.64	***1.89	0.69	***2.00	0.34	***1.41
Some/completed post-secondary (Ref)	---	---	---	---	---	---	---	---
Race								
White	0.24	***1.27	0.20	***1.22	0.34	***1.41	-0.07	0.93
Non-White (ref)								
Immigration Status								
Not an immigrant	0.05	1.05	-0.02	0.98	-0.01	0.99	0.13	1.14
Recent (<20 yrs)	0.10	1.11	0.14	1.15	-0.05	0.96	0.14	1.15
Long (>=20 yrs) (ref)	---	---	---	---	---	---	---	---
Health Needs								
Chronic Conditions								
# chronic conditions	-0.11	***0.90	-0.36	***0.70	-0.65	***0.52	-0.26	***0.77

Multinomial Logit Model
(Vs. Class 4= High CHC/PHC/CAM)

	Class 1=High CHC/PHC and avg.-low CAM		Class 2=Avg. CHC/PHC and avg.-low CAM		Class 3=Low CHC/PHC/CAM		Class 5=High CAM and low CHC/PHC	
Independent Variables	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*
Functional ability								
Never restricted	0.41	***1.50	0.77	***2.15	0.75	***2.11	0.45	***4.56
Sometimes restricted	0.11	***1.12	0.29	***1.34	0.20	***1.23	0.34	***1.40
Often restricted (ref)	---	---	---	---	---	---	---	---
Perceived Physical Health								
Fair/poor	0.45	***1.57	-0.02	0.98	-0.24	***0.72	-0.59	***0.56
Good	0.29	***1.34	-0.03	0.97	-0.29	***0.75	-0.37	***0.69
Very good	0.15	***1.16	-0.03	0.97	-0.18	***0.84	-0.31	***0.74
Excellent (ref)	---	---	---	---	---	---	---	---
Perceived Mental Health								
Fair/poor	-0.15	**0.86	-0.08	0.92	0.09	1.10	0.00	1.00
Good	-0.10	**0.91	0.00	1.00	0.04	1.04	0.18	**1.19
Very good	-0.11	***0.90	-0.09	**0.91	-0.15	***0.86	-0.03	0.97
Excellent (ref)	---	---	---	---	---	---	---	---

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files
*p<.05 **p<.01 ***p<.001
Note: CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care. The reference category is high/tri-use. Models control for the effects of spatial assets (urban/rural; province of residence) and collectivities (marital status and household size). The age-squared variable and the age*gender interaction term were not statistically significant so models were re-analyzed with those variables excluded. Unstandardized (Beta) and standardized coefficients (Exp(B)) are presented.

Table 17. Final multinomial logit model of medical pluralism (inductive patterns) on hypothesized predictor variables, female subsample, Canadians aged 50+, 2003/2005

	Multinomial Logit Analysis (Vs. Class 3: High CHC/PHC/CAM)									
	Class 1=High CHC/PHC and avg. CAM		Class 2=Low CHC, avg. PHC and low to avg. CAM		Class 4=Low to avg. CHC/PHC and high CAM		Class 5=Avg. CHC,low to high PHC, and low CAM		Class 6=Low CHC/PHC/ CAM	
Independent Variables	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*
Spatial Assets										
Urban (rural)	0.03	1.04	-0.09	0.91	-0.24	0.79	-0.13	0.88	-0.21	0.81
Province										
Maritime/Terr/Yukon	0.51	***1.67	0.76	***2.14	-0.36	**0.70	0.87	***2.38	0.84	***2.31
Quebec	-0.09	0.92	0.31	***1.36	0.04	1.05	0.06	1.07	0.20	1.22
Ontario	0.23	***1.25	0.04	1.04	-0.43	***0.65	-0.10	0.90	-0.11	0.90
Prairie	-0.24	**0.79	0.02	1.02	-0.10	0.90	-0.39	*0.68	-0.08	0.92
Alberta	-0.25	***0.78	-0.10	0.91	-0.14	0.87	-0.60	***0.55	-0.26	0.77
British Columbia (ref)	---	---	---	---	---	---	---	---	---	---
Collectivities										
Marital Status										
Married/common-law	-0.01	0.99	-0.13	0.88	-0.25	*0.78	-1.20	***0.30	-1.13	***0.32
Widowed/divorced	-0.09	0.91	-0.10	0.91	-0.24	*0.79	-0.92	***0.40	-0.97	***0.38
Single (ref)	---	---	---	---	---	---	---	---	---	---
Household size										
No. people in household	0.06	*1.06	0.99	***1.10	0.03	***1.04	0.24	***1.27	0.21	***1.23
Social Location										
Age	0.09	***1.10	0.09	***1.09	0.08	***1.08	0.21	***1.23	0.19	***10.21
Age^2	-0.66	**0.52	-1.24	***0.29	-1.75	***0.17	-1.38	***0.25	-2.70	***0.07

Multinomial Logit Analysis (Vs. Class 3: High CHC/PHC/CAM)										
	Class 1=High CHC/PHC and avg. CAM		Class 2=Low CHC, avg. PHC and low to avg. CAM		Class 4=Low to avg. CHC/PHC and high CAM		Class 5=Avg. CHC,low to high PHC, and low CAM		Class 6=Low CHC/PHC/ CAM	
Independent Variables	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*
Low	1.01	***2.74	1.46	***4.30	0.97	***2.63	1.37	***3.92	2.35	***10.46
Lower middle	0.59	***1.80	0.82	***2.28	0.57	***1.77	0.95	***2.58	1.67	***5.32
Upper middle	0.21	***1.23	0.34	***1.40	0.25	***1.28	0.33	*1.40	0.92	***2.51
High (ref)	---	---	---	---	---	---	---	---	---	---
Education										
Less than grade 12	0.79	***2.21	1.21	***3.36	0.40	***1.50	1.52	***4.59	1.52	***4.55
Completed grade 12	0.51	***1.66	0.78	***2.19	0.47	***1.59	0.68	***1.96	0.92	***2.51
Some/completed college/university (Ref)	---	---	---	---	---	---	---	---	---	---
Race										
White	-0.03	0.97	-0.05	0.95	-0.11	0.90	-1.26	***0.28	-0.34	**0.71
Non-White (ref)	---	---	---	---	---	---	---	---	---	---
Immigrant Status										
Not immigrant	0.06	1.06	-0.02	0.99	-0.01	0.99	-0.28	**0.76	-0.05	0.95
Recent immigrant	0.04	1.04	0.17	1.19	0.09	1.09	0.46	***1.59	0.65	***1.92
Long-term immigrant (ref)	---	---	---	---	---	---	---	---	---	---
Health Needs										
Chronic conditions	-0.13	***1.06	-0.40	***0.67	-0.21	***0.81	-0.27	***0.76	-0.76	***0.47
Functional Status										

Multinomial Logit Analysis (Vs. Class 3: High CHC/PHC/CAM)										
	Class 1=High CHC/PHC and avg. CAM		Class 2=Low CHC, avg. PHC and low to avg. CAM		Class 4=Low to avg. CHC/PHC and high CAM		Class 5=Avg. CHC,low to high PHC, and low CAM		Class 6=Low CHC/PHC/ CAM	
Independent Variables	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*
Never restricted in	0.53	***1.70	0.94	***2.57	0.51	***1.67	0.42	***1.52	0.72	***2.05
Sometimes restricted	0.11	1.12	0.30	***1.34	0.34	***1.41	0.07	1.08	0.03	1.03
Often restricted (ref)	---	---	---	---	---	---	---	---	---	---
Perceived physical										
Fair/poor	0.06	1.06	-0.25	**0.78	-0.72	***0.49	-0.03	0.97	-0.34	**0.71
Good	0.03	1.04	-0.26	***0.77	-0.50	***0.61	-0.04	0.96	-0.44	***0.65
Very good	-0.05	0.95	-0.18	**0.83	-0.44	***0.65	-0.30	0.75	-0.40	***0.67
Excellent (ref)	---	---	---	---	---	---	---	---	---	---
Perceived mental health										
Fair/poor	0.09	1.09	0.06	1.06	0.48	***1.62	0.36	1.43	0.49	**1.63
Good	-0.06	0.94	-0.02	0.98	0.07	1.07	0.14	1.15	0.07	1.07
Very good	0.01	1.01	-0.01	0.99	0.02	1.02	0.79	1.02	0.13	1.14
Excellent (ref)	---	---	---	---	---	---	---	---	---	---

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files. *p<.05 **p<.01 ***p<.001
Note: The reference category is high/tri-use. Models control for the effects of spatial assets (urban/rural, province of residence) and collectivities (marital status and household size). The age*gender interaction term was not statistically significant so the model was re-analyzed with that variable excluded. Unstandardized (Beta) and standardized coefficients (Exp(B)) are presented.

Table 18. Final multinomial logit model of medical pluralism (inductive patterns) on hypothesized predictor variables, male subsample, Canadians aged 50+, 2003/2005

	Multinomial Logit analyses (Vs. Class 3=High CHC/PHC/CAM)			
	Class 1=High CHC/PHC and low CAM		Class 2=Low CHC/PHC/CAM	
Independent Variables	*Beta*	*Exp(Beta)*	*Beta*	*Exp(Beta)*
Spatial Assets				
Urban (rural)	-0.16	0.85	-0.37	***0.69
Province				
Maritime/Territory	0.84	***2.32	0.68	***1.97
Eastern Canada	-0.10	0.91	-0.21	*0.81
Western Canada (ref)	---	---	---	---
Collectivities				
Marital Status				
Married/common-law	0.03	1.03	-0.75	***0.47
Widowed/divorced	-0.34	0.71	-0.54	*0.58
Single (ref)	---	---	---	---
Household size				
No. of people in household	-0.10	*0.90	-0.02	0.98
Social Location				
Age	0.07	**1.08	0.08	**1.09
Age^2	-0.77	0.46	-2.01	***0.14
Income Adequacy				
Low	0.71	**2.04	1.69	***5.40
Lower middle	0.07	1.07	0.60	***1.83
Upper middle	0.01	1.01	0.27	**1.30
High (ref)	---	---	---	---
Education				
Less than high school	0.28	**1.33	0.59	***1.81
Completed high school	-0.08	0.92	0.09	1.09
Some/all postsecondary (ref)	---	---	---	---
Race				
White	-0.53	**0.92	-0.53	**0.92
Non-White (ref)	---	---	---	---
Immigration Status				
Not immigrant	-0.28	**0.76	-0.34	**0.71

	Multinomial Logit analyses (Vs. Class 3=High CHC/PHC/CAM)			
	Class 1=High CHC/PHC and low CAM		Class 2=Low CHC/PHC/CAM	
Independent Variables	*Beta*	*Exp(Beta)*	*Beta*	*Exp(Beta)*
Recent immigrant	0.78	**2.17	0.66	*1.93
Long-term immigrant (ref)	---	---	---	---
Health Needs				
Chronic conditions	-0.17	***0.84	-0.56	***0.57
Functional Restriction				
Never	0.13	1.14	0.39	**1.48
Sometimes	0.03	0.97	0.18	1.20
Often (ref)	---	---	---	---
Perceived Physical Health				
Fair/poor	0.41	**1.51	0.00	1.00
Good	0.08	1.08	0.24	0.85
Very good	-0.15	0.86	0.16	0.84
Excellent (ref)	---	---	---	---
Perceived Mental Health				
Fair/poor	0.20	1.23	0.18	1.19
Good	0.38	***1.46	0.42	***1.52
Very good	0.17	*1.18	0.07	1.07
Excellent	---	---	---	---

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files.
*p<.05 **p<.01 ***p<.001
Note: The reference category is high/tri-use. Models control for the effects of spatial assets (urban/rural; province of residence) and collectivities (marital status and household size). The age*gender interaction term were not statistically significant so the model was re-analyzed with that variable excluded. Unstandardized (Beta) and standardized coefficients (Exp(B)) are presented.

5.2.3.1: Social Location Variables

5.2.3.1.1: Age

Both linear and quadratic functions for age were examined in the equations. Turning first to deductive analyses of age on health service use in the equation for the full sample (Table 12), results demonstrated one significant negative association between age^2 and the non-use (vs. tri-use) category, which was slightly stronger in block three than it was in block two. In other words, all else being equal, as age increased, the likelihood of non-use relative to tri-use decreased up until a certain point. Of note, a negative association between age^2 and CHC-only (vs. tri-use) found in block two was no longer significant in the final block, once health-related needs were controlled for. No other relationships between age^2 and health service use were evident in the final block, which suggests that increasing age is more indicative of whether or not service use services occurs, rather than what types of service combinations are being used.

With regard to the linear effect of age on health service use, however, in the full sample (deductive, Table 12), there were a number of significant relationships observed. Age had a negative relationship with CHC-only use and CAM single or dual use compared to tri-use; and a positive relationship with PHC-only use and non-CAM dual use relative to tri-use. The direction and strength of these relationships was relatively consistent from block two to three when health needs were entered. These results suggest that older people are less likely to be CHC only users and CAM single or dual users compared to tri-users. In addition, older people are more likely to be PHC only users or non-CAM dual users rather than tri-users.

In the deductive female (Table 14) and male (Table 15) subsamples, only age was examined, as age^2 was not significantly related to health service use. Results demonstrated that for both subsamples, examined separately, the relationship between age and use of health services differs. For women, a significant positive linear relationship between age and health service use was evident in all but one category. A significant negative relationship between age and CAM single or dual use was noted in block two, but the relationship disappeared (block three) once health needs were entered. Yet, for men, significant and negative relationships between age and most health service categories was found with the exception of the non-CAM dual use category where a significant positive relationship with age was observed. In both the female and male subsamples (deductive), PHC use had no significant association with age. Taken together, these results suggest differences between women and men with regard to utilization but not for PHC use. Among women, older age appears to decrease the likelihood of tri-use relative to most other types of service use. Conversely, among men, older age seems to increase the likelihood of tri-use compared to most other types of use and also, non-CAM dual use (CHC, PHC) compared to tri-use.

As there was no significant relationship observed between the age^2 variable and medical pluralism defined inductively for the full sample (Table 16), only the linear effect of age is presented here. Results obtained for the full sample indicate a significant and positive association with membership in Classes 1 (i.e., High CHC/PHC and avg.-low CAM) and 2 (Avg. CHC/PHC and avg.-low CAM) relative to the reference category Class 4 (High CHC/PHC/CAM). Conversely, age was negatively associated with the likelihood of being in Classes 3 (Low CHC/PHC/CAM) and 5 (high CAM and low CHC/PHC) than in Class 4. Overall, therefore, older age is associated with use of more types of services but particularly those that encompass CHC and PHC, with lesser use of CAM-related services specifically.

When medical pluralism, defined inductively, was regressed on age^2, the results differ somewhat when female and male subsamples were examined separately, with a curvilinear age effect evident in both subsamples (see Tables 17 and 18). In the female subsample, there was a significant negative association between age^2 and membership in all Classes rather than Class 3 (High CHC/PHC/CAM). Of note, there was a significant linear positive association between age and being in Class 1 (HIGH CHC/PHC and AVG. CAM) rather than Class 3, as age^2 was not statistically significant. In the male subsample, a negative association was also evident between age^2 and the likelihood of being in Class 2 (Low CHC/PHC/CAM) compared to Class 3 (High CHC/PHC/CAM). These results suggest that, among women and men, advancing age is associated with an increased probability of using services associated with all three health care systems up to a certain point before the likelihood of tri-use decreases.

In addition to the main effect of age and of a quadratic transformation of the age variable on medical pluralism, defined deductively and inductively, an age*gender interaction term was also analyzed. Turning first to the analyses for medical pluralism defined deductively, across all samples, the interaction between age and gender on health service use was only significant in the full sample (see Table 13). Positive and significant associations between the age*gender term and health service use were evident in the non-use, CHC only use and PHC only use categories. What this indicates is that as age increases the tendency for males rather than females to be non-users or CAM single or dual users or PHC only users relative to tri-users increases. No statistically significant relationships were observed between the age*gender interaction and health service patterns when medical pluralism was defined inductively.

5.2.3.1.2: Gender

The relationship between health service use and gender was examined in the full sample only. In the deductive pattern analysis (Table 12), the results indicated that there was a positive association between male gender and each of the health service categories relative to tri-use. Males were more likely than females to be non-users, CHC-only users, CAM single or dual users, PHC only users and non-CAM dual users relative to tri-users. These relationships held their statistical significance, strength, and direction between block two and three. This suggests that males are much less likely to be tri-users than are females even after controlling for sex differences in health-related needs.

When medical pluralism is defined inductively, gender also had a statistically significant relationship with health service use (see Table 16). However, the results were similar to those evident above (see Table 12). Specifically, compared to females, males were more likely to be in Classes 1 (High CHC/PHC and low-avg CAM), 2 (Avg. CHC/PHC and low-avg CAM), 3 (Low CHC/PHC/CAM) and 5 (High CAM and low CHC/PHC) than they are to be in Class 4 (High CHC/PHC/CAM). Thus, males were less likely to belong to the class with the highest probability of tri-use compared to females.

5.2.3.1.3: Socioeconomic status

When medical pluralism, defined deductively, was regressed on household income adequacy and respondent education, results obtained for the full sample (Table 12, also Appendix J) and female (Table 14, also Appendix M) and male (Table 15, also Appendix O) subsamples, separately, indicated a significant association between income and education and combinations of health service use.

Those in low income groups were more likely than those in high income groups to be non-users, CHC-only users, CAM single- and dual –users, PHC-only users and non-CAM dual users relative to tri-users. While the association between low income and non-, monistic or dual service use (compared to tri-use) was apparent across all samples, in the full sample and male subsamples, only a relationship between low (vs. high) income adequacy and membership in the CAM single or dual use category (vs. tri-use), and, in the male subsample, only a relationship between low (vs. high) income adequacy and membership in the non-CAM dual use category (vs. high) was found. In other words, greater differences in the likelihood of service use were seen when comparing lowest with highest levels of income rather than across the income gradient as a whole.

It is important to note that the impact of income on health service patterns for the full sample changed in two important ways from block two (Appendix J) to block three when health needs were entered. First, all observed associations between income adequacy and health service patterns were stronger in block three than in block two, suggesting that the relationship between income and health service use is independent of (and suppressed by) differences in health need. Second, also with the deductive approach, in the full sample and female and male subsamples, it is only after health needs were entered into the equation that a significant association between income adequacy and CAM single or dual use relative to tri-use was observed. The same observations were apparent in the inductive approach, for the full sample and female subsamples; as health needs were entered (in block three), the relationship between income adequacy and membership in any Class with 'High CAM' became statistically significant. This means that use of CAM services is once again, being suppressed by health needs and is, in fact, dependent on income. In the male subsample (inductive), after adding health needs to the model, a significant association between lower middle income and membership in Class 2 (low CHC/PHC/CAM) emerged.

The relationship between respondent education and medical pluralism was also significant for the full sample. This relationship did not change once health needs were entered. Therefore, lower levels of education increased the likelihood of being in any category except for tri-use, regardless of health status. In the female subsample, being less educated was associated with non-use, CHC-only use, CAM single or dual use, PHC-only use and non-CAM dual use, relative to tri-use. Furthermore, the association between education and health service use was stronger when comparing low to high compared to medium to high levels of education. These associations held when health needs were entered, with the relationship between low education (less than grade 12) and membership in all Classes except for tri-use becoming slightly stronger and the relationship between middle education (completed grade 12) and membership in all Classes except for tri-use becoming slightly weaker. This suggests that for these women not only does lower education decrease the likelihood of service use across the three health care systems but also, that education has a differential effect on health service use that disadvantages women in the lowest education category particularly once health needs are controlled for. Among males, the significant effect of education on health service use was evident in the CHC-only category, for all three levels of education (less than high school; graduated high school; some or completed post-secondary), and in the non-use and non-CAM dual use categories, the education effect was only significant for low versus high but not middle levels of education. These results suggest that for men being more educated increases the likelihood of tri-use but only relative to exclusive use of CHC, dual use of CHC and PHC (i.e., non CAM dual use) and no service use at all. In the male subsamples, the association between education and health service patterns became slightly stronger, once health needs were entered. In addition, as shown in Appendix O, the two significant associations (at the p<05 level) observed in block two (i.e., males who completed grade 12 vs. some/completed post-secondary) were more likely to be in the CAM single or dual use and non-CAM dual use categories compared to the tri-use category) were no longer significant in block three. This suggests that these differences in service use reflect differences in health status associated with education.

When inductive patterns of medical pluralism were regressed on income and education, the results obtained for the full sample (Table 16, also Appendix Q) and female subsample (Table 17, also Appendix S) indicated a significant and positive association with membership in all Classes relative to Class 4 (High CHC/PHC/CAM)—in the full sample—and Class 3 (High CHC/PHC/CAM)—in the female subsample. The exception is that in the female subsample the significant relationship between education and membership in Class 5 (Avg. CHC, low to high PHC, and low CAM) relative to Class 3 was only discernable when comparing low and lower middle levels of income with high income. Overall, higher levels of income adequacy and education were associated with a higher probability of using medical doctors, specialists, chiropractors, CAM providers and getting flu shots. On the other hand, results obtained for the male subsample (Table 18, see Appendix U) suggest that when inductive patterns of medical pluralism were regressed on income and education, a significant association was only evident for membership in Class 2 (Low CHC/PHC/CAM) relative to Class 3 (High CHC/PHC/CAM) and only for certain levels of income and education. Specifically, the effects of income and education on being in Class 2 was only apparent when comparing low with high levels of both variables and not for middle versus high level comparisons.

5.2.3.1.4: Race and immigration status

When medical pluralism was defined using the deductive approach, results obtained for all three samples indicate there are few statistically significant associations evident with race. Of note, in block two of the female subsample, there was one statistically significant relationship evident for the CHC-only category, with White females relative to non-White females about fifty percent less likely to be CHC-only users compared to tri- users; however, this relationship disappeared once health needs were considered. This suggests that among females, racial differences in these health service patterns reflect differences in health status.

With the inductive approach, the results revealed a statistically significant between race and medical pluralism, but not in the hypothesized direction. In the full sample (Table 16, Appendix Q), three statistically significant contrasts were found. Whites were more likely than non-Whites to be in Classes 1 (High CHC/PHC and avg.-low CAM), 2 (Avg. CHC/PHC and avg.-low CAM) and 3 (Low CHC/PHC/CAM) versus Class 4 (high CHC/ PHC/CAM). Moreover, this was largely unchanged by the inclusion of health status variables in the regression equation. This suggests that for Whites, health service use is less extensive than it is for non-Whites. Conversely, in the female subsample (Table 17, Appendix S) only one significant and negative association was found for membership in Class 5 (Avg. CHC, low to high PHC, and low CAM) relative to Class 3 (High CHC/ PHC/CAM). Whites were less likely to be in Class 5 than in Class 3. White females were also more likely to be in Class 6 (Low CHC/PHC/CAM) than in Class 3, however, that association was not significant at the $p<.001$ level, once health needs were controlled for. In the male subsample, there were no statistically significant relationships found between medical pluralism and race.

Significant associations between medical pluralism (deductive) and immigration status were apparent in the full sample (Table 12, Appendix J) and female subsample (Table 14, Appendix M). Results obtained for the full sample indicate a significant and negative association between being in the CHC-only and non-CAM dual use categories relative to the tri-use category, when comparing Native-born Canadians with long-term immigrants. Conversely, a significant and positive association was evident with regard to being in the CHC-only use category (vs. tri use) when comparing recent with long-term immigrants. There were no significant associations found in the male subsample. Overall, therefore, Native-born Canadians are more likely to be tri-users than long-term immigrants, with the latter group more likely to be exclusive users of CHC or non-CAM dual users. Yet, for recent immigrants the likelihood of exclusive use of CHC is greater than it is for long-term immigrants for whom tri use is more likely.

When medical pluralism was regressed on immigration status in the female subsample, only four significant associations were found. Recent female immigrants compared to long-term female immigrants were more likely to be in the non-use and in the CAM single or dual use categories than in the tri-use category. Conversely, they were also less likely than long-term female immigrants to be PHC-only users or non-CAM dual users compared to tri-users. This latter finding is opposite to what was expected in this study. Overall, with the exception of PHC-only and non-CAM dual use, for female immigrants, the longer the duration of time since immigrating to Canada, the more likely it is that their health service patterns mirror those of Native-born Canadians[18], with use of more combinations of health services across all three health care systems.

---

[18] Further evidence for the immigration effect was found when examining the health service use patterns (defined deductively) of immigrants only using the full sample data (see Appendix W). For regression analyses only, a subsample of immigrants (unweighted sample size of 28,457 male and female immigrants) from the full sample was created by filtering out respondents who were Native- born Canadians. When a continuous variable representing length of time since immigration was entered in block two, in place of the categorical immigration variable (i.e., non-immigrants are removed from the subsample), results obtained indicate that there is a significant (albeit weak) and negative association found for membership in the CHC only and the non-CAM dual use categories compared to the tri-use category. This suggests that among Canadian immigrants with each additional year in Canada, the likelihood of more extensive service use increases.

In the inductive approach, only two significant and positive associations were found when medical pluralism was regressed on immigration status and they were in the female subsample (see Table 17). Among female recent immigrants compared to female long-term immigrants, there was a greater likelihood of membership in Class 5 (Avg CHC, low to high PHC, and low CAM) relative to Class 3 (High CHC/PHC/CAM), and in Class 6 (Low CHC/PHC/CAM) relative to Class 3. This suggests that for women, as time since immigration increases, so too does the likelihood of using different types of health services. Note, that a similar pattern was seen in block two of the male subsample (Appendix U).

5.2.3.2: Health-needs

Four variables were used to represent health needs: chronic conditions, functional ability, perceived physical health and perceived mental health. When medical pluralism, defined deductively and inductively was regressed on chronic conditions, the results obtained for all three samples revealed a significant and negative association between chronic condition and membership in all categories of medical pluralism (see Tables 12 thru 18). That is, with each additional chronic condition, there was a greater likelihood of tri-use or high CHC/PHC/CAM use relative to all other combinations of health services[19].

---

[19] Examination of the type of chronic condition rather than the number of conditions revealed a similar trend for the full sample, deductive approach (see Appendix V). A significant and negative association was apparent in each of the three most frequently reported groups of chronic conditions (i.e., musculoskeletal,

Thus, results obtained in the deductive and inductive analyses, indicate that comorbidity is associated with a greater likelihood of tri-use, for all samples.

When medical pluralism was defined deductively and regressed on functional ability, in the full sample, the results indicated that better functional ability (i.e., never restricted) increased the likelihood of association with the non-use, CHC-only, PHC-only, and non-CAM dual use categories relative to tri-use. Similarly, reporting some restrictions was positively associated with PHC-only use. Comparatively, in the female subsample, significant associations were found in all of the same categories except for the non-use category. In the male subsample, however, a significant and positive association was only found for the PHC-only category (vs. tri-use). Overall, for all samples, better functional ability was associated with less extensive service use across the three health care systems. That is, individuals who report no or few restrictions on function were more likely to use services within one (e.g., PHC-only or CHC-only) or two health care

---

endocrine/metabolic, and cardiovascular disorders) compared to not having the condition (reference category). Conversely, a significant and positive association was found with membership in the non-CAM dual use category relative to tri-use. Overall, therefore, the propensity for service use across all three health care systems was greater among individuals with musculoskeletal, endocrine/metabolic, or cardiovascular disorders; however, for individuals with cardiovascular conditions, dual service combinations that do not include CAM services were more probable. What this means is that people with cardiovascular disease are more likely to use biomedical health paradigms for treatment (i.e., acute care) and less likely to use the holistic health paradigm inherent in CAM.

systems (e.g., CHC and PHC), or, in the case of the full sample, to not use any services at all than they are to be tri-users.

When medical pluralism was defined inductively, positive and significant associations were found in the full sample between functional health and membership in all Classes of medical pluralism relative to Class 4 (high CHC/PHC/CAM). Similar significant and positive associations for function and medical pluralism were found in the female subsample but the associations were fewer in number than those observed in the full sample. In the male subsample, there were no significant associations observed for functional health. On the whole, therefore, in the full sample and female subsample, no or few restrictions on function were associated with a decreased likelihood of using diverse types of health services.

In the full sample, when medical pluralism (deductive) was regressed on perceived physical health, the results indicated significant and negative associations among those reporting fair/poor, or good, or very good health rather than excellent health for membership in the non-use, CAM single or dual use, and PHC-only use categories relative to tri-use. Similarly, a significant and negative association in the PHC-only use category was also observed among those reporting good or very good rather than excellent health in the female subsample. Thus, the likelihood of tri-use is greater among individuals who report poor/fair physical or good or very good rather than excellent health. Consequently, as perceptions of health improve from fair/poor to various degrees of positive (i.e., good or very good) relative to excellent health, the likelihood of tri-use decreases relative to other service use patterns. In the male subsample, there were no relationships observed between perceived physical health and membership in the non-use, CAM single or dual use or PHC-only use categories. However, significant and positive associations between poorer perceived physical health and membership in the CHC-only and non-CAM dual use categories compared to tri-use were noted in the full sample and female and female subsamples. This suggests that fair or poor perceptions of physical health are associated with a greater likelihood of exclusive use of CHC or CHC in conjunction with PHC services but not CAM.

When medical pluralism was defined inductively and regressed on perceived physical health, in the full sample, positive and significant associations were found for membership in Class 1 (High CHC/PHC and avg-low CAM) relative to Class 4 (high CHC/PHC/CAM) across all levels of perceived physical health. Among individuals who perceive their physical health as fair/poor or good or very good (versus excellent), there was a threefold increase in the likelihood of using a combination of services that encompass CHC and PHC but not CAM. Conversely, significant negative associations were observed in the full sample, specifically for Classes 3 (low CHC/PHC/CAM) and 5 (high CAM and low CHC/PHC) compared to Class 4 (high CHC/PHC/CAM). No relationship was observed between all levels of perceived physical health and membership in Class 2 (avg CHC/PHC and avg-low CAM). In the female subsample, however, there was a decreased likelihood of being in Classes 2 (low CHC, avg. PHC and low to avg. CAM) or 4 (low to avg. CHC/PHC and high CAM) or 6 (low CHC/PHC/CAM) relative to Class 3 (high CHC/PHC/CAM) for individuals who perceive their physical health as fair/poor or good or very good (versus excellent). Thus, there is a decreased likelihood for females with lower levels of perceived health to have low or average probability of use of CHC, CAM and PHC services relative to high probability of use of services associated with all three health care systems. There were no observed relationships between perceived physical health and membership in Class 1 (High CHC/PHC and avg. CAM) or Class 5 (avg CHC, low to high PHC, and low CAM) for females. Nor, were there significant associations observed for perceived physical health and health service use in the male subsample across all Classes.

Turning to the relationship between medical pluralism (deductive) and mental health, in both the full sample and female subsample, fair/poor perceptions of mental health (vs. excellent) were associated with an increased likelihood of being in the non-use rather than tri-use category. A significant and positive association was also obtained in the full sample for membership in the CAM single or dual use category, among individuals with good vs. excellent health. A significant and negative relationship was found in the full sample between very good vs. excellent mental health and being in the CHC-only rather than tri-use category. No significant associations between medical pluralism and mental health were found in the male subsample. Thus, based on the limited number of significant associations evident in these analyses, it appears that mental health has little bearing on whether (or what type of) discretionary health services are used. It does appear, however, that in some cases, poor mental health is inversely associated with medical pluralism, given evidence of non-use among those individuals and females reporting fair/poor mental health and evidence of diverse service use among those reporting good or very good mental health.

Results obtained when medical pluralism (inductive) was regressed on mental health suggest that among individuals in the full sample who report very good (vs. excellent) mental health there was a decreased likelihood of being in Classes 1(High CHC/PHC and avg-low CAM) or 3 (low CHC/PHC/CAM) compared to Class 4 (high CHC/PHC/CAM). Therefore, perceptions of less than excellent (i.e., good and very good) mental health are associated with more diverse service use across the three health care systems. In the two subsamples, the opposite direction was noted. Specifically, among females, there was an increased likelihood that those reporting poorer (i.e., fair/poor) mental health (vs. excellent) would be in Class 4 (low to avg. CHC/PHC and high CAM) relative to Class 3 (high CHC/PHC/CAM). Among males with good vs. excellent mental health, there was an increased likelihood of being in Classes 1 (high CHC/PHC/ and low CAM) or 2 (low CHC/PHC/CAM) relative to Class 3 (high CHC/PHC/CAM). Overall, these results suggest that for females, fair/poor perceptions of mental health are linked to a low probability of using CHC and PHC services but a high probability of using CAM. Comparatively, for males, good rather than excellent perceptions of mental health decrease the likelihood of diverse service use, particularly those related to CAM.

5.2.3.3: Control Variables

5.2.3.3.1: Spatial Assets and Collectivities

The four independent variables representing measures of geographical location (spatial assets) and social networks (collectivities) were included as control variables in block one and retained for blocks two and three.

Turning first to the spatial assets, in the full sample, when medical pluralism (deductive) was regressed on urban/rural residence, significant negative associations were evident with the non-use category and the CAM single- or dual-use category relative to tri-use. This pattern was retained from the first through to the third block and suggests that urban residents are less likely to be non-users and to use CAM. However, a significant and positive association observed between urban living and CHC-only use in block one disappeared after social location variables were entered in block two. This suggests that non-use was more likely than tri-use among individuals living in an urban rather than a rural environment. However, findings also indicated that urban living was associated with a decreased likelihood of using only CAM or using CAM in conjunction with PHC or CHC services relative to tri-use, with no differences evident between urban and rural residence with regard to CHC or PHC monism and non-CAM dual use. In the female subsample, only one significant and positive association was observed; those living in an urban (vs. rural) environment report an increased likelihood of being a non-CAM dual user rather than a tri-user. Thus, for females, urban living is associated with more conventional service use. There were no significant associations between urban/rural residence and health service patterns found in the male subsample.

When medical pluralism was defined inductively and regressed on urban/rural environment, in the full sample, results indicated that urban residence was associated with a lower likelihood of membership in Classes 2 (CHC/PHC and avg. -low CAM), 3 (Low CHC/PHC/CAM) and 5 (High CAM and low CHC/PHC) relative to Class 4 (High CAM/PHC/CAM). Conversely, there was a positive and significant association between urban residence and membership in Class 1 (High CHC/PHC and avg.-low CAM) relative to Class 4 (High CAM/PHC/CAM). Thus, similar to the results observed in the full sample (deductive), urban residents appear to be more likely than rural residents to use CAM services, with the exception of urban residents for whom average to low CAM use (i.e., Class 1) was more likely than high CHC, PHC and CAM. The results differ, however, in that with the inductive approach, urban living had significantly more associations with health service use than was observed in the deductive approach. In the female subsample, there were no significant associations found between health service patterns and urban/rural environment, indicating that place of residence has no significant influence on women's health service utilization. However, in the male subsample, urban living was found to be significantly associated with a decreased likelihood of being in Class 2 (low CHC/PHC/CAM) relative to Class 3 (High CHC/PHC/CAM). This suggests that among males, urban living is also associated with more diverse health service use.

Provincial/territorial differences were also noted when using both pattern identification strategies. With regard to health service use (deductive patterns), across all three samples, results obtained in block one and carried through blocks two and three indicate significant and positive associations between province/territory and membership in most but not all health service categories other than tri-use. The provincial/territorial differences in health service patterns were greatest when comparing residents in the Maritime/ Yukon/Territory to their British Columbian (BC) counterparts. Conversely, a significant and negative association was observed for the CHC only category, in the full sample, for the CAM single or dual use category (full and male subsample), and for the non-CAM dual use (full and female subsample) category relative to tri-use. Of note, it was only in block three of the full sample that a statistically significant and negative effect was observed between residence in Alberta (vs. BC) and membership in the non-CAM dual use category (vs. tri use). In general, those living in provinces other than BC, Alberta, and Quebec were more likely to be non-users or CHC-only users while those living in Quebec were comparatively less likely to be CHC-only or CAM (single or dual) users than tri-users but more likely to rely on PHC-only or CHC and PHC services than all three.

When medical pluralism was defined inductively and regressed on province, the results indicated that in the full sample there were positive and significant association between living in most provinces/territories other than BC and membership in Classes 1 (High CHC/PHC and avg.-low CAM), 2 (CHC/PHC and avg. -low CAM), 3 (Low CHC/PHC/CAM) and 5 (High CAM and low CHC/PHC) relative to Class 4 (High CAM/PHC/CAM). However, a negative significant effect was found between being a Quebec resident (vs. BC) and membership in Class 5 relative to Class 4, indicating that for residents of Quebec (compared to BC) tri-use was more likely. Of note, there were no significant associations found between residence in Alberta (compared to living in BC) and health service use in the full sample. In the female subsample, similar patterns were reported. Thus, for the full sample and female subsample, there was a much higher probability of tri-use in BC relative to any other province or territory in Canada with the exception of Quebec (full sample) and Ontario and Alberta (female subsample). In the male subsample, province/territory was operationalized differently because Quebec and parts of Alberta did not take part in the PSA module of the CCHS. The results indicated a positive association between living in the Maritime/ Territories/Yukon compared to western Canada (BC and Alberta) and membership in both Classes 1 (High CHC/PHC and low CAM) and 2 (Low CHC/PHC/CAM) relative to Class 3 (High CHC/PHC/CAM). This suggests that use of health services is less diverse among males living in the Maritime/Territories/Yukon than in western Canada.

Turning to the collectivities variables (marital status and household size), the results from the full sample analyses indicated that among individuals that are currently married or have ever been married (vs. single) there was a greater likelihood of being in the non-use relative to the tri-use category when all other variables were included in the regression equation. However, the positive direction observed for the relationship between marital status and non-use was only apparent in block three. Prior to health needs being entered in the equation, the relationship between being married and non-use was negative. This implies that married or ever married people were less likely to be non-users independent of health need. Conversely, married versus single individuals are less likely to be in the PHC-only use category relative to tri-use and this association was consistent through blocks one to three. This suggests that married and ever married individuals are more likely than single individuals to be non-users than tri-users but also, are less likely to rely exclusively on PHC services (i.e., flu shot). There were no other significant relationships between marital status and health service use in the final block of the full sample. Yet, in block one, married/common-law or ever married individuals compared to single individuals were less likely to be CHC-only users and CAM single or dual users rather than tri-users. These relationships disappeared in block two when social location variables were entered. In the female and male subsamples (deductive), married/common-law individuals (and for females, including ever widowed or divorced individuals) appear less likely to be non-users and CHC-only users than tri-users when compared with single women or single men. There were no other significant relationships found between marital status and health service use in the male subsample, which could mean that marital status is not a significant predictor of other types of services outside of CHC. Further, in the female subsample, a significant negative association was evident between being married/common law (vs. single) and PHC-only use vs. tri-use. However, the significant associations observed in the final model of the female subsample were only apparent once social location variables were entered in block two (such that being widowed/divorced/separated was now statistically significant for CHC-only use) and with the addition of health needs variables in block three the relationship between marital status and PHC-only use became statistically significant for married/common-law females. Thus, these results suggest that for females and males, being married increases the likelihood of tri-use, particularly when compared with non-use of health services. Yet, for females, the relationship between marital status and health service use is only significant after controlling for social location and health variables.

When medical pluralism was defined inductively and regressed on marital status, the results observed in the full sample indicate that married/common-law individuals have a decreased likelihood of being in Classes 2 (Avg. CHC/PHC and avg. –low CAM) and 3

(Low CHC/PHC/CAM) relative to Class 4 (High CHC/PHC/CAM); however the relationship between marital status and membership in Class 2 only emerges in block three, after social location and health needs are entered. Widowed/divorced individuals (vs. single) were also less likely to be in Class 3 relative to Class 4, an association that was consistent from blocks one through three. Of note, in block one, a negative association between marital status (for both married/common law and ever married vs. single) and being in Class 5 disappeared once social location variables were entered, as does a positive relationship between being widowed/divorced vs. single and membership in Class 1 vs. 4. For females, the likelihood of being in Class 5 (Avg. CHC, low to high PHC, and low CAM) and Class 6 (Low CHC/PHC/CAM) compared to Class 3 (High CHC/PHC/CAM) was also lower among married/common-law individuals relative to single persons; however, the former association only emerged as statistically significant in block two, after social location variables were entered. In addition, a significant negative association between widowed/divorced (vs. single) women and membership in Class 1 (High CHC/PHC and avg. CAM) rather than Class 3 that was apparent in block one disappeared in block two. No other significant associations were found between marital status and other health service Classes in the female subsample.

Taken together, the results from the full sample and female subsample suggest that tri-use is more likely among married or ever married individuals and females compared to single individuals and females. Negative associations between marital status and medical pluralism were also apparent in the male subsample. In block one, widowed/divorced (vs. single) men had a decreased likelihood of being in Class 2 (vs.

Class 3) but this association disappeared in block two. However, there was a decreased likelihood of being in Class 2 (Low CHC/PHC/CAM) compared to Class 3 (High CHC/PHC/CAM) among married/common-law men versus single men that held from block one through three. This suggests that for men, being married increases the likelihood of using different types of health services and that among widowed/divorced men, this relationship is no longer significant once social location variables such as age, income and education are controlled for.

When medical pluralism was defined deductively and regressed on household size, only one significant and positive association was evident in the final block of the full sample. Specifically, each increase in number of persons living in the household was associated with an increase in the likelihood of non-use relative to tri-use. There were no other significant associations in the full sample between household size and health service patterns; however, significant positive associations between household size and CHC-only use (block 1, 2) and CAM single or dual use (block 1) disappeared in the final block. In the female subsample, significant and positive associations were found between household size and the non-use, CHC-only use and non-CAM dual use compared to tri-use categories. However, the negative association observed in the final model between household size and PHC-only use was not apparent in block one, as it emerged in block two when the social location variables were entered. There was no significant relationship between household size and membership in the CAM single or dual use category. This suggests that the larger the household the greater the likelihood of non-use, CHC only use and non-CAM dual use compared to tri-use and the lower the likelihood of exclusive use of PHC services occurring relative to tri-use. Household size had no significant relationship with health service use in the male subsample, suggesting that health service use is not influenced by the number of people living in the households of these males.

In the full sample and female subsample, when medical pluralism was defined inductively, the results indicated that with increasing numbers of persons in the household there was an increased likelihood of membership in most Classes other than the reference category (which in the full sample ws Class 4(High CHC/PHC and CAM) and in the female subsample it was Class 3 (High CHC/PHC and CAM)). With the addition of social location and health variables to the model, the effect of household size on medical pluralism was slightly stronger. Thus, larger households are less likely to use extensive health services relative to smaller households. In the male subsample, household size had no statistically significant association with health service patterns.

5.3: Results Summary

The first objective of this study was to identify patterns of health service use among adults aged 50 and older. The two methods used for identifying medical pluralism patterns produced different results with regard to both the number and form of patterns. In the deductive or variable oriented method, six distinct patterns were used to represent medical pluralism. These six categories were pre-defined by the researcher along theoretically meaningful lines. Yet, when an inductive or person-centred strategy was applied to the data, only five distinct patterns or classes emerged. There were no differences in the number of classes evident in the female subsample. However, for the male subsample, the inductive method produced three classes compared to the six pre-defined categories drawn from the deductive method. Overall, women were found to have more diverse health care patterns involving services across health care systems than males.

The most frequent form of health service use found in this study was dual use of CHC (medical and/or specialists) and PHC services (flu shots). Exclusive use of CAM alone or in conjunction with CHC or PHC services was uncommon. This was the case across all samples and pattern definitions. When sex-specific screening services (mammogram, Pap, PSA tests) and flu shots were included in the patterns, the proportion of the sample engaging in dual use (CHC and PHC) patterns increased to two-thirds of all respondents in the female (deductive pattern) and male subsamples (inductive and deductive pattern), but remained about the same for the female subsample (inductive). The frequency of tri-use (i.e., CHC, CAM and PHC), whether defined deductively and inductively, while decidedly lower than dual use (CHC and PHC) of health services, characterized at least one in ten respondents in the full sample and male subsample. In the female subsample, the frequency of tri-use was about one in five respondents using the deductive approach, with an even smaller frequency of tri-users evident in the deductive approach. Overall, tri-use was the second most frequent pattern found in the female and male subsamples and third most frequent pattern among respondents in the full sample. With the inductive approach, tri-use was the fourth most common pattern of five in the full sample, and the third most common pattern (of six) for the female and (of three) male subsamples.

In the deductive approach, categories were created to capture exclusive use of one health care system (medical monism) and service non-use. In the overall 50+ sample, CHC monism (23%) was found to be the second most common pattern, with almost one in four respondents reporting exclusive use of medical doctors or specialists annually. It was the third most common pattern for the male subsample (10%) and was a relatively infrequent occurrence among respondents in the female subsample (1%). Rather, for female respondents, PHC monism (8%) was much more frequent, coming in as the third most common health pattern. Non-use (1%) of health services was also an infrequent health service pattern within the female subsample but it was a more common occurrence in the overall sample (7%) and male subsample (5%).

The second objective of this study was to examine the predictors of medical pluralism. Here, the findings revealed that age had a curvilinear association with health service patterns for all samples, but there were variations in the direction of the association depending upon how the patterns were defined. A curvilinear relationship between age and health service use was found in the full (deductive) and female and male subsamples (inductive). Advancing age was associated with an increased likelihood of being a tri-user up to a certain point and then the likelihood of pluralistic service use decreased. In analyses where no curvilinear association between age and health service was detected, age was found to have a positive linear association with health service use in the female subsample (deductive pattern); older age decreased the likelihood of tri-use relative to most other types of service use. Conversely, among men (deductive pattern), older age increased the likelihood of tri-use compared to most other types of use and also, non-CAM dual use (CHC and PHC). Overall, older age was associated with more extensive use of services for males and particularly those that encompass CHC and PHC. However, this was not the case for females and the overall sample.

With regard to gender, females were more likely than males to have pluralistic service patterns that included use of all three health care systems, even after controlling for health needs. The relationship between gender and health service use was particularly strong when comparing non-use (or low CHC/PHC/CAM class) with tri-use (or high CHC/PHC/CAM class). Further, age and gender interact to influence health service utilization. As age increased, the tendency was for males relative to females to be non-users or to use CAM or PHC exclusively, rather than to use services across all three health care systems. Thus, it is apparent that females have more pluralistic service patterns than males, regardless of age.

In terms of the other social location variables, strong evidence for a socioeconomic gradient was found. On the whole, higher levels of household income adequacy and respondent education increased the likelihood of tri-use. Yet education had fewer significant relationships than income. This was the case regardless of whether the patterns were defined using a deductive or inductive approach. Race had a weak association with health service patterns. There were no significant associations evident when the patterns were defined deductively and only a few significant relationships emerged when medical pluralism was defined inductively. These latter results suggest that for Whites, health service use was less varied than it was for non-Whites, which was in the opposite direction of that hypothesized. Conversely, in the female subsample, when sex-specific services were considered, diverse service use was more probable for White females but only when contrasted with average to low CHC/CAM and low/high PHC, as all other contrasts were not significant. These results suggest that for females, there is variation *within* and *across* health care systems, according to racial identity, but particularly for services *within* PHC. Furthermore, Native-born Canadians were more likely to be tri-users compared to long-term immigrants, while recent immigrants are less likely to be tri-users compared to long-term immigrants. Thus, the longer that an immigrant is in Canada the more likely it is that their health service patterns mirror those of Native-born Canadians, indicating some degree of health care acculturation after about 20 years in Canada.

Of the four independent variables representing health needs, chronic condition has the strongest association with health service patterns. As the number of chronic conditions increases, the propensity toward pluralistic use of the three health care systems also increases. This is the case regardless of how the patterns were defined or what types of PHC services were included in the analyses. Also, for all samples, functional ability is associated with less diverse service use across the three health care systems. That is, individuals who report no or few restrictions on function are more likely to use services within one or two health care systems, or, as was the case in the full sample, to not use any services at all.

Somewhat contradictory findings were obtained when health service patterns were regressed on self-reported physical health. On the one hand, individuals with excellent self-reported physical health were more likely to be tri-users, given evidence that less than excellent (poor/fair and good) perceptions of health predicted patterns of CHC-only or combinations of services that did not include CAM. Yet, on the other hand, less than excellent perceptions of health increased the likelihood of tri-use but only in relation to non-use or exclusive use of CAM or PHC. These latter patterns were not evident in the male subsample, however. Taken together, these results suggest that excellent physical health is associated with service use within and across health care systems, except for situations where non-use, PHC only, or CAM only are considered, in which case the likelihood of tri-use is low.

In terms of mental health, there was a decreased likelihood of medical pluralism among individuals in the full and female subsamples reporting poor/fair mental health rather than excellent mental health. Yet, there were few significant associations across the samples, suggesting that all things being equal, perceived physical health is a much more significant predictor of pluralistic health service use than is perceived mental health.

Although no formal hypotheses were tested for the impact of spatial assets and collectivities variables on medical pluralism, the results suggest that where in Canada an individual lives and with whom influences health service patterns. Living in an urban area appears to decrease the likelihood of pluralistic service use and CAM use in particular, when medical pluralism is defined deductively, in the full sample and female subsample. No significant associations were found in the male subsample. With an inductive approach, living in an urban area also decreases the likelihood of CAM use. Yet, paradoxically, urban living also increases the likelihood of pluralistic service use, within the overall sample and male subsample. Regional effects for province were also noted. Individuals residing in British Columbia were more likely to engage in medical pluralism than residents of other provinces. The exception was Quebec, Ontario and Alberta, as residents in those provinces tend to be represented by tri-use patterns compared to British Columbians when the pattern involved CAM use. Residents of Quebec were less likely to have health services patterns involving only CAM, while Alberta and Ontario residents were less likely to have patterns that did not include CAM.

An individual's social network (collectivities) also influenced health service patterns. Married and ever married individuals were more likely to have tri-use or high CHC/PHC/CAM use patterns compared to single persons. The exception was in the full sample (deductive) where the opposite pattern was found. Also, the larger the household, the less likely that pluralistic health service use would occur.

The next chapter discusses the study's findings and implications of pluralistic health service use for sociological theory, research and health policy.

Chapter 6: Discussion and Conclusions

This dissertation research examined discretionary health care service use among Canadians aged fifty and older. It had two objectives. The first was to examine health service patterns related to medical pluralism—defined here as use of more than one health care system. The second was to examine the predictors of these patterns including social location and health factors while controlling for dimensions related to geographical place of residence and individual household. In particular, it assessed whether inequalities associated with age, gender, socioeconomic status, race and immigration status purported to generate inequitable access to services *within* health care systems also exist when use is examined *across* conventional health care (CHC), complementary and alternative medicine (CAM), and public health care (PHC).

In this chapter, the research findings are discussed in the context of existing literature, the strengths and limitations of the research are examined, and the implications of the findings for future research and health policy are explored.

6.1: Establishing the number and form of health care patterns

This study found evidence of three to six health care patterns, depending upon the approach used to identify them and the types of services included. The two approaches did not produce similar results. The deductive approach established six patterns, pre-defined by the researcher along theoretically meaningful lines. These included six discrete service combinations representing non-use, medical monism (exclusive use of one health care system – CHC, PHC, or CAM) and medical pluralism (use of two or three health care systems). However not all relevant patterns were represented (due to low volume of use in CAM-only or dual use of CAM and PHC). An inductive approach used latent class analysis to establish health service patterns as they emerged from the data. Using this approach, five classes of service use emerged from the data for the overall sample. In addition, six classes were found in the female subsample and three classes in the male subsample. The finding that there are differences in the number of health service patterns between men and women suggests that the latter use more diverse types of services within and across health care systems than the former.

In terms of establishing the forms of the health service patterns, the analyses suggest that the use of two (dual) and three (tri) health care systems was common. The most frequent combination of discretionary health services involved dual use of CHC and PHC, which occurred in 48% (deductive) and 51% (inductive) of the overall sample. However, the latter included use of medical doctors (and/or specialists) and flu shots, with no (or low to average probability of) use of chiropractors and/or CAM providers. When sex-specific screening services are included, the percentage of dual use of CHC and PHC increases substantially for both women (69% deductive) and men (63% deductive). The percentage of dual CHC and PHC use reported here is similar to the 60% reported by Druss and Rosenheck (1999) in their American study of medical pluralism among adults aged 18 and over.

In this study, other patterns of dual use (e.g., CHC and CAM, or CAM and PHC), defined deductively, were distinctly low in all three samples (8% in the full sample; 3% in the male subsample; and 2% in the female subsample). This is in line with the 6.5% of dual CHC and CAM use found in the Druss and Rosenheck (1999) study. However, these percentages are lower than the 14% of dual use (CHC and CAM) reported in the Eisenberg et al. (1998) study. However, the Eisenberg study (1998) only reported the prevalence of dual use (CHC and CAM) for treatment of a specific condition. In addition, specialist visits were not considered in the Eisenberg study, nor were PHC services separated out from CHC services, which may explain the difference in frequency of dual use reported between their study and this one. The percentage of dual use of CHC and CAM found in this study is also lower than that reported for the Canadian population in other studies. For example, Millar (2001) reports that 16% of adults (aged 18+) used a CAM provider and saw a physician in the same year. Esmail (2007) also reports that 32 percent of adults saw both a CHC and CAM provider for the same health problem.

The prevalence of tri-use (CHC, CAM and PHC) in this study was found to be substantially lower than the prevalence of dual use of CHC and PHC. The proportion reporting tri-use was similar in the overall (9%) and male subsample (11%), but was reported twice as frequently in the female subsample (20%). The incidence of tri-use as measured inductively (by high rather than low probability) was lower than that found in the deductive patterns. Specifically, only 9% of the full sample, 6% of the female subsample, and 9% of the male subsample were classified as having a high probability of combined use of CHC, CAM and PHC. As this is the first study to separate out PHC services from CHC and CAM, and to examine use of services across all three systems, there are no comparable studies with which to assess the occurrence of tri-use.

Other health care patterns examined in this study included medical monism and non-use. Medical monism—or use of only one health care system—was more common in the overall sample. About 25 percent of the overall sample (including 10 percent of the male subsample and only one percent of the female subsample) reported exclusive use of CHC services. This is important to know and an advance over previous studies which generally include measures of PHC (i.e., flu shots, mammograms, etc.) in their analyses under the umbrella of CHC services and thus, under-estimate medical pluralism (see Druss & Rosenheck, 1999; Eisenberg et al., 1993; 1998; Wade et al., 2007). Unfortunately, it was not possible to obtain an accurate picture of CAM monism in this study because its frequency of use was too low (1.1% of the overall sample) to run meaningful analyses; consequently, the CAM-only category was combined with the dual CAM and PHC category. Other studies have reported that exclusive use of CAM is usually less than six percent (Astin, 1998; Eisenberg et al., 1993; 1998).

Interestingly, non-use of health services illustrates the health practices of a minority of respondents in the overall sample (7%). In the female subsample, a non-use pattern (1%) is almost non-existent. Even within the inductive approach, when non-use is represented by classes having low probability of CHC, CAM and PHC use, its likelihood is low for both the overall sample (10%) as well as for the female subsample (4%). In contrast, within the male subsample, 26 percent have a low probability of any health service use. These frequencies are substantially lower than the 32 percent of non-use reported in Druss and Rosenheck's (1999) study of health service use among Americans aged 18 and older; a finding which may be attributable to the population studied, as research suggests that there is lower use of preventive services and health care on the whole in early than later adulthood (Martel et al., 2005).

6.1.1: **What was learned by using two approaches to pattern identification?**

This study found that when health care use patterns were pre-defined by the researcher (deductive) into six theoretically-driven categories, there were differences in both the number and form of patterns compared to when the patterns ‘emerged’ from the data using latent class analyses (inductive). Evidence of variation in both the number of categories (deductive) and classes (inductive) of the patterns lends support to the notion that medical service use is much more complex than just ‘going to the doctor’ (Kelner and Wellman, 1997; Pescosolido, 1992). Yet this observation was only revealed after comparing the two approaches and finding that with the inductive approach it was possible to quantify variation *within* and *across* health care systems. This is an important finding, as it suggests that the way researchers have been examining medical pluralism is limited because their research designs (and subsequently the results) generally assume heterogeneity in health service patterns without empirically validating its existence.

However, the inductive analyses did not allow for the identification of non-users of health services or those who rely exclusively on only one type of care. Yet, it is important to consider how monistic service users and non-users differ from each other and from pluralistic service users. For example, for some, non-use of health services could be an act of resistance to medicalization and consumerism (Scambler & Kelleher, 2006; Thompson, 2003). Consequently, non-use may reflect a conscious choice of the individual rather than an inequitable health care system (Allin, 2008). Therefore, both methods for identifying health care patterns offer useful, albeit somewhat different types of information.

The difference in prevalence observed between the categories and classes can be attributed to the way that the patterns were created. In the deductive approach, the individuals were explicitly classified into categories by the researcher using an 'either/or' criteria. For example, to be classified into the CHC category required that the individual had (i) a medical visit *or* a specialist visit; or (ii) a medical visit *and* a specialist visit. Conversely, in the inductive approach, parameters were estimated for the overall probability of class membership and for the distribution (mean and variance) of the health service indicator variables, given class membership (Magidson & Vermunt, 2001; Vermunt & Magidson, 2003). Therefore, the classes were formed using an 'and' criteria, which is the (posterior) probability that the individual belongs to a specific class given a certain pattern of observed scores (yes/no) on the health care indicators. Consequently, with an inductive (person centered) approach, it was possible to examine *within* class differences—a feature that was prohibited when the medical pluralism patterns were defined deductively. For instance, with the inductive approach, it was observed that among males, one of the three health profiles involved use of chiropractors but not other CAM providers, and among females there were differences in the use of flu shots or cancer screening services. These distinctions were not captured in the 'CAM single or dual use' or 'PHC only use' categories, respectively, with medical pluralism defined deductively (although they could have been derived but only at the expense of adding more categories to the deductive pattern analyses).

Furthermore, adopting a two strategy approach to identifying health care patterns also revealed that medical pluralism and in particular, dual use of CHC and PHC characterized more than one-half of Canadians aged fifty and older. Evidence of medical dominance was found using both approaches. In the deductive patterns, almost one-quarter of the overall sample reported exclusive use of medical or specialist services (i.e., CHC monism) in a given year. No other health care system included in this analysis had such a high prevalence of exclusivity. In addition, most others (58%) reported dual- or tri-use patterns that included medical or specialist services. With the inductive patterns, most of the health service classes also had medical visits as the focal point with further variations in the form of the classes related to what types of services accompanied medical visits. For instance, Class 1 (51%) was characterized by high probability of CHC service use, while Class 2 (25%) had average probability that CHC service use occurred. Therefore, it is clear that CHC providers (i.e., medical doctors and/or specialists) remain pivotal figures in the health practices of late middle-aged and older Canadians, despite the so-called ‘new medical pluralism’ (Cant & Sharma, 1999).

It is possible that the persistence of medical dominance can be attributed to the structure of the Canadian health care system itself, in addition to the culture of medicine prevalent in Western society. Almost eighty percent of Canadians report seeing a medical doctor at least once a year (Blackwell et al., 2009). Within existing infrastructure, medical doctors determine access to other CHC services through a fixed referral process, as most initial referrals to specialists originate with medical doctors. Medical doctors also act as ‘gatekeepers’ to CAM services by encouraging or discouraging patient-consumers from seeking out CAM. Friction between providers in the CHC (biomedical-reactive) and CAM (holistic) systems is longstanding (Goldstein, 2002; Kaptchuk & Eisenberg, 2001a; 2001b; Starr, 1982). Certainly, the fissure between chiropractic and the medical profession has a long history in the United States (Cooper & McKee, 2003; Kaptchuk & Eisenberg, 1998) and in Canada (Coburn & Biggs, 1986). While a growing number of medical doctors see mainstream CAM services as complementary (rather than alternative to CHC) and are increasingly referring patients to these services (Frohock, 2002), their numbers are small relative to the larger profession (Walsh, Kelner, Wellman, & Boon, 2004). Indeed, the finding that exclusive use of CAM services makes up such a small proportion of overall service use suggests that it is not at all a mainstream health practice for this population of adults aged fifty and older.

Further evidence of medical dominance is seen in the relationship between the CHC and PHC systems. Most Pap tests are done in doctors' offices and even though mammograms are typically done in public health or cancer clinics, a medical referral is usually but not always a pre-requisite for entry into the breast cancer screening program. It used to be the case that flu shots were administered in doctors' offices; yet, recent global trends suggest that flu shots are increasingly being made available to the public in stand-alone public health clinics, in employer-sponsored clinics, and in pharmacies (Vance, 2011). This leads to speculation that getting a flu shot may soon be an over-the-counter occurrence, removed from the medical referral process all together. Despite these trends and the potential for future de-medicalization of some health services, presently, it is apparent that medical dominance is inextricably woven into the social fabric of Canada's health care system, simply by virtue of the role of medical doctors as gatekeepers to services within CHC and other health care systems.

6.2: Establishing the predictors of medical pluralism

Defining health service patterns was but one goal of this study. The second objective was to link theory and empiricism by examining the predictors of health service patterns, as defined both deductively and inductively. In light of the perceived need to move away from frameworks that theorize health care utilization as occurring within a single discrete health care system (Giarelli, 2004; Hsu, 2008; Pescosolido & Kronenfeld, 1995), an alternative research framework called the *medical pluralism paradigm* was proposed. It considers opportunities to seek out one type or combination of health services over others as resulting from socialization processes and experiences acting in concert with socially structured constraints. These constraints shape health care utilization patterns directly in terms of access to services, with some groups being over- and under-serviced relative to others. Hypotheses were tested using the medical pluralism paradigm as a framework to assess whether socially structured constraints associated with age, gender, socioeconomic status, race, and immigration status and purported to generate inequitable access to services *within* health care systems also exist when use is examined *across* conventional, complementary and alternative, and public health care.

The medical pluralism paradigm also helped organize the social and health independent variables in the regression models. Using this framework and entering the variables in three additive blocks, the medical pluralism paradigm was found to explain approximately 22 percent of the variance in medical pluralism when flu shots were used to assess PHC use. While there are no comparable studies that report explained variance in use *across* health care systems, this is slightly higher than the variance (range of 7 to 21 percent) typically reported in studies predicting physician visits among adults aged 18 and over (Dunlop et al., 2000) and of physician, home care and hospital use within the population aged 65 and older (Allan, Funk, Colin, & Cloutier-Fisher, 2011; Penning, 1995; Strain, 1990). Yet, is lower than the (unusually high) 37 percent found for physician visits among older adults (Chappell & Blandford, 1987). In the present study, the variance explained in women's health service utilization patterns was found to be somewhat lower (14 percent in the deductive model and 20 percent in the inductive model). However, this is still slightly higher than the 12 percent variance explained in the Dunlop et al. (2000) study of the predictors of CHC use (i.e., physician and specialist visits) among Canadian females aged 18 and older.

Many of the relationships observed in this study are consistent with what has been previously reported in the health care utilization literature. However, not all of the observed relationships were in the hypothesized direction. Age was found to have a curvilinear relationship with health service use when medical pluralism was defined both ways and is consistent with what was hypothesized. For instance, in the overall sample (deductive) and in the female and male subsamples (inductive), the likelihood of tri-use compared to non-use or other service categories was found to increase up until a certain point and then decline, taking on the shape of an inverted U. This finding is consistent with studies that show CAM use typically peaks around the age of 70 relative to late-middle age (45-64) where its use is highest (Eisenberg et al., 1998; Grzywacz et al., 2007; Kessler et al., 2001). Preventive screening has also been shown to decrease with age, among females over the age of seventy (Edwards & Jones, 2000; Qi et al., 2006). However, it contradicts research that suggests flu shot use is lower in younger rather than older cohorts (Kwong et al., 2007; Newsom et al., 2004). When age was treated as a linear variable, the findings were also in the expected direction. Within the overall sample and among females specifically, the likelihood of medical pluralism decreased with increasing age. Conversely, for men, when the patterns were defined deductively, older age was associated with more diverse use of services and particularly those that encompass CHC and PHC, with lesser use of CAM-related services specifically.

The medical pluralism paradigm would explain these age differences in CAM use as arising from socialization processes and experience with CAM, with older cohorts having less experience with its services (and providers) and consequently more inclination to follow CHC recommended treatments relative to younger cohorts. In addition, as noted, most CHC recommendations tend not to involve CAM practitioners or treatments. Research also supports this. In one of the only inter-cohort analyses of CAM use, using 1996 data, results indicated that three of 10 Americans in the pre-baby boom cohort (pre 1945), five of 10 in the baby boom cohort (1945-1965), and seven of 10 in the post-baby boom cohort (1966-1986) reported use of a CAM service by the age of 33 (Kessler et al., 2001). Nearly one-half of the CAM users continued to use CAM after they first tried it, with the range of CAM services used increasing over time. Thus, the age strata differences Kessler and colleagues detected in their study and that are supported by the results of the present study do suggest that older people use fewer CAM services than younger people do. However, neither the Kessler study nor the present study was designed to isolate period effects from age or cohort effects (APC effect) (Hsu, Lew-Ting, & Wu, 2001). Consequently, to suggest that the age differences in CAM use found in this study are due to cohort-specific socialization processes only would be potentially inaccurate. Alternatively, to say the observed age differences in medical pluralism patterns are due solely to biological aging would also be inaccurate, as individual aging is a multidimensional process that involves physical, social and behavioural and cognitive changes throughout life (McPherson & Wister, 2008).

The finding that older people are less likely to use CAM could also be related to differences in the size and composition of the social networks of older and younger people —conceptualized in this study as collectivities. Older people tend to have smaller social networks coupled with (and related to) changes in marital status, retirement, disability, and the deaths of friends, family and marital partners. As larger networks tend to have wider referral bases and CAM providers rely heavily on word of mouth (Kelner et al., 2000), this would suggest that older cohorts are likely to have less exposure to CAM referrals. However, the finding in this study that smaller networks (not larger ones) increased the likelihood of tri-use does not entirely support the relationship between collectives and CAM use outlined in the medical pluralism paradigm. Perhaps a measure of collectivities based on strength of network tie (weak or strong), rather than quantifying networks in terms of number of connections, as the present study did, would elucidate how collectivities (interacting with age) shape pathways to CAM and other health services. Granovetter (1973), a pioneer in social network analysis research, suggests that it is the strength of tie (weak or strong) and not the number of ties that matter most for the diffusion of information through networks.

Where increasing age did not appear to be associated with medical pluralism was in the male subsample, when health services were defined deductively. This may reflect greater use of PHC services by older men. In the male subsample (deductive), both flu shots and PSA tests were examined. Therefore, the finding that older men have more diverse service use patterns than younger men might be explained by looking at the changing age distribution of prostate cancer. While the incidence of prostate cancer among Canadian males has been increasing steadily since the 1980s, a population-based study of the incidence of prostate cancer from 1971 to 2000 found that it is the 65-74 year old age group that had the highest rate of PSA testing (Neutel, Gao, Blood, & Gaudette, 2007). This is different from female preventive health screening which tends to be concentrated in late middle-age (i.e., among the 50-65 year age group) (Canada Public Health Agency, 2005). Therefore the age difference in health service use among males found in this study may reflect a trend toward later sex-specific screening services among males relative to females for whom screening is occurring earlier (in their fifties and sixties).

The Neutel et al. (2007) study also found that beginning in the late 1990s, larger proportions of young male cohorts (50-59) were being diagnosed with prostate cancer, even though they were being tested less often than those in the 65-74 age group. The implications of this trend are twofold: that there will likely be a trend toward increased

PSA testing in the 50-59 age cohort; and that men in their fifties will likely be living much longer with diagnosed cancer, as improved treatments for most cancers have led to longer survival times following diagnosis. Subsequently, and as outlined in the medical pluralism paradigm, armed with the discourse of diagnosis (or fear of diagnosis), these men in their fifties may well start (or continue) to use diverse services within and across health care systems, as they become embedded in a 'cancer network' and aspire to be 'cancer survivors' (Brown et al., 2004). Upon being diagnosed with a life threatening or chronic disease, or even the risk of diagnosis, many individuals re-define their health needs and practices relative to when they were in a 'healthy' state. These re-defined needs could be based on their individual illness experiences regarding what works and does not work, coupled with shared experiences and suggestions from formal and informal caregivers, and other cancer (disease) survivors.

In addition to the inverse relationship found between age and health care use, a relationship between gender and service use was also observed. As hypothesized, women had a greater propensity for medical pluralism than males. Males were more likely to be non-users or to use only CHC services in a given year while females were more likely to use more types of health services *across* health care systems. These differences mirror those reported in the utilization literature on use *within* health care systems. For instance, studies show that women tend to use more CHC (Dunlop et al., 2000; Prus & Walters, 2004; Taylor et al., 2006; Verbrugge, 1985), CAM (Astin, 1998; Barnes et al., 2004; Eisenberg et al., 1998; Millar, 2001), and PHC services (Bloom et al., 2001; McFall & Davila, 2008; Nelson et al., 2002; Rundall & Wheeler, 1979; Shensen et al., 2007).

Furthermore, the relationship between gender and health service use was found to interact with age, such that the impact of gender differed at different ages. As age increased, it appears that the likelihood that males will be non-users and females will be tri-users also increased.

The finding that women use more types of health services than males across all age cohorts is consistent with the view that there are more opportunities for women to contact health care providers and, conversely, that fewer opportunities exist for men. This was the thesis put forth in the medical pluralism paradigm and supported by others (Ridgeway & Correll, 2004) that North American society is structured on a gender belief system. The gender belief system categorizes, according to sex, many aspects of society, including work, the family, religion and other social institutions. Therefore, one possibility is that women contact health providers more frequently because they have poorer health than males, due to the patriarchal nature of the gender belief system that positions women in low status and low prestige jobs in the work and home. However, this view is not entirely supported in this study (nor was it empirically tested), given findings indicating that gender differences in medical pluralism were apparent even after controlling for health related-needs.

Another possibility is that the gender discourse institutionalized into the health care system appears to (ironically) discriminate against men, as patients, but not as providers. Men are often categorized into the high power and prestigious roles of medical doctors and specialists and women into the lesser roles of nurses and nurse specialists (Becker, 1961; Friedson, 1970). Yet, as patients, men are socialized to be stoic, to ignore symptoms and avoid doctors, which may lead to delayed treatment, increasing morbidity and mortality (Arber & Cooper, 1999; Cecile et al., 1997; Cecile et al., 1999; Kandrack, Grant, & Segall, 1991; Macintyre et al., 1996). In contrast, women in general, but late middle-aged and older women in particular, are socialized to be responsible for health, attentive to their bodies, and to engage in preventive health practices (Wray, 2010). For women, this can be good for health. Extensive contact with a range of health providers can lead to early detection of health problems and foster proper management of existing ones. Alternatively, medical pluralism may not be good for women's health. Increased contact with providers is often associated with a greater risk of referral to other services within and across health care systems, which could result in inappropriate or over-servicing. The tendency toward (over-) servicing is seen by some as representing the medicalization of the female body, and thus socially constructed rather than biologically necessary (Barker, 2008; Gallagher & Sionean, 2004; Wray, 2010).

It was also hypothesized that individuals in better socioeconomic positions would have enhanced opportunities for medical pluralism. Indeed, this was found to be the case. In all samples and pattern definitions, where there were significant associations found between medical pluralism and household income adequacy or individual education, the direction of the association pointed toward a socioeconomic gradient. Differentials in service use were found to favour those with higher income and education. In almost all cases, the socioeconomic gradient was found to be larger when comparing the service patterns of individuals with low income compared to high income rather than when comparing those with middle to high income. These results are similar to those observed in previous studies on use of CHC services that find a ‘pro-rich’ distribution of health care resources with higher income groups having an increased probability of both medical and specialist visits (Allin, 2008), and studies that find SES differences to be most likely when focusing on specialist services (Blackwell et al., 2009; Dunlop et al., 2000). Similar findings are observed in PHC use where a ‘pro-rich’ distribution is also evident in the use of female preventive screening services (Katz et al., 2000; Shensen et al., 2007; Shensen, Adams, Bolen, & Andersen, 2011), but not flu shots (Kwong et al., 2007). While income and education are often found to be inconsistent predictors of CAM use (Bishop & Lewith, 2008; Spence & Ribeaux, 2004), in this study, there was a positive association between levels of income and education and the likelihood of its use.

This study also examined race and immigration status as elements of social location that may constrain (or enable) opportunities for medical pluralism. Overall there was not a lot of evidence in favour of retaining the hypothesis that there is variation in health service use by race. There were no significant associations between medical pluralism (defined deductively) and race. With the inductive approach, however, results revealed that in the overall sample health service use was less extensive among Whites than it was for non-Whites. As this finding was not in the hypothesized direction, the race hypothesis was rejected. However there was one notable significant finding, although it does not constitute enough evidence to warrant retaining the hypothesis. In the female subsample (inductive), diverse service use was more probable among White females than among non-White females for whom low to average use of CHC and CAM, and low to high use of PHC was more likely.

It would be remiss to conclude that given no significant *overall* pattern of service diversity by race that there is equitable access to health services for Canadians regardless of their race or ethnic background. The finding that White females aged fifty and older are more likely to get mammograms and PAP tests but less likely to get flu shots than non-White females shows disparity in the receipt of PHC services. This disparity exists even after controlling for individual differences related to other social location factors and health-related need. These findings are similar to those of other studies reporting racial and ethnic differences in cancer screening behaviours (McDonald & Kennedy, 2007; Oxman-Martinez et al., 2000; Wade et al., 2007). Most of these studies attribute the barriers in access to education and income as well as to regional and provider characteristics. While this study did not control for provider characteristics, it did control for education, income, region, and other factors. Therefore, it is not entirely clear whether the diversity in service use by race among females in this study is due to access issues alone.

Another possibility is that the service differential evident in PHC use for the women in this study reflects cultural preferences and experiences. The medical pluralism paradigm views variation in service use as resulting from socialization and experience. Non-White women may be less inclined to use mammograms or Pap testing because of the nature of the testing procedures, or perhaps because they feel their risk of getting cancer is low, while, conversely, flu shots may be deemed culturally appropriate.

Santibanez and colleagues (2010) found that use of influenza vaccination differed by race/ethnicity (among adults aged 50-64) and that these differences were accounted for by beliefs about the flu and the vaccination itself. Yet, research by Magai and colleagues (2004) found no cultural differences in health beliefs with regard to mammogram screening. Instead, their results showed that ethnicity ceased to predict mammogram screening frequency once cognitive and emotional variables were controlled for, suggesting that there may be specific beliefs about the efficacy of the PHC treatment held by women independent of race and ethnicity. However, the Magai (2004) study did not include a measure of CAM use. Therefore, given research indicating the strong link between personal beliefs (cognitive, attitudinal, and emotional) and use of CAM (Astin, 1998; Fulder & Munro, 1985; Furnham, 2000), it is possible that the women in the present study were supplementing diagnostic screening with CAM services. Yet, the fact that the health care profile of these non-White women included 'low' rather than 'high' CAM use, that too is unlikely. In future, including measures of cognitive, attitudinal, and emotional variables in medical pluralism research might improve understanding of what is deemed an 'appropriate' health care response among women when it comes to cancer screening and the receipt of flu shots.

Evidence for retaining the immigration status hypothesis was clear and consistent across the samples, regardless of how health service patterns were defined. The findings revealed that Native-born Canadians were more likely than long-term immigrants to be tri-users, while recent immigrants were less likely than long-term immigrants to be tri-users. Recent immigrants were also more likely to use only CHC services and to not use any health services at all. Thus, as hypothesized, the longer that an immigrant lives in Canada the more likely it is that his or her health service patterns will mirror those of Native-born Canadians. The finding that medical pluralism increases with acculturation is consistent with findings reported by Wade et al. (2007) that show that the longer older Chinese immigrants lived in the US the more likely they were to adopt mainstream CHC services while still continuing to use Traditional Chinese Medicine (TCM) as their main health care practice.

Further exploration of the relationship between immigration status and medical pluralism (deductive) within an immigration-only subsample confirmed the finding from the overall sample that the likelihood of tri-use increased with more years in Canada. Interestingly, in the immigrant-only subsample, foreign-born Whites (compared to foreign-born non-Whites) were more likely to be non-users and CHC-only users rather than tri-users. This suggests that in some cases, acculturation is independent of race in predicting health care use, a finding that replicates that of Prus, Tfaily and Lin’s (2011) study of racial and immigrant status among health care users in Canada.

In addition to social location factors, a number of health-related need factors were examined. Given that prior evidence is inconclusive regarding whether medical pluralism is used by ‘unhealthy’ individuals in response to illness or by ‘healthy’ individuals for purposes of wellness, this thesis explored rather than tested a health needs hypothesis. Results indicated that increasing levels of comorbidity and disability were positively associated with tri-use across all samples, suggesting that much of the pluralistic service use taking place in late middle-aged and later life is for illness care. In fact, chronic illness was a consistent and strong predictor of health service use in each analysis. However, it is noteworthy that in the overall sample—using the inductive approach—differences in the relationships between functional health and health service use were evident across the classes. Specifically, individuals who reported never being restricted in function (even with comorbid states) were more likely to belong to the health service class characterized by high probability of CAM use and low probability of CHC use rather than tri-use. This lends some support to the idea introduced in this study that the health care systems differ in terms of their underlying paradigms, which is outlined as a key feature of the medical pluralism paradigm. Individuals with less complex care needs (i.e., no or low disability) had a greater propensity to use CAM relative to CHC, implying that the former is better suited for wellness care and the latter for illness care.

It also suggests that there may be some limits to the degree of trust that these individuals will put in the hands of CAM providers when it comes to complex health needs. Further examination of the relationship between specific types of chronic illness (instead of number of conditions) and health care utilization in the overall sample revealed that individuals with cardiovascular disease did not use CAM; instead they relied on dual use of CHC and PHC. The lack of association between cardiovascular disease and CAM use has been reported in one other study (Eisenberg et al.,2001), with the non-CAM users in that study stating that they felt conventional care was better for them. Cardiovascular disease is often regarded as a complex health condition requiring (invasive) medical intervention and as such its treatment is much more suited to the type of care offered in CHC (reactive-biomedical) instead of CAM (Kaptchuk & Eisenberg, 2001a). Therefore, the differences in the types of service that constitute medical pluralism observed here may be explained by considering the relationship between type of chronic condition and the underlying paradigm of each health care system.

This study also found that there was considerable variation in the relationship between perceived health and health service utilization. There was some indication that positive ratings of physical health (good, very good and excellent) were related to tri-use, but this was not consistent across all samples. In other cases, specifically in the overall sample, fair/poor health was associated with a greater likelihood to use only CHC services, which would lend further support to the notion that CHC is used in response to illness. Mental health had no significant influence on health care utilization on the whole, but there was some indication in the overall sample that fair/poor mental health predicted the likelihood that non-use of health services would occur. This finding is somewhat consistent with literature that reports age-related differences in the use of CHC and CAM health services among individuals with mental health issues (Crabb & Hunsley, 2011); however, it is important to note that self-reported fair/poor mental health does not necessarily mean a person has a mental health issue.

The finding that neither negative nor positive ratings of physical health consistently predicted health care utilization could be explained by the fact that perceived health is a subjective measure defined differently by individuals. Shooshtari, Menec and Tate (2007) report substantial variation in how those aged 25-54 rate their health compared to people aged 55 and over. They conclude that characteristics and conditions related to individuals' health behaviours and lifestyles, and social location factors influenced whether health was perceived positively or negatively, over and above other health measures. Therefore, researchers need to re-think how health is conceptualized in later life, as it appears that around about the age of fifty, despite having chronic illness and functional restrictions, it is the perception of good health coupled with social factors that contributes to variation in health service use.

To summarize the main findings, differences were found in both the number and form of health service patterns for this population of adults aged fifty and older, using the two pattern identification approaches. Medical pluralism was found to be common, as dual-use (of CHC and PHC) characterized about one-half of Canadians aged fifty and older in this study, while tri-use (of CHC, CAM and PHC) made up about 9 percent (inductive) and 11 percent (deductive). Women had a greater number of health service patterns than did men, when sex-specific screening services were included in the definition of PHC along with flu shots. Evidence was also found for associations between the major social and health factors and health service patterns. For the most part, pluralistic service use varies by age, gender, socioeconomic status, race, immigration status, health, region and social networks. Pluralistic service users tend to be younger, female, and to have high income and education; they are also more likely to be White, Canadian-born, married, live in smaller households, residents of BC, and urban dwellers. They often report more than one chronic condition and restrictions in daily function, despite this they tend to rate their physical health positively.

6.3: Research limitations

A number of conceptual and methodological issues created challenges for research design, measurement and analysis. Conceptually, differentiating health services into three distinct systems (based on their health paradigm) allowed for the examination of use across health care systems, but in reality could not account for the cross-referral taking place at the practical level. Consequently, the prevalence of CHC monism is likely overestimated (and PHC monism is underestimated) because CHC use may be capturing situations where a PHC service was actually used in the context of a medical visit. Furthermore, annual physical exams by medical doctors were not included as an outcome measure in this study. Consequently, use of CHC was assumed to be illness care. However, a review of utilization studies found that among Canadians there was no significant relationship between annual checkups and the use of other preventive health services (Hulka & Wheat, 1995).

The present study also only examined health care utilization related to initial contact with a health care provider (use or non-use) and not service intensity. In the early stages of this research, the intention was to study health care as a two-stage process (propensity, intensity), as it is clear from previous Canadian studies that use a two-stage design that there are difference between access (use vs. non-use) and volume of use (number of visits by users). These studies suggest that inequities may be an issue for initial contact with health care providers but that once in the health care system, individuals are more likely to receive similar levels (volume) of care (Asada & Kephart, 2007; Dunlop et al., 2000; Penning, 1995; Sarma & Simpson, 2006). However, there is also speculation that lower SES individuals are less likely to be referred to specialists, quite possibility due to differential quality of care (Sarma & Simpson, 2006). That is, the 'risk of referral' to specialized (and supposedly better) care is quite selective and favours those in better social locations. However, while the data used in the present study included visits to medical doctors, specialists, and chiropractors, there was no measure of visits to CAM providers and so it was not possible to incorporate a two-stage approach into the study design.

This study also did not (could not) examine the sequence of service use. Rather, the study outcome was restricted to combinations of health services. The disadvantage with studying combinations is that it is not possible to determine which health care provider or what health care system was contacted first (Pescosolido, 1986; 1992). As a result, it was not possible to determine whether dual or tri-use translates into service duplication or supplementation.

Canadian research suggests that among dual users of CHC and CAM, there are differences in the order that providers are contacted and the intensity of use following initial contact. For instance, Esmail (2006) found that among dual users, almost one-half had used a medical doctor before consulting a CAM provider for the same problem, while less than one-quarter saw a CAM provider first. A similar sequence was reported by Sirios (2002); yet, she also found that as individuals' self-reported knowledge of CAM increased the likelihood of first contacting a CHC provider, even for the same problem, declined.

The Esmail (2006) and Sirios (2002) studies suggest that service duplication may be extensive, given that consultations for the same problem are occurring across health care systems. A typical sequence is CHC first, followed by CAM, with reliance on CHC for primary consultation decreasing over time. Therefore, even though this study did not examine sequence, one could speculate that of the approximately 10 percent of tri-users and 50 percent of dual-users observed in the overall sample, service duplication is occurring to some degree. As Lupton (1994) suggests, people are increasingly disillusioned with scientific medicine and, yet, paradoxically have a growing dependence on it. What may be different is that the dual- and tri-users in this study are redefining biomedicine's responsibility within the larger model of health care delivery and going outside of CHC for further consultation and treatments.

Another measurement issue is that the CHC and CAM indicators measured service use within the last year whereas the PHC indicators measured lifetime use (i.e., ever had the service versus use within the last twelve months). The decision to measure lifetime use rather than PHC use within the past year was made for both conceptual and methodological reasons. At the conceptual level, measuring lifetime PHC use (rather than recent use) better reflects the recommended standard of care by the Public Health Agency of Canada, which, for sex-specific PHC services, is greater than one year. As noted, current recommendations in Canada are that women should have mammograms every two years beginning at age 50 until age 69 and that women have Pap tests every one to three years until the age of 69 (for women with normal Pap test results only). Methodologically, the lifetime PHC measure had higher frequency counts. Low sample size is often a problem that occurs when examining preventive women's health service use in later ages (McDonald & Kennedy, 2007), given that screening practices tend to decrease in frequency with advancing age. Avoiding sparse or 'zero cells' is an important consideration with deductive approaches that have many categories (Whitman and Lokeman, 2006). It tends not to be a problem with inductive methods, as the researcher can select solutions (even if it is not the optimal solution) that have fewer classes in order to combine classes that are small in proportion.

The negative implications of measuring PHC in terms of lifetime rather than recent use include the fact that PHC service use is likely overestimated and important differences among occasional and regular (i.e., up-to-date) users of PHC services are potentially masked. Research indicates that there are distinct social and health factors related to whether or not mammogram and Pap tests are up-to-date among late-middle aged (Bancej et al., 2005; Bolen et al., 2007; McDonald & Kennedy, 2007) and older women (Edwards & Jones, 2000). These studies find that women with up-to-date PHC services tend to be better educated, White, married, and to have larger social networks than women who do not use annual or bi-annual PHC services. However, some of these studies point to characteristics of the provider and clinic as determining the extent of recent PHC service use rather than individual level factors (Bancej et al., 2005; Bolen et al., 2007; Shensen et al., 2007).

Finally, other limitations to measurement pertain to the challenge of conducting meaningful analyses in situations where combining categories is the only solution to biased estimates. This occurred in three cases. In the first case, eleven of the CAM service indicators available in the CCHS, not including chiropractic visits, were used by less than five percent of those in this sample of Canadian adults aged fifty and older. As a result, it was necessary to collapse all CAM practices into a single measure differentiated by a use/non-use dichotomy. This is unfortunate, as there are known differences in the social and health profiles of CAM users across the range of services included under the CAM umbrella. Shmueli and Shuval (2006), among others (Frohock, 2002; Sirois & Gick, 2002; Sirois, 2008; Spence & Ribeaux, 2004), observe that variations among CAM ‘users’ are often larger than the variations between CAM users and non-users. Certainly, the results obtained by focusing on medical patterns defined inductively do point toward differences among those individuals who use chiropractors from those who use other CAM providers.

In the second case, the number of Canadians who self-identified with a racial origin other than White was less than ten percent. Consequently, it was necessary to combine the racial categories into one non-White category, limiting this research to a two category measure of race. Using ethnicity rather than race to represent cultural diversity in health service use would not have solved the problem, however, as it too had many categories with low frequencies in each category, relative to those who reported having a “Canadian” ethnic identity. Future research would benefit from using a combined measure of ethnicity and race, similar to that used by Wu and colleagues (2003) in their study of race, ethnicity and depression in Canada (for e.g., they used White Jewish, non-White Chinese, non-White Canadian). A combined measure would thus allow for an examination of specific ethnic beliefs about health and barriers to access that may be related to racial discrimination.

In the third case, dichotomizing urban and rural residence, as the present study did, reflects a rather crude categorization and likely overlooks differences in health service patterns that may be due to living in regions that do not fall neatly into either category. For instance, many urban centres across Canada are reporting increased growth in the rural-urban fringe, particularly those fringe areas that are ‘amenity rich’ (Halseth, 2003). There is potential for further growth in the rural-urban fringe, as over the next two decades the geographic mobility of baby boomers and new retirees is expected to be high (Longino & Bradley, 2003). Granted, even if the present study used a less crude measure of urban/rural residence, it would still be viewing region through a conventional or static lens. Conventional views of space and place tend to mask important contextual and dynamic differences that relate to in- and out-migration of people based on age, gender and immigration status as well as the socioeconomic status of the area (Cummings, Curtis, Diez-Roux, & Macintyre, 2007). Early in the design of the present study, a dynamic measure of place was included in the analyses (i.e., the CCHS variable called the Health Region Peer Group-HRPG). However, following preliminary analysis, the HRPG variable was removed for several reasons. The main concern with using this measure was that it combined age, gender, regional socioeconomic status and others with geographical factors and therefore precluded the ability to assess their independent associations with health service use. Low cell counts in some of the categories coupled with the fact that the HRPGs crossed provincial boundaries were additional concerns.

Another limitation included the need to conduct separate analyses for male and female preventive health services use. In hindsight, a variable that captured male or female preventive services overall (i.e., without specifying type of PHC use) would have made it possible to examine one overall sample rather than three. However, that approach would have been hindered by the fact that the PSA variable is relevant only for a select sample of Canadian males and was therefore not applicable to the overall sample of males. Separate analyses by sex also created situations where some of the health service categories and classes were small in size. This was particularly problematic for the female subsample, as, for example, non-use and CHC-only use (monism) were found to be rare service combinations for women and so the frequency counts were low. However, additional analyses exploring the impact of collapsing various health service categories in the female subsample showed little difference in results. Specifically, after regressing a binary variable (dual/tri use vs. non/monism) on the social and health factors, there were no major differences found between that exploratory analysis and the main findings presented herein.

There is also room for discussion as to whether the analytical procedures used in this study were the appropriate ones to use. The utility of latent class analyses for examining health behaviour is an opinion shared by others across the social sciences. Psychologists Whiteman and Loken (2006) suggest that latent class analyses are generally superior to other methods in that they reveal a complexity in both number and form of patterns not revealed in traditional cluster analyses or *a priori* researcher defined classifications. Health economists Sarma and Simpson (2006) used a variety of techniques and also found latent class modelling to be a superior method when examining health care utilization. Their caveat is that the "data must permit modelling unobserved heterogeneity and over-dispersion" (p.219), which, they argue characterizes most data on discretionary (or non-hospital) health care use due to the unobservable nature of an illness episode that varies widely across individuals.

Once the patterns were identified, a multinomial logit model was used to examine the impact of social and health factors on these patterns. As the outcomes of interest were discrete categories representing patterns of service use (and non-use), the logit model was the appropriate model to use (Liao, 1994; Menard, 2000). Yet, the multinomial logit model assumes that the categories are discrete and the individual makes a choice to use one type of service over another. However, the assumption that the categories are independent of each other may not apply when modelling individual health care choices.

Some researchers suggest that regression models based on the "characteristics of the alternative" approach, such as those offered in conditional logit models (Hoffman & Duncan, 1988), are more informative for examining consumer 'choices'. In the conditional logit model, the focus is on a set of *alternatives* for each individual, with the independent variables representing the characteristics of those alternatives (Hoffman & Duncan, 1988). The conditional logit model, thus, examines how the characteristics of the consumer choice categories affect individuals' likelihood of being in them. It would be suitable for generating evidence on how health care systems are related to each other (e.g., whether there is more overlap between CHC and CAM or between CHC and

PHC), thus building a conceptual and theoretical argument for medical pluralism at the system (macro) level. Yet, a conditional logit model would have limited utility for examining the social and health predictors of the patient-consumer making the choices at the micro level.

To summarize the research limitations, conceptualizing health care services as three separate systems, while theoretically meaningful, may not have accounted for the overlap between services that may occur in practice and consequently may have overestimated use of CHC and underestimated use of PHC. Conversely, using a lifetime rather than recent measure of PHC use may have overestimated its use but still captures those individuals who use or have ever used preventive health services. Having to collapse health service categories in the deductive approach resulted in a loss of some detail, but did not detract from the main purpose of this study, which was to see whether health services cluster in meaningful patterns. Even though the present study did not incorporate a two-stage (propensity, intensity) design, it was still able to show that there are inequities in one type of care that extend to other types of care. Lastly, the challenge of reporting and interpreting results of analyses with many categorical variables across two different approaches (deductive and inductive) was counteracted by the wealth of detailed information generated about the social and health factors of discretionary health service use. Notwithstanding these limitations, this study demonstrated that health service use in late middle-age and later life is diverse and that variations in service use exist *within* and *across* health care systems that are best detected using a pluralist lens.

6.4: Implications for future research, theory and policy

This study found that Canadians over the age of fifty are not a homogenous group of health care users and that, for most, service use occurs *across* health care systems and not just *within* mainstream CHC, as existing research, theory and health policy implies. Rather, when it comes to use of discretionary health services, several discrete patterns emerge depending upon what types of services are included. Most Canadians aged fifty and older use services across CHC and PHC systems but not CAM, although approximately one in ten use services across all three systems. Further, there are a number of significant social location and health factors that predict which type of service pattern an individual belongs to, thus suggesting that there are distinct profiles or 'health styles' characterizing these late middle-aged and older Canadians. That is, similar to studies on equitable use of CHC or PHC services, there appears to be unequal distribution of health care resources across health care systems associated with age, sex, socioeconomic status, race, and immigration status that is independent of health need.

What is interesting about these findings is that, to a large extent, social structural factors tend to show similar associations with patterns of dual- and tri-use as they do with exclusive use of CHC. This would seem to suggest that inequities in one type of care extend to other types of care and consequently, that one type of care (e.g., CAM) does not appear to compensate for the inadequacies of other forms of care (e.g., CHC). In other words, as the Fundamental Cause hypothesis suggests (Link & Phelan, 1995), those who benefit from one type of care are more likely to benefit from other types of care as well. This includes opportunities for multiple service use within and across health care systems, particularly among those individuals who are in better position to access these services. That is, if health needs are not being addressed in CHC—and we know from the present study that CHC is being used by individuals with comorbid and potentially complex care states— high SES individuals are better placed to access other services which may resolve existing health issues and/or detect new ones. The caveats are that (i) more health care is not necessarily better health care (Evans, 1997) and (ii) the efficacy of some CAM and PHC services has not been scientifically verified and both may pose more harm than benefit (Wahlberg, 2007). Overall, this points to the need for further study on medical pluralism rather than discrete use of health services and particularly of CHC in relation to CAM and PHC, in order to highlight inequities associated with use *across* health care systems.

The implications of the present findings also extend to future development of the medical pluralism paradigm and other variations of Cockerham's (2005) health lifestyle theory. This was the first time to my knowledge that this model has been used to frame an empirical analysis of health care utilization, although there has been indirect discussion around the theoretical merit of Cockerham's (2005) theory (see Link, Phelan, Miech, & Westin, 2008; Thoits, 2006). I adapted the model to examine medical pluralism as a specific type of health practice, as measured by visits to formal health care providers and use of preventive health services. This meant modifying the original model from a wellness-based model where health practices are defined broadly (e.g., seatbelt use, tobacco use, exercise, blood pressure checks) to one in which only formal services are included, as in later life contact with health care providers is a common health practice. The next step would be to bring the modifiable health practices back into the paradigm in order to build a comprehensive profile of health care users that includes formal health care and lifestyle related practices.

In addition, including a measure of health products would also round out the range of health practices included in the medical pluralism paradigm and highlight pluralistic use across CHC and CAM. New research suggests that for a growing number of older adults the combined use of natural health products (i.e., CAM) and pharmaceuticals is a common health practice (Busfield, 2010). The degree of integration between pharmaceuticals and natural health products by industry suggests that there is a medicalization of natural health products taking place that is being felt at the consumer level (Baer, 2008; Crawford, 2006).

The relationship between 'aspirational health consumerism' and pluralistic use of health care while speculated upon in this study could also be addressed empirically in future research. The concept, borrowed from Scambler (2007) and integrated into the medical pluralism paradigm, holds promise for explaining the reflexive behaviour of individuals in the realm of health. It suggests that through socialization and lived experience individuals aspire to (agency) certain health behaviours and, depending upon one's social location (structure), health service use occurs. Knowing that in this study there were significant differences in terms of the social and health predictors of pluralistic service use, future research should thus consider whether there are distinct values and belief systems about health risk and responsibility that differentiate pluralistic users (about 60%) from monistic or non-health care users (about 40%).

To examine this, one strategy would be to incorporate measures of health beliefs into the medical pluralism paradigm in order to examine whether pluralistic service users perceive health risk differently. Hulka and Wheat (1985) suggest that the perception of being at greater risk of illness would be a useful variable to include when predicting preventive health service use. Early on, Jackson and Greenlick (1974) found that there were differences among health care uses related to perceived risk. They coined the term the ‘worried well’ to describe extensive service use by seemingly healthy individuals, suggesting that there was about 10 percent of the American population that used medical services despite being asymptomatic. More recently, McKinlay and Marceau (2002) speculate that Western society is experiencing yet another epidemiological transition, moving from an *age of delayed degenerative disease* (Olshansky & Ault, 1986) to an *age of globalized health threats*. In this context, health anxiety has reached new heights, as risk is no longer local but global, owing to threats of bioterrorism, pollution, the re-emergence of ‘old’ diseases (such as tuberculosis) and the spread of antibiotic-resistant viruses which have no boundaries. Health practices in the new *age of globalized health threats* require greater individual responsibility to control exposure through vaccinations and to be diligent about disease screening in order to prevent sickness and disease caused by these new environmental toxins and re-emergent viruses (Andreassen & Trondsen, 2010; Ekberg, 2007). By framing health risk as global, as suggested by McKinlay and Marceau (2002), and including a measure of health beliefs in future research, it would be possible to examine similarities between the 10 percent of ‘worried-well’ found by

Jackson and Greenlick (1974) and the approximately 10 percent of tri-users found in the present study.

In terms of understanding medical pluralism as it plays out across middle-age and later life, a longitudinal focus on care transitions and trajectories is also necessary. The interaction between the disablement process and medical pluralism is of interest, particularly given the finding that 'unhealthy' individuals are more likely to be pluralistic service users. Insight into service use over time would help clarify when (or if) pluralistic service begins. Is it at some point following diagnosis when individuals turn to use of health care outside of CHC? Alternatively, is it through dual- or tri- use of health services that the discourse of diagnosis is learned and embedded in health practices? It is entirely possible that following diagnosis late middle-aged and older people may gradually conceive of themselves as having expanded patient roles and responsibilities beyond those outlined in the CHC and as dictated by medical doctors. Thus, aspirational health care consumers may very well represent a modern day inversion of Parsons' sick role—that of a wellness role. Rather than responsibilities and roles being tied to social control of deviant behaviour (i.e., illness), following the diagnosis of disease, these late middle-aged and older adults are reified by capitalist values to consume health services and aspire to a maximum state of wellness and health. To refer back to Higgs (2009) and the medicalization of aging introduced earlier, with aging comes the social expectation—indeed, a neoliberal agenda—that older people can (and should) have 'the will to health'.

Also of interest is whether and how use of health information influences medical pluralism among late middle-aged and older persons. Sociologists note that the democratization of health information widely accessible on the Internet is related to growth of the reflexive self (Beck, 1992; Giddens, 1991; Lupton, 1994). Others see a growth in the so called 'DIY' [do it yourself] subject as a manifestation of increasing access to health information, particularly among young adults (Lewis, 2006). The relevance of the DIY subject in later life is largely unexplored and likely has direct links with aspirational health consumerism and medical pluralism, particularly given the finding that pluralistic users have one or more chronic illnesses. Pluralistic service users—although they are not called that in other studies—are often considered to be experts in their own health, capable of obtaining and interpreting health information about disease and treatment options (Frank & Stollberg, 2004; Kelner & Wellman, 1997; Spence & Ribeaux, 2004). However, this is not necessarily an option for people with lower levels of income and education (Bakx, 1991; Barker, 2008; Lupton, 1997).

The medical pluralism paradigm could also be adapted to include health care provider characteristics. Kelner (2000) remarks that the therapeutic relationship between CAM providers and patients is qualitatively different from provider-patient relationships in other health models. Others note that there may be different levels of trust implicit in the therapeutic relationship that influences patient behaviour (McKinlay & Marceau, 2002). Provider characteristics may also garner insight into opportunities for medical pluralism, particularly as it pertains to age and gender. For instance, a recent study of physicians' attitudes toward cancer screening in older women found that female doctors were far more likely to ‘overscreen’ while male physicians were more likely to ‘underscreen’ (Heflin, Pollack, Kuchibhatla, Branch, & Oddone, 2006).

In addition, including provider characteristics in the medical pluralism paradigm may help to explain findings indicating that the population of the west coast of Canada and particularly of British Columbia, have health service patterns that are more diverse in terms of number and types of services than is evident in most other provinces. These findings are similar to those reported by others who refer to a West Coast Culture’ related to CAM use; along the west coast of Canada and the United States, there is a greater tendency for people to use CAM and for CHC providers to recommend CAM services to their patients (Astin, 1998; Hirschkorn et al., 2009; Millar, 2001; Park, 2005; Verhoef & Sutherland, 1995). It may also be that the relationship between medical pluralism and region is less about ‘distance to resources’ (Cummins et al., 2007) and more about the providers embedded within the broader health care system(s) coupled with individual social and health characteristics of the populations living in different regions.

Lastly, further examination of the referral process that takes place among providers across health care systems would help revise the way that the health care systems are presented in the paradigm. Presently, the health care systems are illustrated as equally overlapping circles, much like a Venn diagram (see Figure 1). A more realistic picture of medical pluralism based on what was learned here (given that the most common pattern across all samples was dual use of CHC and PHC but not CAM) is that the three circles representing each of the three health care systems do not overlap equally, as currently depicted. In the revised diagram, the CHC and PHC circles would overlap and the CAM circle would be somewhat isolated from both to represent the lack of dual service use taking place between CHC and CAM, or CAM and PHC.

Further theorizing would map how these systems are related from the policy, provider and patient perspectives and work toward refining the current definition and classification of a ‘medical system’. A question posed by Press (1980) is whether a medical system can be (or should be) defined as one system with various subsystems within, because by definition a system is composed of inter-related parts that function as a whole. From a policy and provider perspective, however, the way that health care is currently structured is that the three health care ‘systems’ are neither inter-related nor functioning as a whole. Clearly, there is not a level playing field for CAM providers, as CHC and PHC practitioners have the advantage of providing care that fits within the biomedical paradigm; a health paradigm that is socially constructed in North American culture to be the model for health care delivery. Yet, from a patient perspective, for about 60 percent of late middle-aged and older Canadians, service integration is occurring on some level, across two and sometimes three health care systems. For these patients, health care is likely serving as a whole and complete ‘system’.

In addition to advancing the theoretical and research bodies of knowledge regarding health services utilization within and outside of sociology, these results also have important implications for health policy and practice. To begin with, the finding that health service utilization is associated with both age and gender suggests that there are some inequities related to health service access for older men and women. For instance, the finding that women have more diverse types of health service patterns overall could reflect over-servicing on the one hand, and thus suggests a need to understand the disease screening process among women from a medicalization perspective.

The prevention paradox—arguably a manifestation of medicalization—is a problem encountered when government implements large-scale interventions to improve health, such as universal breast or cervical cancer screening programs (Armstrong, 1995; Rutten & Bonsel, 1992). Although such programs are designed to save health care dollars in the long run by detecting health problems early, critics question the amount of dollars being spent in the short term on detecting potentially benign health outcomes and how this translates into service intensity for patients. On the other hand, the finding that women use more services across health care systems may reflect inappropriate or inadequate servicing among women, assuming that they continue to seek help for problems that are not being adequately attended to by providers in each health care system. A better understanding of the reasons for provider visits would inform health policy about the degree of service overlap or substitution, as it pertains to illness or wellness care.

Alternatively, whether (and the extent to which) men are being under-serviced in health care, as the present findings suggest, is also worth exploring further using a longitudinal design. It is quite possible that as baby boomers age and if current trends persist, medical pluralism may lead to a levelling of gender differences in discretionary health service use. The growth in awareness of and treatment for sex-specific diseases has the potential to medicalize the male aging experience in much the same way it has for females. Calasanti and King (2005) propose that men who are aging today have a very different experience than their fathers and grandfathers did, as the contemporary expectation is that men need to consume health services and products to compensate for age-related declines in function and health. For instance, since 2003, in Canada, a public health campaign called 'Mo-vember[20]' requires that all participating men grow moustaches for the month of November to raise awareness about men's health, particularly prostate health and the importance of PSA testing. The men's health campaign has almost reached cult status, with a profile comparable to that of the 'think pink' breast cancer campaign.

Despite the difficulties in differentiating what is necessary from excessive health care utilization (Hulka & Wheat, 1985), it is clear that even after controlling for gender differences in health care use that there is an age bias. The age bias is evident in findings indicating that service use decreases across all health care systems, but particularly for PHC and CAM services. On the one hand, this decreased service use may reflect a survivor effect in that there remain older healthy people in the community with little need to use discretionary health services. Yet, quite likely the age bias reflects the tendency within medical and public health care systems to promote and recommend less targeted efforts to screen women and men over the age of seventy (Balducci, 2006). To avoid age discrimination in the allocation of preventive health care resources among older people,

[20] See http://ca.movember.com. Accessed on August 17, 2010.

health care policy makers and providers should broaden the age criteria for disease screening and leave it up to the discretion of the individual whether to comply with recommended treatments. Consideration should also be given to research, however, that indicates some diagnostic screening services may be less beneficial and perhaps more harmful in later life (Bancej et al., 2005; Shensen et al., 2007).

The finding that there is a socioeconomic gradient *across* health care systems suggests that the same inequalities that influence service use *within* health care systems persist in the 'new medical pluralism'. It is not entirely clear, however, whether the association between income and medical pluralism is due to financial barriers related to service access, as this study did not include a measure of insurance status. However, Link and McKinlay (2010), referring specifically to health care in the American context, suggest that growing disparity in health and access to services has less to do with income than with insurance status. They note that the under-insured are worse off than the un-insured because the latter are caught in government safety nets whereas the former are not.

With health care reform in Canada increasingly mirroring the interests of privatization to the south, this is a growing concern. As more baby boomers retire and more self-employed contract workers without employee sponsored benefits leave the paid workforce, we may see a rise in the number of under-insured in Canada. In Canada, coverage for CHC and most PHC services is universal whereas CAM services tend to be covered by employee plans or government subsidized plans for the poor. Older adults are likely to be retired and therefore, tend not to benefit from employment-based plans. This suggests that some older adults are more likely to be under-insured than others. To prevent further disparity in access to CAM and preventive health services, health policy makers should look at ways to close the gap in coverage, either by increasing eligibility criteria in means-tested services or evaluating whether more CAM and PHC services should be included as ‘essential services’ and included as insured benefits under Medicare.

In addition, the finding that there is inequitable access across health care systems for immigrants in general but recent immigrants (<20 years in Canada) in particular speaks to the need for health policy to educate new immigrants about the types of health care services offered under Medicare so that they may make an informed decision about what type of health care to choose and when. Yet, it also means that health policy makers should consider ways to accommodate different cultural perceptions of what constitutes ‘conventional’ health care. For instance, a non-native born individual may consider Traditional Chinese Medicine (TCM) to be a conventional response to an illness episode. However, given the way our health care system is currently structured, that individual is penalized (i.e., must pay out of pocket for the service) because TCM is not deemed an appropriate health care response covered under Medicare. Given that the profile of Canadian immigrants is changing from a predominately White Anglo-Saxon to South Asian and Asian composition (Lai & Surood, 2010), it is important to explore further the relationship between ethnicity, race and medical pluralism, to prepare for future challenges that an increasingly diverse population may create for the health care system, its providers, and users.

Regional differences in the use of PHC services also suggest a need to evaluate provincial influenza and screening programs. The finding that the probability of tri-use (and therefore PHC use) is much higher in British Columbia than other provinces indicates that the PHC system in British Columbia is operating at a different level than it is elsewhere in Canada. This may be due to the fact that British Columbia has the longest-standing breast cancer screening program in the country. If this is the case, other provincial governments may wish to look at BC as an example and aim to replicate those programs in their own provinces. However, there are those that advise against universal screening programs. Other things could be happening as well in BC that could explain the PHC service differential; for instance, there could be a greater uptake of flu shots by BC residents than elsewhere in the country, owing to widespread flu campaigns and increased accessibility to flu clinics. However, this is not likely the case, given that Ontario and Quebec have universal flu shot programs for all ages, whereas in BC there is some fee-for-service involved for flu shots under the age of 65. Furthermore, regional differences in CAM use may also point to differences in coverage from employee and/or provincially sponsored health insurance plans. Revisiting health care reforms to provincial supplementary health service benefits (e.g., chiropractors, acupuncturists and massage therapists) may reveal growing gaps in access to these services, particularly for the under-insured.

6.5: Conclusions

The present study offers one of the few empirical sociological examinations of medical pluralism to date. It used a medical pluralist lens to examine the number and form of health service patterns evident across conventional, complementary and public health care systems, given evidence of rising use in each of the three health care systems, particularly among late middle-aged and older cohorts. A pluralist lens afforded a view of health care utilization not normally visible using traditional or normative approaches. Consequently, this study reorients the body of research on health care utilization that has arguably been fixed to a normative perspective and medical bias by expanding the lens from discrete use within one health care system to use *within* and *across* three health care systems. In doing so, this study was able to contribute new information about patterns of integrated service use and the profiles of their users.

By using two different approaches to operationalize medical pluralism, this study also showed that a methodological shift from a variable oriented (deductive) approach to a person centred (inductive) one can elucidate the complexity inherent in medical pluralism. Consequently, this study was able to show that discretionary health care use among Canadians aged fifty and older is much more complex than just ‘going to the doctor’, as evident by the distinct number and form of patterns that differed depending upon the types of services being examined. Furthermore, social and health hypotheses were examined on two sets of health care patterns using the same pooled data. Pooling two consecutive survey cycles made it possible to increase sample size and therefore improve statistical power significantly.

What was learned is that despite variation in the number of health care patterns and types of services used, for the majority of Canadians, the ‘new medical pluralism’ (as theorized by some) is not at all ‘new’. Rather, medical dominance persists. Most users of discretionary health services in this study visited medical doctors and specialists, often in conjunction with use of public health care services, such as influenza vaccinations and cancer screening. Almost no one visited chiropractors or other CAM providers exclusively or used only PHC services in a given year. The observation that late middle-aged Canadians are more likely to be pluralistic service users than those who are older, does suggest that as these baby boomers age there is potential for change at the patient-provider level, as these consumers continue to integrate services across systems. However, without longitudinal (age-period-cohort) analysis, the prediction that these 'aspirational health care consumers' will continue to exhibit the same health care patterns as age increases and health declines is merely speculation. Thus, from a policy and practice perspective, greater transparency in the referral process is necessary to avoid unnecessary service duplication and inappropriate treatment. It would also improve our understanding of what constitutes a health care 'system' and the degree to which services are or are not integrated.

What was also learned is that inequities in access to conventional health care services related to age, gender, socioeconomic status, race, and immigration status also exist when service use is examined across complementary and preventive health care systems. These inequities are occurring independent of health need. In fact, the finding that chronic illness and disability are associated with a greater likelihood of service use across conventional, complementary and public health care systems and poor perceived health does not warrants further examination. In this context, health need factors, as traditionally defined, do not appear to be tied to notions of illness but instead, signal a refocusing around health consciousness within broader definitions of health and individual responsibility. Thus, understanding how illness and wellness care influence medical pluralism should be seen as a pressing research and health policy issue, in light of population aging and the projected illness burden on society in the near future.

References

Abel, T. (1991). Measuring health lifestyles in a comparative analysis: Theoretical issues and empirical findings. *Social Science & Medicine, 32*(8), 899-908.

Acheson, R., M. (1990). The medicalization of public health; the United Kingdom and the United States contrasted. *Journal of Public Health Medicine, 12*(1), 31-38.

Allan, D. E., Funk, L., M., R. Colin, R., & Cloutier-Fisher, D. (2011). Exploring the influence of income and geography on access to services for older adults in British Columbia: A multivariate analysis using the Canadian community health survey (cycle 3.1). *Canadian Journal on Aging, 30*(1), 69-82.

Allin, S. (2008). Does equity in healthcare use vary across Canadian provinces? *Healthcare Policy, 3*(4), 83-99.

Allison, P., D. (1999). *Multiple regression: A primer*. Thousand Oaks, CA: Pine Forge Press.

Andersen, R. M. (1995). Revisiting the behavioural model and access to medical care: Does it matter? *Journal of Health and Social Behaviour, 36*(1), 1-10.

Andersen, R. M., & Newman, J. F. (1973). Societal and individual determinants of medical care utilization in the United States. *Milbank Quarterly, 51*(1), 95-124.

Andreassen, H. K., & Trondsen, M. (2010). The empowered patient and the sociologist. *Social Theory and Health, 8*(3), 280-287.

Arber, S. (1997). Comparing inequalities in women's and men's health: Britain in the 1990s. *Social Science and Medicine, 44*(6), 773-787.

Arber, S., & Cooper, H. (1999). Gender differences in health in later life: The new paradox? *Social Science and Medicine, 48*, 61-76.

Archer, M., S. (1995). *Realist social theory: The morphogenetic approach.* New York: NY.: Cambridge University Press.

Arcury, T. A., Grzywacz, J. G., Bell, R. A., Neiberg, R. H., Lang, W., & Quandt, S. A. (2007). Herbal remedy use as health self-management among older adults. *Journal of Gerontology, 62B*(2), S142-S149.

Arcury, T. A., Quandt, S. A., & Bell, R. A. (2001). Staying healthy: The salience and meaning of health maintenance behaviors among rural older adults in North Carolina. *Social Science and Medicine, 53*, 1541-1556.

Arminger, G., Clogg, C. C., & Sobel, M. E. (1995). In Arminger G., Clogg C. C. and Sobel M. E. (Eds.), *Handbook of statistical modelling for the social and behavioral sciences*. New York: NY: Plenum Press.

Armstrong, D. (1995). The rise of surveillance medicine. *Sociology of Health & Illness, 17*(3), 393-404.

Asada, Y., & Kephart, G. (2007). Equity in health services use and intensity of use in Canada. *BMC Health Services Research, 7*, 41-48.

Astin, J. A. (1998). Why patients use alternative medicine: Results of a national study. *Journal of American Medical Association, 279*(19), 1548-1553.

Astin, J. A., Pelletier, K. R., Marie, A., & Haskell, W. L. (2000). Complementary and alternative medicine use among elderly persons: One-year analysis of a blue shield Medicare supplement. *Journal of Gerontology, 55A*(1), M4-M9.

Baer, H. A. (2008). The Australian dominative medical system: A reflection of social relations in the larger society. *The Australian Journal of Anthropology, 19*(3), 252-271.

Baer, H. A., Hays, J., McClendon, N., McGoldrick, N., & Vespucci, R. (1998). The holistic health movement in the San Francisco bay area: Some preliminary observations. *Social Science & Medicine, 47*(10), 1495-1501.

Bakx, K. (1991). The 'eclipse' of folk medicine in western society. *Sociology of Health and Illness, 13*(1), 20-38.

Balducci, L. (2006). Cancer in the older person. *Generations,* , 45-51.

Ballard, K., & Elston, M. A. (2005). Medicalisation: A multi-dimensional concept. *Social Theory and Health, 3*(4), 43-63.

Bancej, C. M., Maxwell, C. J., Onysko, J., & Eliasziw, M. (2005). Mammography utilization in Canadian women aged 50 to 69. *Canadian Journal of Public Health, 96*(5), 364-340.

Barker, K. K. (2008). Electronic support groups, patient-consumers, and medicalization: The case of contested illness. *Journal of Health and Social Behaviour, 49*, 20-36.

Barnes, P. M., Powell-Griner, E., McFann, K., & Nahin, R. L. (2004). Complementary and alternative medicine use among adults: United States, 2002. *Seminars in Integrative Medicine*, *2*(2), 54-71.

Bartholomew, D. J. (1987). *Latent variable models and factor analysis.* New York, NY: Oxford University Press.

Bates, D. G. (2002). Why not call modern medicine "alternative"? *Annals of the American Academy of Political and Social Science, 583*, 12-28.

Bauman, Z. (2001). *Liquid modernity and dilemmas of development.* Cambridge, UK.: Polity Press Inc.

Beck, U. (1992). *Risk society: Towards new modernity.* London: Sage Publications.

Becker, H. S. (1961). *Boys in white: Student culture in medicine.* NewJersey, NJ: Transaction Publishers.

Becker, M. H. (Ed.). (1974). *The health belief model and personal health behaviour*. Thorofare, N.J.: Charles B. Slack.

Beland, Y., Dufour, J., & Hamel, M. (2001). Preventing non-response in the Canadian Community Health Survey. *Proceedings of Statistics Canada's Symposium, ,* 1-8.

Benyamini, Y., Leventhal, E. A., & Leventhal, H. (2003). Elderly people's ratings of the importance of health-related factors to their self-assessments of health. *Social Science and Medicine, 56*, 1661-1667.

Berry, W. D., & Feldman, S. (1985). *Multiple regression in practice*. Newbury Park, CA: Sage Publications.

Bishop, F. L., & Lewith, G. T. (2008). Who uses CAM? A narrative review of demographic characteristics and health factors associated with CAM use. *Ecam, March*, 1-18.

Blackwell, D. L., Martinez, M. E., Gentleman, J. F., Sanmartin, C., & Berthelot, J. (2009). Socioeconomic status and utilization of health care services in Canada and the United States findings from a binational health survey. *Medical Care, 47*(11), 1136-1146.

Blaum, C. S., Liang, J., & Liu, X. (1994). The relationship of chronic diseases and health-status to the health-services utilization of older Americans. *Journal of the American Geriatrics Society, 42*(10), 1087-1093.

Bloom, G., Standing, H., & Lloyd, R. (2008). Markets, information asymmetry and health care: Towards new social contracts. *Social Science and Medicine, 66*(10), 2076-2087.

Bloom, S. W. (2002). *The word as scalpel. A history of medical sociology.* New York, NY: Oxford University Press.

Bloom, J. R., Stewart, S. L., Koo, J., & Hiatt, R. A. (2001). Cancer screening in public health clinics - the importance of clinic utilization. *Medical Care, 39*(12), 1345-1351.

Bolen, J., Adams, M., & Douglas, S. (2007). Routine preventive services for older women: A composite measure highlights gaps in delivery. *Journal of Women's Health, 16*(5), 583-592.

Boon, H. S., Verhoef, M. J., Vanderheyden, L. C., & Westlake, K. P. (2006). Complementary and alternative medicine: A rising healthcare issue. *Healthcare Policy, 1*(3), 19-30.

Boorah, V. K. (2001). *Logit and probit: Ordered and multinomial models.* Thousand Oaks, CA: Sage Publications.

Borrayo, E. A., Salmon, J. R., Polivka, L., & Dunlop, B. D. (2002). Utilization across the continuum of long-term care services. *Gerontologist, 42*(5), 603-612.

Broom, A., Doron, A., & Tovey, P. (2009). The inequalities of medical pluralism: Hierarchies of health, the politics of tradition and the economies of care in Indian oncology. *Social Science & Medicine, 69*(5), 698-706.

Brown, P., Zavestoski, S., Sabrina, M., Mayer, B., Morello-Frosch, R., & Gasior Altman, R. (2004). Embodied health movements: New approaches to social movements in health. *Sociology of Health and Illness, 26*(1), 55-80.

Busfield, J. (2010). 'A pill for every ill': Explaining the expansion in medicine use. *Social Science & Medicine,* , 934-941.

Calasanti, T., & King, N. (2005). Firming the floppy penis; age, class and gender relations in the lives of old men. *Men and Masculinities, 8*(1), 3-23.

Calnan, M., Montaner, D., & Horne, R. (2005). How acceptable are innovative health-care technologies? A survey of public beliefs and attitudes in England and Wales. *Social Science and Medicine, 60*, 1937-1948.

Canada Public Health Agency. (2005). *Disease prevention and control guidelines.* Retrieved March/27, 2009, from http://www.phac-aspc.gc.ca/dpg-eng.php#cancer

Cant, S., & Sharma, U. (1999). *A new medical pluralism: Alternative medicine, doctors, patients, and the state.* Boston, MA: Taylor & Francis.

Cardona, B. (2007). 'Anti-aging' medicine and the cultural context of aging in Australia. *Annals of the New York Academy of Sciences, 1114*(1), 216-229.

Cecile, M. T., van Wijk, G., Huisman, H., & Kolk, A. M. (1999). Gender differences in physical symptoms and illness behavior:A health diary study. *Social Science and Medicine, 49*(8), 1061-1074.

Cecile, M. T., van Wijk, G., & Kolk, A. M. (1997). Sex differences in physical symptoms: The contribution of symptom perception theory. *Social Science & Medicine, 45*(2), 231-246. doi:DOI: 10.1016/S0277-9536(96)00340-1

Chan, T. W., & Goldthorpe, J. H. (2007). Social stratification and cultural consumption: Music in England. *European Sociological Review, 23*(1), 1-19.

Chappell, N. L., & Blandford, A. A. (1987). Health service utilization by elderly persons. *The Canadian Journal of Sociology / Cahiers Canadiens De Sociologie, 12*(3), 195-215.

Chen, J., Wilkens, R., & Ng, E. (1996). Life expectancy of Canada's immigrants from 1986 to 1991. *Health Reports, 8*(3), 29-38.

Cheung, C. K., Wyman, J. F., & Halcon, L. L. (2007). Use of complementary and alternative therapies in community-dwelling older adults. *Journal of Alternative and Complementary Medicine, 13*(9), 997-1006.

Chi, M., Wu, S., Chan, D., & Lee, C. (2009). Social determinants of emergency utilization associated with patterns of care. *Health Policy, 93*(2-3), 137-142.

Clarke, A. E., Shim, J., K., Mamo, L., Fosket, J. R., & Fishman, J., R. (2003). Biomedicalization: Technoscientific transformations of health, illness, and US biomedicine. *American Sociological Review, 68*(2), 161-194.

Clarke, J. N., Arnold, S., Everest, M., & Whitfield, K. (2007). The pardoxical reliance on allopathic medicine and positivist science among sceptical audiences. *Social Science and Medicine, 64*, 164-173.

Clogg, C. C. (1995). Latent class models. In G. Arminger, C. C. Clogg & M. E. Sobel (Eds.), *Handbook of statistical modelling for the social and behaviorial sciences* (pp. 311-359). New York: Plenum.

Coburn, D. (2004). Beyond the income inequality hypothesis: Class, neo-liberalism and health inequalities. *Social Science and Medicine*, *58*, 41-56.

Coburn, D. (2006). Medical dominance then and now: Critical reflections. *Health Sociology Review, 15*(5), 432-444.

Coburn, D., & Biggs, L. A. (1986). Limits to medical dominance: The case of chiropractic. *Social Science & Medicine, 22*(10), 1035-1046.

Cockerham, W. C. (2000). Health lifestyles in Russia. *Social Science & Medicine, 51*(9), 1313-1324.

Cockerham, W. C. (2005). Health lifestyle theory and the convergence of agency and structure. *Journal of Health and Social Behavior*, *46*(March), 51-67.

Cockerham, W. C., Hinote, B. P., Cockerham, G. B., & Abbott, P. (2006). Health lifestyles and political ideology in Belarus, Russia, and Ukraine. *Social Science & Medicine*, *62*(7), 1799-1809.

Cockerham, W. C., Kunz, G., Guenther, L., & Spaeth, J. L. (1986). Symptoms, social stratification, and self-responsibility for health in the United States and West Germany. *Social Science and Medicine, 22*(11), 1263-1271.

Cockerham, W. C., Rutten, A., & Abel, T. (1997). Conceptualizing contemporary health lifestyles: Moving beyond Weber. *The Sociological Quarterly*, *38*(2), 321-342.

Cohen, J. (1983). The costs of dichotomization. *Applied Psychological Measurement, 7*, 249-253.

Conrad, P. (1975). The discovery of hyperkinesis: Notes on the medicalization of deviant behavior. *Social Problems, 23*, 12-21.

Conrad, P. (2005). The shifting engines of medicalization. *Journal of Health and Social Behavior, 46*(March), 3-14.

Conrad, P. (2007). *The medicalization of society: On the transformation of the human condition into treatable disorders.* Baltimore, MD: John Hopkins University Press.

Cooper, R. A., & McKee, H. J. (2003). Chiropractic in the United States: Trends and issues. *Milbank Quarterly, 81*, 107-138.

Crabb, R., & Hunsley, J. (2011). Age-related patterns in mental health-related complementary and alternative medicine utilization in Canada. *International Psychogeriatrics*, *23*(3), 459-471.

Crawford, R. (1980). Healthism and the medicalization of everyday life. *International Journal of Health Services, 10*(3), 365-388.

Crawford, R. (2004). Risk ritual and the management of control and anxiety in medical culture. *Health: An Interdisciplinary Journal for the Social Study of Health, Illness and Medicine, 8*(4), 505-528.

Crawford, R. (2006). Health as a meaningful social practice. *Health: An Interdisciplinary Journal for the Social Study of Health, Illness and Medicine, 10*(4), 401-420.

Cummings, S., Curtis, S., Diez-Roux, A., V., & Macintyre, S. (2007). Understanding and representing 'place' in health research: A relational approach. *Social Science and Medicine, 65*, 1825-1838.

Curtis, L. J., & MacMinn, W. J. (2008). Health care utilization in Canada: Twenty-five years of evidence. *Canadian Public Policy-Analyse De Politiques, 34*(1), 65-87.

Dannefer, D. (2003). Cumulative Advantage/disadvantage and the life course: Cross-fertilizing age and social science theory. *The Journals of Gerontology: Series B, 58B*(6), S327-S337.

Deeg, D. J. H., Portrait, F., & Lindeboom, M. (2002). Health profiles and profile-specific health expectancies of older women and men: The Netherlands. *Journal of Women & Aging, 14*(1-2), 27-46.

Denton, M., Prus, S., & Walters, V. (2004). Gender differences in health: A Canadian study of the psychosocial, structural and behavioural determinants of health. *Social Science & Medicine, 58*(12), 2585-2600.

Downey, L., Tyree, P. T., & Lafferty, W. E. (2009). Preventive screening of women who use complementary and alternative medicine providers. *Journal of Women's Health (15409996), 18*(8), 1133-1143.

Druss, B. G., & Rosenheck, R. A. (1999). Association between use of unconventional therapies and conventional medical services. *Journal of American Medical Association, 282*(7), 651-656.

du Plessis, V., Beshiri, R. D., Bollman, R. D., & Clemenson, H. (2001). *Definitions of rural. rural and small town analysis bulletin. catalogue no. 21-006-XIE, statistics canada.* No. 3(13). Ottawa, Ont.: Statistics Canada.

Duncan, G. J., & Smith, K. R. (1989). The rising affluence of the elderly: How far, how fair, and how frail? *Annual Review of Sociology, 15*, 261-289.

Dunlop, S., Coyte, P. C., & McIsaac, W. (2000). Socio-economic status and the utilisation of physician's services: Results from the Canadian National Population Health Survey. *Social Science & Medicine, 51*, 123-133.

Dunn, J. R., & Dyck, I. (2000). Social determinants of health in Canada’s immigrant population: Results from the National Population Health Survey. *Social Science & Medicine*, *51*(11), 1573-1593.

Edwards, N., I., & Jones, D., A. (2000). Breast cancer screening uptake in older women. *Age and Ageing, 29*, 131-135.

Egede, L. E., Zheng, D., Ye, X., & Silverstein, M. D. (2002). The prevalence and pattern of complementary and alternative medicine use in individuals with diabetes. *Diabetes Care*, *25*(2), 324-329.

Eisenberg, D. M., Davis, R. B., Ettner, S. L., Appel, S., Wilkey, S., Van Rompay, M., & Kessler, R. C. (1998). Trends in alternative medicine use in the United States, 1990-1997: Results of a follow-up national survey. *Journal of American Medical Association, 280*(18), 1569-1575.

Ekberg, M. (2007). The parameters of the risk society. *Current Sociology, 55*(3), 343-366.

Elliot, A. (2002). Beck's sociology of risk: A critical assessment. *Sociology, 36*(2), 293-315.

Emirbayer, M., & Mische, A. (1998). What is agency? *American Journal of Sociology, 103*(4), 962-1023.

Esmail, N. (2007). *Complementary and alternative medicine in Canada: Trends in use and public attitudes, 1997-2006.* No. 87).The Fraser Institute: Public Policy Sources.

Estes, C. L., Biggs, S., & Phillipson, C. (2003). *Social theory, social policy and ageing.* Maidenhead, England: Open University Press.

Estes, C. L., & Binney, E. A. (1989). The biomedicalization of aging: Dangers and dilemma. *The Gerontologist, 29*(5), 587-596.

Evans, R. G. (1997). Going for the gold: Redistributive agenda behind market-based health care reform. *Journal of Health Politics, Policy and Law*, *22*(2), 428-465.

Evans, R. G., & Stoddart, G. L. (1990). Producing health and consuming health care. *Social Science and Medicine, 31*(12), 1347-1363.

Finlayson, M., Lix, L., Finlayson, G. S., & Fong, T. (2005). Trends in the utilization of specific health care services among older Manitobans: 1985 to 2000. *Canadian Journal on Aging-Revue Canadienne Du Vieillissement, 24*, 15-27.

Forde, O. H. (1998). Is imposing risk awareness cultural imperialism? *Social Science and Medicine, 47*(9), 1155-1159.

Foster, D. F., Phillips, R. S., Hamel, M. B., & Eisenberg, D. M. (2000). Alternative medicine use in older Americans. *Journal of American Geriatrics Society, 48,* 1560-1565.

Fox, N. J., Ward, K. J., & O'Rourke, A. J. (2005). The 'expert patient': Empowerment or medical dominance? the case of weight loss, pharmaceutical drugs, and the internet. *Social Science and Medicine, 60*, 1299-1309.

Frank, A., W. (2002). What's wrong with medical consumerism. In S. Hendersen, & A. Petersen (Eds.), *Consuming health: The commodification of health care.* (pp. 13-30). London, UK: Routledge.

Frank, R., & Stollberg, G. (2004). Medical acupuncture in Germany: Patterns of consumerism among physicians and patients. *Sociology of Health & Illness, 26*(3), 351-372.

Freeborn, D. K., Pope, C. R., Mullooly, J. P., & Bentson H. McFarland. (1990). Consistently high users of medical care among the elderly. *Medical Care, 28*(6), 527-540.

Freeman, H. E., & Reeder, L. G. (1957). Medical sociology: A review of the literature. *American Sociological Review, 22*(1), 73-81.

Fried, L., P., Ferrucci, L., Darer, J., Williamson, J., D., & Andersen, G. (2004). Untangling the concepts of disability, frailty, and comorbidity: Implications for improved targeting and care. *Journal of Gerontology: Medical Sciences, 59*(3), 255-263.

Friedson, E. (1970). *Profession of medicine*. New York: Dodd, Mead.

Fries, J. F. (2001). Aging, cumulative disability and compression of morbidity. *Complementary Therapies in Medicine, 27*(4), 322-329.

Fries, J. F. (2005). The compression of morbidity. *The Milbank Quarterly, 83*(4, The Milbank Memorial Fund Centennial: Selected Articles from the "Milbank Quarterly"), 801-823.

Frohock, F. M. (2002). Moving lines and variable criteria: Differences/connections between allopathic and alternative medicine. *American Academy of Political and Social Science*, *583,* 214-232.

Fuchs, V. R., & Zeckhauser, R. (1987). Valuing health: A 'priceless' commodity. *American Economic Review*, *77*, 263-268.

Fulder, S. J., & Munro, R. E. (1985). Complementary medicine in the United Kingdom: Patients, practitioners, and consultations. *Lancet, 2*(8454), 542.

Furnham, A. (2000). How the public classify complementary medicine; A factor analytic study. *Complementary Therapies in Medicine, 8*, 82-87.

Furr, M., R., & Funder, D., C. (2004). Situational similarity and behavioural consistency: Subjective, objective, variable-centred, and person-centred approaches. *Journal of Research in Personality, 38*, 421-447.

Gallagher, E. B., & Sionean, K. C. (2004). Where medicalization boulevard meets commercialization alley. *Journal of Policy Studies, 16*, 53-62.

Galobardes, B., Shaw, M., Lawlor, D. A., Davey Smith, G., & Lynch, J. W. (2006). Indicators of socioeconomic position. In M. J. Oakes, & J. Kaufman S. (Eds.), *Methods in social epidemiology* (pp. 47-85). San Francisco, CA: Jossey-Bass.

Gardiner, P., Graham, R., Legedza, A. T. R., Ahn, A. C., Eisenberg, D. M., & Phillips, R. S. (2007). Factors associated with herbal therapy use by adults in the United States. *Alternative Therapies, 13*(2), 22-29.

Gee, E., & Gutman, G. (Eds.). (2000). *Overselling of population aging: Apocalyptic demography, intergenerational challenges and social policy*. Don Mills, Ontario: Oxford University Press.

Gee, E., Kobayashi, K. M., & Prus, S. (2003).
Examining the “Healthy immigrant effect” in later life: Findings from the Canadian CommunityHealth Survey. *SEDAP Research Paper 98. McMaster University., 98*

Giarelli, G. (2004). Convergence or divergence: A multidimensional approach to healthcare reforms. *International Review of Sociology, 14*(2), 171-203.

Giddens, A. (1991). *Modernity and self-identity.* Cambridge: Polity Press.

Gilleard, C., & Higgs, P. (2002). The third age: Class, cohort or generation? *Ageing and Society, 22,* 369-382.

Gold, M. (1977). A crisis of identity: The case of medical sociology. *Journal of Health and Social Behavior, 18,* 16-68.

Goldstein, M. S. (2002). The emerging socioeconomic and political support for alternative medicine in the United States. *The Annals of the American Academy, 583,* 44-63.

Goldstein, M. S. (2004). The persistence and resurgence of medical pluralism. *Journal of Health Politics, Policy and Law, 29*(4-5), 925-945.

Goodman, L. A. (1974). Exploratory latent structure analysis using both identifiable and unidentifiable models. *Biometrika, 61,* 215-231.

Granovetter, M., S. (1973). The strength of weak ties. *American Journal of Sociology, 78*(6), 1360-1380.

Green, T. C., Kershaw, T., Lin, H., Heimer, R., & Goulet, J. L. (2010). Patterns of drug use and abuse among aging adults with and without HIV: A latent class analysis of a US veteran cohort. *Drug and Alcohol Dependence, 110,* 208-220.

Green, C. A., & Pope, C. R. (1999). Gender, psychosocial factors and the use of medical services: A longitudinal analysis. *Social Science & Medicine, 48*(10), 1363-1372.

Grzywacz, J. G., Suerken, C. K., & Neiberg, R. H. (2007). Age, ethnicity, and use of complementary and alternative medicine in health self-management. *Journal of Health and Social Behavior, 48*(March), 84-98.

Hagenaars, J., A. (1988). Latent structure models with direct effects between indicators: Local dependence models. *Sociological Methods and Research, 16,* 379-406.

Halseth, G. (2003). Attracting growth 'back' to an amenity rich fringe: Rural-urban fringe dynamics around metropolitan Vancouver, Canada. *Canadian Journal of Regional Science, XXVI*(2/3), 297-318.

Han, G. (2002). The myth of medical pluralism: A critical realist perspective. *Sociological Research Online, 6*(4)

Haug, M. (1988). A reexamination of the hypothesis of physician deprofessionalization. *Milbank Quarterly, 66*(2), 48-56.

Haug, M., & Lavin, B. (1991). *Consumerism in medicine: Challenging physician authority*. Beverly Hills, CA: Sage.

Health Canada, Population and Public Health. (2001). *The population health template: Key elements and actions that define a population health approach.*

Hebert, R., Raiche, M., Dubois, M., Gueye, N. R., Dobuc, N., Tousignant, M., & PRISMA Grp. (2010). Impact of PRISMA, a coordination-type integrated service delivery system for frail older people in Quebec (Canada): A quasi-experimental study. *Journals of Gerontology Series B-Psychological Sciences and Social Sciences*, *65*(1), 107-118.

Heflin, M., Pollack, K., Kuchibhatla, M., N., Branch, L., G., & Oddone, E., Z. (2006). The impact of health status on physicians' intentions to offer cancer screening for older women. *Journal of Gerontology: Medical Sciences, 61A*(8), 844-850.

Heinrich, S., Luppa, M., Matschinger, H., Angermeyer, M. C., Riedel-Heller, S. G., & Koenig, H. (2008). Service utilization and health-care costs in the advanced elderly. *Value in Health, 11*(4), 611-620.

Hendersen, S., & Petersen, A. (Eds.). (2002). *Consuming health: The commodification of health care.* New York, NY: Routledge.

Henwood, F., Wyatt, S., Hart, A., & Smith, J. (2003). 'Ignorance is bliss sometimes': Constraints on the emergence of the 'informed patient' the changing landscapes of health information. *Sociology of Health and Illness, 25*(6), 589-607.

Herd, P., Goesling, B., & House, J. S. (2007). Socioeconomic position and health: The differential effects of education versus income on the onset versus progression of health problems. *Journal of Health and Social Behavior, 48*(3), 223-238.

Higgs, P., & Gilleard, C. (2006). Departing the margins: Social class and later life in a second modernity. *Journal of Sociology, 42*(3), 219-241.

Higgs, P., Leontowitsch, M., Stevenson, F., & Jones, I. R. (2009). Not just old and sick - the 'will to health' in later life. *Ageing and Society, 29*, 687-707.

Hirschkorn, K. A., Andersen, R., & Bourgeault, I. L. (2009). Canadian family physicians and complementary and alternative medicine: The role of practice setting, medical training and province of practice. *Canadian Review of Sociology, 46*(2), 143-160.

Hong, S. (2010). Understanding patterns of service utilization among informal caregivers of community older adults. *The Gerontologist, 50*(1), 87-99.

Houle, L. G., Salmoni, A. W., Pong, R. W., Laflamme, S., & Viverais-Dresler, G. A. (2001). Predictors of family physician use among older residents of Ontario and an analysis of the Andersen-Newman behavior model. *Canadian Journal on Aging-Revue Canadienne Du Vieillissement, 20*(2), 233-249.

House, J. S., Lantz, P. M., & Herd, P. (2005). Continuity and change in the social stratification of aging and health over the life course: Evidence from a nationally representative longitudinal study from 1986 to 2001/2002 (Americans' Changing Lives Study). *Journals of Gerontology: Series B, 60B*(Special Issue II), 15-26.

Hsu, H., Lew-Ting, C., & Wu, S. (2001). Age, period, and cohort effects on the attitude toward supporting parents in Taiwan. *The Gerontologist, 41*(6), 742-750.

Hsu, E. (2008). Medical pluralism. In K. Heggenhougen (Ed.), *International encyclopedia of public health* (pp. 316-321). Oxford: Academic Press.

Huang, J., Weng, R., Lai, C., & Hu, J. (2008). Exploring medical utilization patterns of emergency department users. *Journal of Formosan Medical Association, 107*(2), 119-128.

Hughes, K. (2004). Health as individual responsibility: Possibilities and personal struggles. In P. Tovery, G. Easthope & J. Adams (Eds.), (pp. 25-48). London, UK: Routledge.

Hulka, B. S., & Wheat, J. R. (1985). Patterns of utilization: The patient perspective. *Medical Care*, *23*(5), 438-460.

Iecovich, E., & Carmel, S. (2009). Differences in accessibility, affordability, and availability (AAA) of medical specialists among three age-groups of elderly people in israel. *Journal of Aging and Health, 21*(5), 776-797.

Ipsos Reid. (2005). Natural health product use in Canada. *Health Reports*, *13*(2), 185-191.

Jackson, J. O., & Greenlick, M. R. (1974). The worried-well revisted. *Medical Care, 12*(8)

Johnson, R. J., & Wolinsky, F. D. (1993). The structure of health-status among older adults - disease, disability, functional limitation, and perceived health. *Journal of Health and Social Behavior, 34*(2), 105-121.

Joung, I. M. A., Van Der Meer,J. B. W., & Mackenbach, J. P. (1995). Marital status and health care utilization. *International Journal of Epidemiology, 24*(3), 569-575.

Jubas, K. (2007). Conceptual Con/fusion in democratic societies: Understandings and limitations of consumer-citizenship. *Journal of Consumer Culture, 7*(2), 231-254.

Jutel, A. (2009). Sociology of diagnosis: A preliminary review. *Sociology of Health and Illness, 31*(2), 278-299.

Kandrack, M., Grant, K. R., & Segall, A. (1991). Gender differences in health related behaviour: Some unanswered questions. *Social Science & Medicine, 32*(5), 579-590.

Kaplan, G. A., & Lynch, J. W. (1997). Whither studies on the socioeconomic foundations of population health? *American Journal of Public Health, 87*, 1409-1411.

Kaptchuk, T. J., & Eisenberg, D. M. (1998). Chiropractic - origins, controversies, and contributions. *Archives of Internal Medicine, 158*(20), 2215-2224.

Kaptchuk, T. J., & Eisenberg, D. M. (2001a). Varieties of healing. 1: Medical pluralism in the United States. *Academia and Clinic, 135*, 189-195.

Kaptchuk, T. J., & Eisenberg, D. M. (2001b). Varieties of healing. 2: A taxonomy of unconventional healing practices. *Academia and Clinic, 135*, 196-204.

Katz, S., & Marshall, B. (2003). New sex for old: Lifestyle, consumerism, and the ethics of aging well. *Journal of Aging Studies, 17*(1), 3-16.

Katz, S. J., Zemencuk, J. K., & Hofer, T. P. (2000). Breast cancer screening in the United States and Canada, 1994: Socioeconomic gradients persist. *American Journal of Public Health, 90*(5), 799-803.

Kelner, M., & Wellman, B. (1997). Health care and consumer choice: Medical and alternative therapies. *Social Science and Medicine, 45*(2), 203-212.

Kelner, M., Wellman, B., Pescosolido, B. A., & Saks, M. (Eds.). (2000). *Complementary and alternative medicine: Challenge and change.* Harwood Academic Publishers.

Kessler, R. C., Davis, R. B., Foster, D. F., Van Rompay, M., Walters, E. E., Wilkey, S., . . . Eisenberg, D. M. (2001). Long-term trends in the use of complementary and alternative medical therapies in the United States. *Annals of Internal Medicine, 135*, 262-268.

Kickbusch, I. (2004). Health and citizenship: The characteristics of 21st century health. *World Hospitals and Health Services, 40*(4), 12-14.

Kobayashi, K. M., Prus, S., & Lin, Z. (2008). *Ethnic differences in health: Does immigration status matter?* No. SEDAP Research Paper No. 230).

Korten, A. E., Jacomb, P. A., Jiao, Z., Christensen, H., Jorm, A. F., Henderson, A. S., & Rodgers, B. (1998). Predictors of GP service use: A community survey of an elderly australian sample. *Australian and New Zealand Journal of Public Health, 22*(5), 609-615.

Krieger, N. (2008). Proximal, distal, and the politics of causation: What's level got to do with it? *American Journal of Public Health, 98*(2), 221-230.

Kuhlmey, A., Winter, M. H. J., Maaz, A., Hofmann, W., Nordheim, J., & Borchert, C. (2003). High utilization of health care services by older adults. *Zeitschrift Fur Gerontologie Und Geriatrie, 36*(3), 233-240.

Kunh, R., & Culhane, D. P. (1998). Applying cluster analysis to test a typology of homelessness by pattern of shelter utilization: Results from the analysis of administrative data. *American Journal of Community Psychology, 26*(2), 207-232.

Kuo, G. M., Hawley, S. T., Weiss, L. T., Balkrishnan, R., & Volk, R. J. (2004). Factors associated with herbal use among urban multiethnic primary care patients. *BMC Complementary and Alternative Medicine, 2*(4), 18.

Kwong, J. C., Rosella, L. C., & Johansen, H. (2007). Trends in influenza vaccinations in canada 1996/1997 to 2005. *Health Reports, 18*(4), 1-11.

Lafortune, L., Beland, F., Bergman, H., & Ankri, J. (2009). Health state profiles and service utilization in community-living elderly. *Medical Care, 47*(3), 286-294.

Lai, D.W.L., & Chappell, N.L. (2007). Use of Traditional Chinese Medicine by older Chinese immigrants in Canada. *Family Practice, 24*: 56-64.

Lai, D. W. L., & Surood, S. (2010). Types and factor structure of barriers to utilization of health services among aging south Asians in Calgary, Canada. *Canadian Journal on Aging-Revue Canadienne Du Vieillissement, 29*(2), 249-258.

Laroche, M. (2000). Health status and health services utilization of Canada’s immigrant and non-immigrant populations. *Canadian Public Policy / Analyse De Politiques, 26*(1), 51-75.

Lauderdale, D. S. (2001). Education and survival: Birth cohort, period, and age effects. *Demography, 38*(4), 551-561.

Lawrence, D. J., & Meeker, W., C. (2007). Chiropractic and CAM utilization: A descriptive review. *Chiropractic and Osteopathy, 15*(2)

Lawton, J. (2002). Colonising the future: Temporal perceptions and health-relevant behaviours across the adult lifecourse. *Sociology of Health and Illness, 24*(6), 714-733.

Lawton, J. (2003). Lay experiences of health and illness: Past research and future agendas. *Sociology of Health and Illness, 25*, 23-40.

Lazarsfeld, P. F., & Henry, N. W. (1968). *Latent structure analysis*. Boston, MA: Houghton Mifflin.

Leboeuf-Yde, C., & Hestbaek, L. (2008). Maintenance care in chiropractic-what do we know? *Chiropractic and Osteopathy, 16*(3) doi:10.1186/1746-1340-16-3

Leon-Munoz, L. M., Lopez-Garcia, E., Graciani, A., Guallar-Castillon, P., Banegas, J. R., & Rodriguez-Artalejo, F. (2007). Functional status and use of health care services: Longitudinal study on the older adult population in Spain. *Maturitas, 58*(4), 377-386.

Leslie, C. (1980). Medical pluralism in world perspective. *Social Science and Medicine, 14B*(4), 191-195.

Levy-Storms, L., & Lubben, J. E. (2006). Network composition and health behaviors among older samoan women. *Journal of Aging and Health, 18*(6), 814-836.

Lewis, T. (2006). Reflexivity and habitus in young people's use of the internet for health information. *European Journal of Cultural Studies*, *9*(4), 461-479.

Liao, F., Tim. (1994). *Interpreting probability models: Logit, probit, and other generalized linear models*. Thousand Oaks, CA.: Sage Publications, Inc.

Linden, M., Horgas, A. L., Gilberg, R., & SteinhagenThiessen, E. (1997). Predicting health care utilization in the very old - the role of physical health, mental health, attitudinal and social factors. *Journal of Aging and Health, 9*(1), 3-27.

Link, B. G., & Phelan, J. C. (1995). Social conditions as fundamental causes of disease. *Journal of Health and Social Behavior, Extra Issue*, 80-94.

Link, B. G., Phelan, J. C., Miech, R., & Westin, E. L. (2008). The resources that matter: Fundamental social causes of health disparities and the challenge of intelligence. *Journal of Health and Social Behavior, 49*(1), 72-91.

Link, C. L., & McKinlay, J. B. (2010). Only half the problem is being addressed: Underinsurance is as big a problem as uninsurance. *International Journal of Health Services, 43*(3), 507-523.

Link, C. R., Long, S. H., & Settle, R. F. (1982). Equity and the utilization of health care services by the Medicare elderly. *The Journal of Human Resources*, *17*(2), 195-212.

Little, R. J. A., & Schenker, N. (1995). Missing data. In G. Arminger, C. C. Clogg & M. E. Sobel (Eds.), (pp. 39-75). New York, NY: Plenum Press.

Longino, C., F., & Bradley, D., E. (2003). A first look at retirement migration trends in 2000. *The Gerontologist, 43*(6), 904-907.

Lowenberg, J. S., & Davis, F. (1994). Beyond medicalisation-demedicalisation: The case of holistic health. *Sociology of Health and Illness*, *16*(5), 579-599.

Lubke, G. H., & Muthén, B. (2005). Investigating population heterogeneity with factor mixture models. *Psychological Methods*, *10*(1), 21-39.

Lupton, D. (1994). Consumerism, commodity culture and health promotion. *Health Promotion International, 9*(2), 111-118.

Lupton, D. (1997). Consumerism, reflexivity, and the medical encounter. *Social Science and Medicine, 45*(3), 373-381.

Lupton, D., & Tulloch, J. (2002). 'Risk is part of your life'; risk epistemologies among a group of australians. *Sociology, 36*, 317-334.

Lynch, J. W. (2001). Social position and health. *Annals of Epidemiology*, *6*, 21-23.

Lynch, J. W., Kaplan, G. A., & Salonen, J. T. (1997). Why do poor people behave poorly? Variation in adult health behaviors and psychosocial characteristics by stages of the socioeconomic lifecourse. *Social Science and Medicine, 44*(6), 809-819.

Lynch, S. M. (2006). Explaining life course and cohort variation in the relationship between education and health: The role of income. *Journal of Health and Social Behavior, 47*(4), 324-338.

Macintyre, S., Hunt, K., & Sweeting, H. (1996). Gender differences in health: Are things really as simple as they seem? *Social Science and Medicine, 42*(4), 617-624.

Magai, C., Consedine, N., Conway, F., Neugut, A., & Culver, C. (2004). Diversity matters: Unique populations of women and breast cancer screening. *Cancer, 100*(11), 2300-2308.

Magidson, J., & Vermunt, J., K. (2001). Latent class factor and cluster models: Bi-plots, and related graphical displays. *Sociological Methodology, 31*, 223-264.

Magnusson, D., Bergman, L., A., Rudinger, G., & Torestad, B. (Eds.). (1991). *Problems and methods in longitudinal research: Stability and change.*

Magnusson, D., & Cairns, R. B. (1996). Developmental science: Towards a unified framework. In R. B. Cairns, & G. H. Elder (Eds.), *Developmental science. cambridge studies in social and emotional development.* (pp. 7-30). New York: Cambridge Press.

Mahalik, J., R., Burns, S., M., & Syzdek, M. (2007). Masculinity and perceived normative health behaviors as predictors of men's health behaviors. *Social Science and Medicine, 64*, 2201-2209.

Manga, P. (2000). Economic case for the integration of chiropractic services into the health care system. *Journal of Manipulative and Physiological Therapeutics, 23*(2), 118-122.

Martel, L., Bélanger, A., Berthelot, J., & Carrière, Y. (2005). Healthy aging. *Health Reports,* , 1-6.

McCutcheon, A., L. (1987). *Latent class analysis*. London, UK: Sage Publications Inc.

McDonald, J. T., & Kennedy, S. (2004). Insights into the 'healthy immigrant effect': Health status and health service use of immigrants to Canada. *Social Science & Medicine (1967), 59*, 1613-1627.

McDonald, J. T., & Kennedy, S. (2007). Cervical cancer screening by immigrant and minority women in Canada. *Journal of Immigrant Minority Health, 9*, 323-334.

McDonald, R., Mead, N., Cheraghi-Sohi, S., Bower, P., Whalley, D., & Roland, M. (2007). Governing the ethical consumer: Identity, choice and the primary care medical encounter. *Sociology of Health and Illness, 29*(3), 430-456.

McFall, S. L., & Davila, M. (2008). Gender, social ties and cancer screening among elderly persons. *Journal of Aging and Health, 20*(8), 997-1011.

McFarland, B., Bigelow, D., Zani, B., & Kaplan, M. (2002). Complementary and alternative medicine use in Canada and the United States. *American Journal of Public Health, 92*, 1616-1618.

McKinlay, J. B., & Marceau, L. D. (2002). The end of the golden age of doctoring. *International Journal of Health Services, 32*(2), 379-416.

McKinlay, J. B., & Stoeckle, J., D. (1988). Corporatization and the social transformation of doctoring. *International Journal of Health Services, 191*(205)

McPherson, B. D., & Wister, A. V. (2008). *Aging as a social process: Canadian perspectives.* Ontario, Canada: Oxford University Press.

McQueen, D. V., & Siegrist, J. (1982). Social factors in the etiology of chronic disease: An overview. *Social Science & Medicine, 16*(4), 353-367.

Mechanic, D. (1979). Correlates of physician utilization: Why do major multivariate studies of physician utilization find trivial psychosocial and organizational effects? *Journal of Health and Social Behavior, 20*(4), 387-396.

Mechanic, D. (1995). Sociological dimensions of illness behavior. *Social Science and Medicine, 41*(9), 1207-1216.

Menard, S. (2000). Coefficients of determination for multiple logistic regression analyses. *The American Statistician*, *54*(1), 17-29.

Millar, W. J. (1997). Use of alternative health care practitioners by Canadians. *Canadian Journal of Public Health, 88*(3), 154-158.

Millar, W. J. (2001). Patterns of use: Alternative health care practitioners. *Health Reports, 13*(1), 9-21.

Millar, J. S., & Hull, C. (1997). Measuring human wellness. *Social Indicators Research, 40*(1/2, Sustainability and Human Well Being: Exploring the Connections), 147-158.

Milton, G. M. (1961). Assimilation in America: Theory and reality. *Daedalus, 90*(2, Ethnic Groups in American Life), 263-285.

Minkler, M. (1989). Health education, health promotion and the open society: An historical perspective. *Health Education and Behavior, 16*(1), 17.

Minocha, A. (1980). Medical pluralism in health services in India. *Social, Science and Medicine*, *14b*, 217-223.

Mirowsky, J., & Ross, C. E. (2008). Education and self-rated health. Cumulative advantage and its rising importance. *Research on Aging, 30*(1), 93-122.

Mischler, E. G. (1989). Critical perspectives on the biomedical model. In P. Brown (Ed.), *Perspectives in medical sociology* (pp. 153-166). Newbury Park: Sage.

Mitchell, J., & Krout, J. A. (1998). Discretion and service use among older adults: The behavioral model revisited. *Gerontologist, 38*(2), 159-168.

Musolf, G. R. (2003). Social structure, human agency, and social policy. *International Journal of Sociology and Social Policy, 6/7*, 1-12.

Mustard, C. A., Kaufert, P., Kozyrskyj, A., & Mayer, T. (1998). Sex differences in the use of health care services. *The New England Journal of Medicine*, *338*(23), 1678-1683.

Muthén, B., & Muthen, L., K. (2000). Integrating person-centered and variable-centered analyses: Growth mixture modeling with latent trajectory classes. *Alcoholism: Clinical and Experimental Research, 24*(6), 882-891.

Nabalamba, A., & Millar, W. J. (2007). Going to the doctor. *Health Reports*, *18*(1), 23-35.

Najm, W., Reinsch, S., Hoehler, F., & Tobis, J. (2003). Use of complementary and alternative medicine among the ethnic elderly. *Alternative Therapies in Health and Medicine*, *9*, 50-57.

Navarro, V. (1986). *Crisis, health and medicine: A social critique.* New York: Tavistock.

Navarro, V. (1999). Health and equity in the world in the era of globalization. *International Journal of Health Services, 29*, 215-226.

Nelson, D. E., Bland, S., & Powell-Griner, E. (2002). State trends in health risk factors and receipt of clinical preventive services among US adults during the 1990s. *Journal of American Medical Association*, *287*(20), 2659-2667.

Ness, J., Cirillo, D. J., Weir, D. R., Nisly, N. L., & Wallace, R. B. (2005). Use of complementary medicine in older Americans: Results from the health and retirement study. *The Gerontologist, 45*(4), 516-524.

Neutel, C. I., Gao, R., Blood, P. A., & Gaudette, L. A. (2007). The changing age distribution of prostate cancer in Canada. *Canadian Journal of Public Health-Revue Canadienne De Sante Publique, 98*(1), 60-64.

Newbold, B. K. (2005). Self-rated health within the Canadian immigrant population: Risk and the healthy immigrant effect. *Social Science & Medicine, 60*(6), 1359-1370.

Newbold, B. K. (2009). Health care use and the Canadian immigrant population. *International Journal of Health Services, 39*(3), 545-565. doi:10.2190/HS.39.3.g

Newsom, J. T., Kaplan, M. S., Huguet, N., & McFarland, B. H. (2004). Health behaviors in a representative sample of older Canadians: Prevalence, reported change, motivation to change and perceived barriers. *The Gerontologist, 44*(2), 193-205.

Newton, K. (1969). A critique of the pluralist model. *Acta Sociologica*, *12*(4), 209-223.

Ni, H., Simile, C., & Hardy, A. M. (2002). Utilization of complementary and alternative medicine by United States adults: Results from the 1999 National Health Interview Survey. *Medical Care, 40*(4), 353-358.

Nitcher, M., & Thompson, J. (2006). For my wellness, not just my illness: North American's use of dietary supplements. *Culture, Medicine and Psychiatry, 30*, 175-222.

Northcott, H. C., & Bachynsky, J. A. (1993). Concurrent utilization of chiropractic, prescription medicines, nonprescription medicines and alternative health care. *Social Science and Medicine, 37*(3), 431-435.

Oakes, L. S., & Rossi, P. H. (2003). The measurement of SES in health research: Current practice and steps towards a new approach. *Social Science and Medicine*, *56*, 769-784.

Olafsdottir, S., & Pescosolido, B. A. (2009). Drawing the line: The cultural cartography of utilization recommendations for mental health problems. *Journal of Health and Social Behavior, 50*, 228-244.

Olshansky, S. J., & Ault, A. B. (1986). The fourth stage of the epidemiological transition: The age of delayed degenerative diseases. *Millbank Memorial Fund Quarterly, 64*, 355-391.

Omran, A. R. (1971). The epidemiologic transition: A theory of epidemiology of population change. *Milbank Quarterly, 49*(4), 509-538.

Oxman-Martinez, J., Abdool, S., & Loisell-Léonard, M. (2000). Immigrant women and health in Canada. *Canadian Journal of Public Health, 91*(5), 394-395.

Paramore, L. C. (1997). Use of alternative therapies: Estimates from the 1994 Robert Wood Johnson Foundation National Access to Care Survey. *Journal of Pain Symptom Management, 13*, 83-89.

Park, J. (2005). Use of alternative health care. *Health Reports, 16*, 39-42.

Pellegrino, E. D. (1999). The commodification of medical and health care: The moral consequences of a paradigm shift from a professional to a market ethic. *Journal of Medicine and Philosophy, 24*(3), 243-266.

Penning, M. J. (1995). Health, social support, and the utilization of health-services among older adults. *Journals of Gerontology Series B-Psychological Sciences and Social Sciences, 50*(5), S330-S339.

Pescosolido, B. A. (1986). Migration, medical care preferences and the lay referral system: A network theory of role assimilation. *American Sociological Review, 51*, 523-540.

Pescosolido, B. A. (1992). Beyond rational choice: The social dynamics of how people seek help. *The American Journal of Sociology, 97*(4), 1096-1138.

Pescosolido, B. A., & Kronenfeld, J. J. (1995). Health, illness, and healing in an uncertain era: Challenges from and for medical sociology. *Journal of Health and Social Behavior, 35*(Extra Issue: Forty Years of Medical Sociology: The State of the Art and Directions for the Future), 5-33.

Phelan, J. C., & Link, B. G. (2005). Controlling disease and creating disparities: A fundamental cause perspective. *Journals of Gerontology: Series B, 60B*(Special Issue II), 27-33.

Pierret, J. (2003). The illness experience: State of knowledge and perspectives for research. *Sociology of Health and Illness, 25*, 4-22.

Pitts, J. (1968). *Social control: The concept.* New York, NY: Macmillan.

Popay, J., & Williams, G. (1996). Public health research and lay knowledge. *Social Science & Medicine, 42*(5), 759-768. doi:DOI: 10.1016/0277-9536(95)00341-X

Porter, J. (1965). *The vertical mosaic: An analysis of social class and power in Canada.* Toronto: University of Toronto Press.

Potvin, L., Camirand, J., & Beland, F. (1995). Patterns of health-services utilization and mammography use among women aged 50 to 59 years in the Quebec Medicare system. *Medical Care, 33*(5), 515-530.

Press, I. (1980). Problems in the definition and classification of medical systems. *Social Science & Medicine.Part B: Medical Anthropology*, *14*(1), 45-57.

Prus, S., Tfaily, R., & Lin, Z. (2011). Comparing racial and immigrant health status and health care access in later life in Canada and the United States. *Canadian Journal on Aging*, *29*(3), 383-395.

Prus, S., & Walters, V. (2004). Gender differences in health: A Canadian study of the psychosocial, structural and behavioral determinants of health. *Social Science and Medicine*, *58*, 2585-2600.

Qi, V., Phillips, S., P., & Hopman, W., M. (2006). Determinants of a healthy lifestyle and preventive screening in Canada. *BMC Public Health*, *6*, 275-283.

Raftery, A. E. (2001). Statistics in sociology, 1950-2000: A selective review. *Sociological Methodology, 31*, 1-45.

Raji, M. A., Kuo, Y., Al Snih, S., Sharif, B. M., & Loera, J. A. (2005). Ethnic differences in herb and vitamin/mineral use in the elderly. *Annals of Pharmacotherapy, 39*, 1019-1023.

Ramsey, S. D., Spencer, A. C., Topolski, T. D., Belza, B., & Patrick, D. L. (2001). Use of alternative therapies by older adults with osteoarthritis. *Arthritis & Rheumatism-Arthritis Care & Research, 45*(3), 222-227.

Reeder, L. G. (1972). The patient-client as consumer: Some observations on the changing professional-client relationship. *Journal of Health and Social Behavior, 13*, 406-414.

Relman, H. (1980). 'The new medical-industrial complex'. *New England Journal of Medicine, 303*(6), 963-970.

Rhodes, J. E., Fischer, K., & Ebert, L. (1993). Patterns of service utilization among pregnant and parenting African American adolescents. *Psychology of Women Quarterly*, *17*, 257-274.

Ridgeway, C., L., & Correll, S., J. (2004). Unpacking the gender system: A theoretical perspective on gender beliefs and social relations. *Gender and Society, 18*(4), 510-531.

Robertson, A. (1998). Critical reflections on the politics of need: Implications for public health. *Social Science & Medicine, 47*(10), 1419-1430.

Roos, N. P., Havens, B., & Black, C. (1993). Living longer but doing worse: Assessing health status in elderly persons at two points in time in Manitoba, Canada, 1971 and 1983. *Social Science & Medicine, 36*(3), 273-282.

Rosenberg, D., Handler, A., & Furner, S. (2004). A new method for classifying patterns of prenatal care utilization using cluster analysis. *Maternal and Child Health Journal, 8*(1), 19-30.

Rundall, T. G. (1981). A suggestion for improving the behavioral model of physician utilization. *Journal of Health and Social Behavior, 22*(1), 103-104.

Rundall, T. G., & Wheeler, J. R. C. (1979). The effect of income on use of preventive care: An evaluation of alternative explanations. *Journal of Health and Social Behavior, 20*(4, Health Professions: Socialization, Organization, Utilization), 397-406.

Rutten, F. F. H., & Bonsel, G. J. (1992). High cost technology in health care: A benefit or burden? *Social Science and Medicine, 35*(4), 567-577.

Saks, M. (Ed.). (1992). *Alternative medicine in Britain*. Oxford: Clarendon Press.

Saldov, M. (1991). The ethnic elderly: Communication barriers to health care. *Canadian Social Work Review, 8*(2), 269-277.

Santibanez, T., A., Mootrey, G., T., Euler, G., L., & Janssen, A., P. (2010). Behavior and beliefs about influenza vaccine among adults aged 50-64 years. *American Journal of Health Behavior, 34*(1), 77-89.

Sarma, S., & Simpson, W. (2006). A microeconometric analysis of Canadian health care utilization. *Health Economics, 15*, 219-239.

Scambler, G. (2007). Social structure and the production, reproduction, and durability of health inequalities. *Social Theory and Health, 5*, 297-315.

Scambler, G., & Kelleher, D. (2006). New social and health movements: Issues of representation and change. *Critical Public Health, 16*(3), 219-231.

Sewell, W. H. (1992). A theory of structure: Duality, agency and transformation. *American Journal of Sociology, 98*(1), 1-29.

Sewitch, M. J., Leffondre, K., & Dobkin, P. L. (2004). Clustering patients according to health perceptions. relationships to psychosocial characteristics and medication nonadherence. *Journal of Psychosomatic Research, 56*, 323-332.

Shah, C. P. (1998). *Public health and preventive medicine in Canada*. Toronto: University of Toronto Press.

Shapiro, E. (1983). The physician visit patterns of chiropractic users: Health-seeking behavior of the elderly in Manitoba, Canada. *American Journal of Public Health, 5*(553), 557.

Sharma, R., Haas, M., & Stano, M. (2003). Patient attitudes, insurance and other determinants of self-referral to medical and chiropractic physicians. *American Journal of Public Health, 93*(12), 2111-2117.

Sharma, U. (1992). *Complementary medicine today*. London, UK: Routledge.

Sharpe, M., & Carson, A. (2001). "Unexplained" somatic symptoms, functional syndromes, and somatization: Do we need a paradigm shift? *Annals of Internal Medicine, 134*(9), 926-930.

Shekelle, P. G., Markovich, M., & Louie, R. (1995). Factors associated with choosing a chiropractor for episodes of back pain care. *Medical Care, 33*(8), 842-850.

Shensen, D., Adams, M., M., Bolen, J., & Andersen, L. (2011). Routine checkups don't ensure that seniors get preventive services. *Journal of Family Practice, 60*(1), E1-E10.

Shensen, D., Bolen, J., & Adams, M. (2007). Receipt of preventive services by elders based on composite measures, 1997-2004. *American Journal of Preventive Medicine, 32*(1), 11-18.

Shmueli, A., & Shuval, J. (2006). Complementary and alternative medicine: Beyond users and nonusers. *Complementary Therapies in Medicine, 14*(4), 261-267.

Shooshtari, S., Menec, V., & Tate, R. (2007). Comparing predictors of positive and negative self-rated health between younger (25-54) and older (55+) Canadian adults. *Research on Aging, 29*(6), 512-554.

Singh, S. R., & Levine, M. A. H. (2006). Natural health product use in Canada: Analysis of the national population health survey. *Canadian Journal of Clinical Pharmacology, 13*(2), e240-e250.

Sirois, F. M. (2008). Motivations for consulting complementary and alternative medicine practitioners: A comparison of consumers from 1997-8 and 2005. *Bmc Complementary and Alternative Medicine, 8*, 16.

Sirois, F. M., & Gick, M. L. (2002). An investigation of the health beliefs and motivations of complementary medicine clients. *Social Science and Medicine, 55*(2), 1025-1037.

Sorensen, A. (1994). Women, family and class. *Annual Review of Sociology, 20*, 27-47.

Spence, M., & Ribeaux, P. (2004). Complementary and alternative medicine: Consumers in search of wellness or an expression of need by the sick? *Psychology & Marketing, 21*(2), 113-139.

Starr, P. (1982). *The social transformation of American medicine.* New York: Harper Collins.

Statistics Canada. (2001). Health Care/Self-care. *Health Reports*, *12*(3), 33-39.

Strain, L. A. (1990). Physician visits by the elderly: Testing the Andersen-Newman framework. *The Canadian Journal of Sociology / Cahiers Canadiens De Sociologie, 15*(1), 19-37.

Strain, L. A. (1991). Use of health-services in later life - the influence of health beliefs. *Journals of Gerontology, 46*(3), S143-S150.

Straus, R. (1957). The nature and status of medical sociology. *American Sociological Review, 22*, 200-204.

Stump, T. E., Johnson, R. J., & Wolinsky, F. D. (1995). Changes in physician utilization over time among older adults. *Journals of Gerontology Series B-Psychological Sciences and Social Sciences, 50*(1), S45-S58.

Suchman, E. (1965). Stages of illness and medical care. *Journal of Health and Human Behavior, 6*, 114-128.

Taylor, A. K., Larson, S., & Correa-de-Araujo, R. (2006). Women's health care utilization and expenditures. *Womens Health Issues, 16*, 66.

Thoits, P. A. (2006). Personal agency in the stress process. *Journal of Health and Social Behavior, 47*(4), 309-323. doi:10.1177/002214650604700401

Thomas, S., & Wannell, B. (2009). Combining cycles of the Canadian Community Health Survey. *Health Reports, 20*(1), 53-60.

Thompson, C. J. (2003). Natural health discourses and the therapeutic production of consumer resistance. *The Sociological Quarterly*, *44*(1), 81-107.

Tindle, H. A., Davis, R. B., Phillips, R. S., & Eisenberg, D. M. (2005). Trends in use of complementary and alternative medicine by US adults. 1997-2002. *Alternative Therapies in Health and Medicine, 11*(1), 42-49.

Tomiak, M., Berthelot, J., & Mustard, C. A. (1998). A profile of health care utilization of the disabled population in Manitoba. *Medical Care, 36*(9), 1383-1397.

Troppmann, L., Johns, T., & Gray-Donald, K. (2002). Natural health product use in canada. *Canadian Journal of Public Health, 93*(6), 426-430.

Tuohy, C., Hughes. (2002). The costs of constraint and prospects for health care reform in canada. *Health Affairs, 21*(3), 32-46.

Twaddle, A. C. (1969). Health decisions and sick role variations: An exploration. *Journal of Health and Social Behavior, 10,* 105-114.

Umphrey, G. J., Kendall, O., & MacNeill, I. B. (2001). Assessing the surveillance capability of Canada's National Health Surveys. *Chronic Diseases in Canada, 22*(2), 50-56.

Vance, M., A. (2011). Disease mongering and the fear of pandemic. *International Journal of Health Services, 41*(1), 95-115.

Verbrugge, L. M. (1979). Marital status and health. *Journal of Marriage and Family, 41*(2), 267-285.

Verbrugge, L. M. (1985). Gender and health: An update on hypotheses and evidence. *Journal of Health and Social Behavior, 26*(3), 156-182.

Verbrugge, L. M., & Jette, A. M. (1993). The disablement process. *Social Science and Medicine, 38*(1), 1-14.

Verhoef, M. J., & Sutherland, L. R. (1995). Alternative medicine and general practitioners. opinions and behaviour. *Canadian Family Physician, 41,* 1005-1011.

Vermunt, J., K. (2010). Latent class modeling with covariates: Two improved three-step approaches. *Political Analysis, 18*(4), 450-469.

Vermunt, J., K., & Magidson, J. (2003). Latent class analysis. In *Encyclopaedia of social science research methods* (pp. 1-21)

Votova, K. M., Penning, M. J., Zheng, C., & Brackley, M., E. (2010). Trends and predictors of publicly subsidized chiropractic service use among adults aged 50+. *The Journal of Alternative and Complementary Medicine, 16*(9), 995-1001.

Votova, K. M., & Wister, A. V. (2007). Self-care dimensions of complementary and alternative medicine use among older adults. *Gerontology, 53*, 21-27.

Wade, C., Chao, M. T., & Kronenberg, F. (2007). Medical pluralism of Chinese women living in the United States. *Journal of Immigrant and Minority Health, 9*, 255-267.

Wade, C., Chao, M., Kronenberg, F., Cushman, L., & Kalmuss, D. (2008). Medical pluralism among American women: Results of a national survey. *Journal of Women's Health, 17*(5), 829-839.

Wagmiller, R. L.,Jr., Lennon, M. C., Kuang, L., Alberti, P. M., & Aber, J. L. (2006). The dynamics of economic disadvantage and children's life chances. *American Sociological Review, 71*(5), 847-866.

Wahlberg, A. (2007). A quackery with a difference—New medical pluralism and the problem of ‘dangerous practitioners’ in the United Kingdom. *Social Science & Medicine, 65*(11), 2307-2316. doi:DOI: 10.1016/j.socscimed.2007.07.024

Waitzkin, H. (1989). Social structures of medical oppression: A Marxist view. In P. Brown (Ed.), *Perspectives in medical sociology* (pp. 166-178). Belmont, CA: Wadsworth.

Walsh, S., Kelner, M., Wellman, B., & Boon, H. S. (2004). Moving forward? complementary and alternative practitioners seek self-regulation. *Sociology of Health and Illness, 26*(2), 216-241.

Ward, R. A. (1977). Services for older people: An integrated framework for research. *Journal of Health and Social Behavior, 18*(1), 61-70.

Watson, D. E., Heppner, P., Reid, R., Bogdanovic, B., & Roos, N. P. (2005). Use of physician services by older adults: 1991/1992 to 2000/2001. *Canadian Journal on Aging-Revue Canadienne Du Vieillissement, 24*, 29-36.

Wellman, B., Kelner, M., & Wigdor, B. T. (2001). Older adults' use of medical and alternative care. *The Journal of Applied Gerontology, 20*(1), 3-23.

Whiteman, S. D., & Loken, E. (2006). Comparing analytic techniques to classify dyadic relationships: An example using siblings. *Journal of Marriage and Family, 68*(5), 1370-1382.

Williams, G., H. (2003). The determinants of health: Structure, context and agency. *Sociology of Health and Illness, 25*, 131-154.

Wilson, H., D., Robinson, J. P., & Turk, D. C. (2009). Toward the identification of symptom patterns in people with fibromyalgia. *Arthritis & Rheumatism, 61*(4), 527-534.

Wister, A. V. (2005). *Baby boomer health dynamics: How are we aging?*. Toronto, CA: University of Toronto Press.

Wolff, J., L., Starfield, B., & Andersen, G. (2002). Prevalence, expenditures, and complications of multiple chronic conditions in the elderly. *Archives of Internal Medicine*, *162*(20), 2269-2276.

Wolinsky, F. D. (1978). Assessing the effects of predisposing, enabling, and illness-morbidity characteristics on health service utilization. *Journal of Health and Social Behavior*, *19*(4), 384-396.

Wolinsky, F. D. (1994). Health-services utilization among older adults - conceptual, measurement, and modeling issues in secondary analysis. *Gerontologist, 34*(4), 470-475.

Wolinsky, F. D., Coe, R. M., Miller, D. K., Prendergast, J. M., Creel, M. J., & Chavez, M. N. (1983). Health services utilization among the noninstitutionalized elderly. *Journal of Health and Social Behavior, 24*(4), 325-337.

Wolsko, P. M., Eisenberg, D. M., Davis, R. B., Ettner, S. L., & Phillips, R. S. (2002). Insurance coverage, medical conditions, and visits to alternative medicine providers: Results of a national survey. *Archives of Internal Medicine, 162*, 281-287.

Wray, S. (2010). Health, exercise, and well-being: The experiences of midlife women from diverse ethnic backgrounds.*5*(2), 144.

Young, J. T. (2004). Illness behaviour; A selective review and synthesis. *Sociology of Health and Illness, 26*(1), 1-31.

Zack, M. M., Moriarty, D. G., Stroup, D. F., Ford, E. S., & Mokdad, A. H. (2004). Worsening trends in adult health-related quality of life and self-rated health- United States, 1993-2001. *Public Health Reports, 119*, 493.

Zola, I. K. (1966). Culture and symptoms: An analysis of patients presenting complaints. *American Sociological Review, 31*, 615-630.

Zola, I. K. (1972). Medicine as an institution of social control. In P. Conrad (Ed.), *The sociology of health and illness: Critical perspectives, 6th edition* (Sixth ed., pp. 404-414). New York: Worth.

Appendix A. Independent samples test for the male subsample, Canadians aged 50+, 2003/2005

	F	Sig.	t	df
Highest level--3-Respondent Education	12.44	0	-0.96	53,878
Income adequacy	13.49	0	9.64	42,641
Age	0.08	0.781	-0.62	55,933
Number of chronic conditions	5.99	0.014	5.28	55,914
Province of Residence (5 Categories)	2,566.95	0	22.04	55,883
Urban and Rural Areas – (2 levels)	666.08	0	13.69	55,933

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files.
Note: Male Sample includes males aged 50+ who were inclusive of the PSA topic module content in the CCHS.

Appendix B: Frequency distribution of medical pluralism (deductive), using various combinations of pattern size, full sample, Canadians aged 50+, 2003/2005

		N	%
Medical Pluralism (8 Patterns)			
	non-users	7,476	6.64
	CHC only	25,589	22.74
	CAM only	1,235	1.10
	PHC only	5,307	4.72
	non-PHC dual users	6,716	5.97
	non-CAM dual users	53,123	47.21
	CAM single or dual users	793	0.70
	tri-users	12,282	10.92
	Total	112,521	100.00
Medical Pluralism (7 Patterns)			
	nonusers	7,476	6.64
	CHC only	25,589	22.74
	non-CHC single or dual users	2,028	1.80
	PHC only	5,307	4.72
	non-PHC dual users	6,716	5.97
	non-CAM dual users	53,123	47.21
	tri-users	12,282	10.92
	Total	112,521	100.00
Medical Pluralism (6 Patterns)			
	nonusers	7,476	6.64
	CHC only	25,589	22.74
	CAM single or dual users	8,745	7.77
	PHC only	5,307	4.72
	non-CAM dual users	53,123	47.21
	tri- users	12,282	10.92
	Total	112,521	100.00
Medical Pluralism (4 Patterns)			
	non-user	7,476	6.64
	single-system user	32,131	28.56
	dual-system user	60,632	53.89
	tri-user	12,282	10.92
	Total	112,521	100.00

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files.

Appendix C. Frequency distribution of Complementary and Alternative (CAM) providers, full sample, Canadians aged 50+, 2003/2005

Frequency Distribution of Use of a CAM Provider in the Last Year

Provider	N	%
Chiropractor Visit		
No	105,118	89.33
Yes	12,561	10.67
Any CAM Provider		
No	105,150	89.31
Yes	12,591	10.69
Massage Therapist		
No	110,805	94.12
Yes	6,920	5.88
Acupuncturist		
No	114,598	97.34
Yes	3,126	2.66
Homeopath/Naturopath		
No	115,389	98.02
Yes	2,336	1.98
Biofeedback-Spiritual healer-Reflexology		
No	117,167	99.53
Yes	558	0.47
Herbalist		
No	117,015	99.40
Yes	710	0.60
Other CAM Provider		
No	116,300	98.79
Yes	1425	1.21

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files.
Note: Complementary and Alternative (CAM)

Appendix D. Frequency distribution of up-to-date public health care services, all samples, Canadians aged 50+, 2003/2005

	Full sample	Female subsample	Male subsample
Indicator	n (%)	n (%)	n (%)
Public Health Care (PHC)			
Flu Shot			
Never had	41,212 (36)	20,402 (34)	4,378 (39)
<1 year	57,282 (51)	31,878 (53)	5,284 (47)
>= 1 year	14,733 (13)	7,557 (13)	1,560 (14)
Total	113,227(100)	59,837 (100)	11,223 (100)
Mammogram			
Never had	--	8,099 (14)	--
<1 year	--	24,143 (41)	--
>= 1 year but <2 years	--	13,697 (23)	--
>=2 years	--	13,470 (23)	--
Total	--	59,409 (100)	--
PAP Test[a]			
Never had	--	6,268 (11)	--
<1 year	--	21,299 (36)	--
>= 1 year but <3 years	--	13,247 (22.5)	--
>=3 years	--	18,028 (31)	--
Total	--	58,839 (100)	--
PSA Test[b]			
Never had	--	--	3,794 (35)
< 2 years	--	--	5,937 (54)
>=2 years	--	--	1,195 (11)
Total	--	--	10,926 (100)

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files.

[a] PAP Test =Papanicolaou test.

[b] PSA Test = Prostrate Serum Antigen test.

Appendix E: Type of chronic condition by group, full sample, Canadians aged 50+, 2003/2005

Variable		N	%
Has respiratory disorder			
	no	104,886	89.19
	yes	12,712	10.81
Has an endocrine or metabolic disorder			
	no	68,793	58.54
	yes	48,725	41.46
Has a muscoskeletal disorder			
	no	61,649	52.44
	yes	55,903	47.56
Has a circulatory disorder			
	no	71,472	60.84
	yes	46,009	39.16
Has cancer			
	no	113,523	96.48
	yes	4,145	3.52
Has mental disorder			
	no	105,775	90.10
	yes	11,618	9.90
Has nervous or sensory disorder			
	no	89,157	76.06
	yes	28,058	23.94
Has digestive or genitouronary disorder			
	no	101,919	86.80
	yes	15,502	13.20
Has other long-term problem			
	no	98,285	83.51
	yes	19,412	16.49

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files.
Note: Groupings were computed using the International Classification of Diseases (ICD-V.9). The groupings are not mutually exclusive, respondents may have more than one chronic condition.
Full Sample, N=117,824

Appendix F. Bivariate analyses of medical pluralism (deductive pattern)

Proportion of Medical Pluralism by Age Cohort, Full Sample, Canadians, aged 50+, 2003/2005

	Age cohort								
Medical Pluralism	**50-54**	**55-60**	**60-64**	**65-69**	**70-74**	**75-79**	**80-84**	**85+**	**Total**
Non-use	10%	8%	7%	5%	4%	3%	2%	3%	7%
CHC-only use	30%	29%	25%	18%	14%	12%	11%	10%	23%
CAM single or dual use[a]	13%	11%	7%	5%	3%	3%	2%	2%	8%
PHC-only use	5%	4%	5%	5%	5%	5%	5%	4%	5%
Non-CAM dual use[b]	31%	36%	45%	56%	63%	67%	71%	73%	47%
Tri-use [c]	11%	12%	12%	11%	11%	10%	9%	7%	11%
Total	100% (27,045)	100% (23,238)	100% (18,060)	100% (14,058)	100% (12,035)	100% (9132)	100% (5836)	100% (3115)	100% (112,519)

(χ^2=11067.44, df=35, p<.000; Cramer's V=.14, p<.000)

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files.
Note: CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care.
[a] Uses CAM only *or* uses CAM + PHC
[b] Uses CHC + PHC only.
[c] Uses CHC+CAM+PHC

Proportion of Medical Pluralism by Gender, Full Sample, Canadians aged 50+, 2003/2005

Medical Pluralism	Male	Female	Total
Non-use	9%	5%	7%
CHC-only use	24%	21%	23%
CAM single or dual use	7%	8%	8%
PHC-only use	5%	4%	5%
Non-CAM dual use	46%	48%	47%
Tri-use	9%	13%	11%
Total[a]	100% (53,218)	100% (59,305)	100% (112,523)

(χ^2=1310.94, df=5, p<.000; Cramer's V=.108, p<.000)

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files.
Note: CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care

Proportion of Medical Pluralism by Household Income Adequacy, Full Sample, Canadians aged 50+, 2003/2005

Medical Pluralism	Low income	Lower middle income	Upper middle income	High income	Total
Non-use	8%	7%	7%	6%	7%
CHC-only use	24%	21%	23%	24%	23%
CAM single or dual use	5%	5%	8%	10%	8%
PHC-only use	6%	5%	4%	4%	5%
Non-CAM dual use	51%	54%	46%	42%	47%
Tri-use	7%	9%	11%	13%	11%
Total	100% (53,218)	100% (20,780)	100% (32,285)	100% (22,788)	100% (84,703)

(χ^2=1285.51, df=15, p<.000; Cramer's V=.071, p.000)

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files.
Note: CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care

Proportion of Medical Pluralism by Respondent Highest Education, Full Sample, Canadians aged 50+, 2003/2005

Medical Pluralism	Less than high school	Graduated high school	Graduated post-secondary	Total
Non-use	7%	7%	6%	7%
CHC-only use	22%	24%	22%	23%
CAM single or dual use	5%	8%	9%	8%
PHC-only use	5%	5%	4%	5%
Non-CAM dual use	52%	46%	45%	47%
Tri-use	8%	10%	13%	11%
Total [a]	100% (31,482)	100% (18,074)	100% (59,443)	100% (108,999)

(χ^2=1239.49, df=10, p<.000; Cramers' V=.075, p<.000)

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files.
Note: CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care

Proportion of Medical Pluralism by Race, Full Sample, Canadians aged 50+, 2003/2005

Medical Pluralism	**White**	**Non-White**	**Total**
Non-use	7%	6%	7%
CHC-only use	23%	24%	23%
CAM single or dual use	8%	7%	8%
PHC-only use	5%	4%	5%
Non-CAM dual use	47%	48%	47%
Tri-use	11%	10%	11%
Total	100% (97,985)	100% (10,163)	100% (108,148)

(χ^2=90.13, df=10, p<.000; Cramer's V=.020, p<.000)

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files.
Note: CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care

Proportion of Medical Pluralism by Immigration Status, Full Sample, Canadians aged 50+, 2003/2005

Medical Pluralism	Non-immigrants	Recent immigrants (<20 years in Canada)	Long-term immigrants (=>20 years in Canada)	Total
Non-use	7%	7%	6%	7%
CHC-only use	23%	29%	22%	23%
CAM single or dual use	8%	7%	6%	8%
PHC-only use	5%	3%	4%	5%
Non-CAM dual use	46%	46%	51%	47%
Tri-use	11%	8%	11%	11%
Total	100% (82,563)	100% (4,587)	100% (21,902)	100% (108,148)

(χ^2=378.115, df=10, p<.000; Cramer's V=0.04, p<.000)

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files.
Note: CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care

Proportion of Medical Pluralism by Number of Chronic Conditions, Full Sample, Canadians aged 50+, 2003/2005

Medical Pluralism	None	One	Two	Three	Four +	Total
Non-use	19%	8%	4%	2%	1%	7%
CHC-only use	29%	28%	24%	20%	15%	23%
CAM single or dual use	9%	9%	8%	7%	6%	8%
PHC-only use	9%	9%	5%	3%	2%	5%
Non-CAM dual use	30%	41%	48%	55%	59%	47%
Tri-use	5%	8%	11%	13%	16%	11%
Total	100% (18767)	100% (24829)	100% (22817)	100% (17027)	100% (29082)	100% (112522)

(χ^2=13221.52, df=20, p<.000; Cramer's V=.14, p<.000)

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files.
Note: CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care

Proportion of Medical Pluralism by Functional Ability, Full Sample, Canadians aged 50+, 2003/2005

Medical Pluralism	Function never restricted	Function sometimes restricted	Function always restricted	Total
Non-use	9%	4%	3%	7%
CHC-only use	26%	20%	18%	23%
CAM single or dual use	8%	8%	7%	8%
PHC-only use	6%	4%	3%	5%
Non-CAM dual use	42%	51%	56%	47%
Tri-use	9%	13%	14%	11%
Total	100% (63685)	100% (24313)	100% (23998)	100% (111996)

(χ^2=4084.827, df=10, p<.000; Cramer's V=.135, p<.000)

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files
Note: CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care

Proportion of Medical Pluralism by Self-perceived Physical Health, Full Sample, Canadians aged 50+, 2003/2005

Medical Pluralism	Fair/Poor health	Good health	V.good/Excellent health	Total
Non-use	2%	5%	9%	7%
CHC-only use	19%	22%	24%	23%
CAM single or dual use	5%	7%	9%	8%
PHC-only use	3%	4%	6%	5%
Non-CAM dual use	59%	50%	41%	47%
Tri-use	12%	11%	10%	11%
Total	100% (21,180)	100% (37,349)	100% (53,863)	100% (112,392)

(χ^2=3336.17, df=10, p<.000; Cramer's V=.12, p<.000)

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files.
Note: CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care

Proportion of Medical Pluralism by Self-perceived Mental Health, Full Sample, Canadians aged 50+, 2003/2005

Medical Pluralism	Fair/Poor health	Good health	V.good/Excellent health	Total
Non-use	4%	6%	7%	7%
CHC-only use	23%	21%	23%	23%
CAM single or dual use	6%	7%	8%	8%
PHC-only use	2%	4%	5%	5%
Non-CAM dual use	52%	51%	46%	47%
Tri-use	12%	11%	11%	11%
Total	100% (5,774)	100% (26,041)	100% (80,394)	100% (112,209)

(χ^2=410.68, df=10, p<.000; Cramer's V=.04, p<.000)

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files.
Note: CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care

Pearson Intercorrelations for Hypothesized Predictor Variables and Use of Health Services, Full Sample, Canadians aged 50+, 2003/2005

Variables	1	2	3	4	5
1. Age (years)	1.0	.216**	.096**	-.007*	-.048**
2. No. of chronic conditions		1.0	.305**	.181**	.051**
3. No. of medical visits			1.0	.188**	.018**
4. No. of specialist visits				1.0	.014**
5. No. of chiropractic visits					1.0

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files.
N=117,824
*Correlation is significant at the 0.01 level (2-tailed).
**Correlation is significant at the 0.01 level (2-tailed).

Proportion of Medical Pluralism by Urban/Rural Region, Full Sample, Canadians aged 50+, 2003/2005

Medical Pluralism	**Urban**	**Rural**	**Total**
Non-use	9%	5%	7%
CHC-only use	24%	21%	23%
CAM single or dual use	7%	8%	8%
PHC-only use	5%	4%	5%
Non-CAM dual use	46%	48%	47%
Tri-use	9%	13%	11%
Total	100% (53,218)	100% (59,305)	100% (112,523)

(χ^2=358.02, df=5, p<.000; Cramer's V=.06, p<.000)

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files.

Note: CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care

Proportion of Medical Pluralism by Province, Full Sample, Canadians aged 50+, 2003/2005

Medical Pluralism	Maritime /Yukon/ NWT	Quebec	Ontario	Prairies	British Columbia	Total
Non-use	6%	10%	5%	6%	6%	7%
CHC-only use	31%	29%	17%	23%	22%	23%
CAM single or dual use	4%	9%	6%	11%	9%	8%
PHC-only use	3%	5%	5%	4%	4%	5%
Non-CAM dual use	50%	39%	55%	41%	46%	47%
Tri-use	5%	8%	12%	13%	13%	11%
Total	100% (9,037)	100% (28,945)	100% (42,121)	100% (16,983)	100% (15,342)	100% (112,428)

(χ^2=4706.18, df=20, p<.000; Cramer's V=.10, p<.000)

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files.
Note: CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care

Proportion of Medical Pluralism by Marital Status, Full Sample, Canadians aged 50+, 2003/2005

Medical Pluralism	Married/ common law	Widowed/ divorced	Single	Total
Non-use	7%	6%	11%	7%
CHC-only use	24%	20%	23%	23%
CAM single or dual use	8%	6%	8%	8%
PHC-only use	5%	5%	6%	5%
Non-CAM dual use	46%	52%	42%	47%
Tri-use	11%	11%	10%	11%
Total	100% (80,375)	100% (25,503)	100% (6,475)	100% (112,353)

(χ^2=647.95, df=10, p<.000; Cramer's V=.06, p<.000)

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files.
Note: CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care

<u>Female subsample</u>:

Proportion of medical pluralism by age cohort, female subsample, Canadians aged 50+, 2003/2005

	Age cohort								
Medical Pluralism	**50-54**	**55-60**	**60-64**	**65-69**	**70-74**	**75-79**	**80-84**	**85+**	**Total**
Non-use	0.7%	0.5%	0.7%	0.6%	0.6%	0.9%	1%	3%	0.7%
CHC-only use	0.6%	0.5%	0.6%	0.9%	1%	1%	2%	3%	0.9%
CAM single or dual use	3%	2%	1%	1%	1%	1%	1%	.5%	2%
PHC-only use	9%	9%	9%	8%	7%	7%	7%	6%	8%
Non-CAM dual use	61%	63%	69%	72%	75%	77%	79 %	79%	69%
Tri-use	26 %	25%	20%	16%	15%	13%	10%	9%	20%
Total	100% (13,658)	100% (11,625)	100% (8872)	100% (7302)	100% (6359)	100% (5205)	100% (3570)	100% (2055)	100% (58646)

(χ^2=1860.01, df=35, p<.000; Cramer's V=.08, p<.001)

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files.
Note: CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care

Proportion of Medical Pluralism by Household Income Adequacy, female subsample, Canadians aged 50+, 2003/2005

Medical Pluralism	Low income	Lower middle income	Upper middle income	High income	Total
Non-use	1%	1%	1%	0.5%	1%
CHC-only use	2%	1%	1%	.5%	1%
CAM single or dual use	1%	1%	2%	2%	2%
PHC-only use	10%	8%	8%	7%	8%
Non-CAM dual use	73%	73%	67%	64%	69%
Tri-use	12%	15%	22%	27%	20%
Total	100% (5,781)	100% (11,936)	100% (16,104)	100% (9,781)	100% (43,602)

(χ^2=950.58, df=15, p<.000; Cramer's V=.09, p<.000)

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files.
Note: CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care

Proportion of Medical Pluralism by Respondent Highest Education, female subsample, Canadians aged 50+, 2003/2005

Medical Pluralism	**Less than high school**	**Graduated high school**	**Graduated post-secondary**	**Total**
Non-use	1%	1%	1%	1%
CHC-only use	2%	1%	1%	1%
CAM single or dual use	1%	2%	2%	2%
PHC-only use	9%	9%	8%	8%
Non-CAM dual use	74%	70%	65%	68%
Tri-use	13%	19%	25%	20%
Total	100% (17,534)	100% (10,573)	100% (28,932)	100% (57,039)

(χ^2=1117.19, df=10, p<.000; Cramer's V=.10, p<.000)

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files.
Note: CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care

Proportion of Medical Pluralism by Race, female subsample, Canadians aged 50+, 2003/2005)

Medical Pluralism	White	Non-White	Total
Non-use	1%	2%	1%
CHC-only use	1%	3%	1%
CAM single or dual use	2%	2%	2%
PHC-only use	8%	6%	8%
Non-CAM dual use	68%	67%	68%
Tri-use	20%	21%	20%
Total	100% (51,807)	100% (4,798)	100% (56,605)

(χ^2=274.86, df=10, p<.000; Cramer's V=.05, p<.000)

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files.
Note: CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care

Immigration Status, Female Sample, Canadians aged 50+, 2003/2005

Medical Pluralism	**Non-immigrants**	**Recent immigrants[a]**	**Long-term immigrants[b]**	**Total**
Non-use	1%	2%	1%	1%
CHC-only use	1%	4%	1%	1%
CAM single or dual use	2%	2%	1%	2%
PHC-only use	9%	5%	7%	8%
Non-CAM dual use	67%	71%	71%	68%
Tri-use	21%	16%	19%	20%
Total	100% (43,892)	100% (2,081)	100% (11,037)	100% (57,010)

(χ^2=332.846, df=10, p<.000; Cramer's V=.05, p<.000)

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files.
Note: CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care
[a] Less than twenty years in Canada
[b] Twenty years or more in Canada

Proportion of Medical Pluralism by Number of Chronic Conditions, female subsample, Canadians aged 50+, 2003/2005

Medical Pluralism	None	One	Two	Three	Four +	Total
Non-use	3%	1%	.4%	.2%	.1%	1%
CHC-only use	1%	1%	1%	1%	1%	1%
CAM single or dual use	3%	2%	1%	1%	1%	2%
PHC-only use	21%	12%	8%	5%	4%	8%
Non-CAM dual use	58%	67%	70%	72%	71%	69%
Tri-use	14%	17%	20%	21%	23%	20%
Total	100% (7,515)	100% (11,088)	100% (11,505)	100% (9,522)	100% (19,021)	100% (58,651)

(χ^2=3738.20, df=20, p<.000; Cramer's V=.13, p<.000)

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files.
Note: CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care

Proportion of Medical Pluralism by Functional Restriction, female subsample, Canadians aged 50+, 2003/2005

Medical Pluralism	Never restricted	Sometimes restricted	Always restricted	Total
Non-use	1%	.3%	.4%	1%
CHC-only use	1%	1%	1%	1%
CAM single or dual use	2%	2%	1%	2%
PHC-only use	12%	6%	4%	8%
Non-CAM dual use	67%	68%	72%	68%
Tri-use	17%	23%	23%	20%
Total	100% (32,016)	100% (13,258)	100% (13,095)	100% (58,369)

(χ^2=1297.24, df=10, p<.000; Cramer’s V=.11, p<.000)

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files.
Note: CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care

Proportion of Medical Pluralism by Self-perceived Physical Health, female subsample, Canadians aged 50+, 2003/2005

Medical Pluralism	Fair/Poor health	Good health	V.good/Excellent health	Total
Non-use	1%	1%	1%	1%
CHC-only use	1%	1%	1%	1%
CAM single or dual use	1%	2%	2%	2%
PHC-only use	4%	7%	9%	8%
Non-CAM dual use	71%	71%	68%	69%
Tri-use	23%	19%	20%	20%
Total	100% (3,078)	100% (13,477)	100% (41,949)	100% (58,504)

(χ^2=203.513, df=10, p<.000; Cramer's V=.09, p<.000)

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files.
Note: CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care

Proportion of Medical Pluralism by Self-perceived Mental Health, female subsample, Canadians aged 50+, 2003/2005

Medical Pluralism	Fair/Poor health	Good health	V.good/Excellent health	Total
Non-use	.3%	1%	1%	1%
CHC-only use	1%	1%	1%	1%
CAM single or dual use	1%	1%	2%	2%
PHC-only use	4%	7%	11%	8%
Non-CAM dual use	75%	70%	65%	69%
Tri-use	19%	20%	20%	20%
Total	100% (11,383)	100% (19,474)	100% (27,738)	100% (58,595)

(χ^2=3336.17, df=10, p<.000; Cramer's V=.04, p<.000)

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files.
Note: CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care

Proportion of Medical Pluralism by Urban/Rural Region, female subsample, Canadians aged 50+, 2003/2005

Medical Pluralism	Urban	Rural	Total
Non-use	1%	1%	1%
CHC-only use	1%	1%	1%
CAM single or dual use	2%	2%	2%
PHC-only use	8%	10%	8%
Non-CAM dual use	69%	66%	69%
Tri-use	20%	21%	20%
Total	100% (47,289)	100% (11,360)	100% (58,649)

(χ^2=54.90, df=5, p<.000; Cramer's V=.03, p<.000)

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files.
Note: CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care

Proportion of Medical Pluralism by Province, female subsample, Canadians aged 50+, 2003/2005

Medical Pluralism	**Maritime /Yukon/ NWT**	**Quebec**	**Ontario**	**Prairies** [a]	**British Columbia**	**Total**
Non-use	1%	1%	1%	.4%	1%	1%
CHC-only use	1%	1%	.5%	1%	1%	1%
CAM single or dual use	.4%	2%	1%	2%	2%	2%
PHC-only use	6%	11%	8%	8%	7%	8%
Non-CAM dual use	80%	67%	71%	62%	65%	69%
Tri-use	11%	18%	19%	27%	25%	20%
Total	100% (4,814)	100% (15,145)	100% (22,061)	100% (8,735)	100% (7,845)	100% (58,600)

(χ^2=1161.14, df=20, p<.000; Cramer's V=.07, p<.000)

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files.
Note: CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care
[a] Prairies include Alberta, Saskatchewan and Manitoba.

Proportion of Medical Pluralism by Marital Status, female subsample, Canadians aged 50+, 2003/2005

Medical Pluralism	Married/ Common law	Widowed/ Divorced	Single	Total
Non-use	1%	1%	1%	1%
CHC-only use	1%	1%	2%	1%
CAM single or dual use	2%	1%	2%	2%
PHC-only use	8%	8%	9%	8%
Non-CAM dual use	67%	71%	65%	69%
Tri-use	21%	17%	20%	20%
Total	100% (36,940)	100% (18,342)	100% (3,268)	100% (58,550)

(χ^2=441.27, df=10, p<.000; Cramer's V=.06, p<.000)

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files.
Note: CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care

Proportion of Medical Pluralism by Living Arrangement, female subsample, Canadians aged 50+, 2003/2005

Medical Pluralism	Unattached alone	With spouse/ partner	With spouse/partner & child/sibling	Other arrangement	Total
Non-use	1%	1%	1%	1%	1%
CHC-only use	1%	.4%	1%	2%	1%
CAM single or dual use	2%	2%	2%	2%	2%
PHC-only use	8%	8%	9%	8%	8%
Non-CAM dual use	71%	69%	65%	71%	69%
Tri-use	17%	21%	23%	17%	20%
Total	100% (17,504)	100% (25,785)	100% (11,967)	100% (3623)	100% (58,429)

(χ^2=366.70, df=15, p<.000, 2-tailed)

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files.
Note: CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care

Proportion of Medical Pluralism by Age, male subsample, Canadians aged 50+, 2003/2005

Medical Pluralism	**Age cohort** 50-59	60-69	70+	**Total**
Non-use	7%	5%	2 %	5 %
CHC-only use	15%	7%	5 %	10%
CAM single or dual use	5%	2%	1%	3%
PHC-only use	8%	7%	5%	7%
Non-CAM dual use	53%	68%	79%	63%
Tri-use	12 %	11%	8%	11%
Total [a]	100% (5,114)	100% (3,201)	100% (2,579)	100% (10,894)

(χ^2=665.71, df=10, p<.000; Cramer's V=.18, p<.000)

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files.
Note: CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care

Proportion of Medical Pluralism by Household Income Adequacy, male subsample, Canadians aged 50+, 2003/2005

Medical Pluralism	Low income	Lower middle income	Upper middle income	High income	Total
Non-use	8%	5%	5%	5%	5%
CHC-only use	16%	10%	9%	9%	10%
CAM single or dual use	3%	2%	4%	4%	4%
PHC-only use	9%	7%	8%	6%	7%
Non-CAM dual use	58%	66%	64%	60%	63%
Tri-use	5%	9%	10%	15%	11%
Total	100% (657)	100% (1,901)	100% (3,337)	100% (3,554)	100% (9,449)

(χ^2=149.74, df=15, p<.000; Cramer's V=.07, p<.000)

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files.
Note: CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care

Proportion of Medical Pluralism by Respondent Highest Education, male subsample, Canadians aged 50+, 2003/2005

Medical Pluralism	Less than high school	Graduated high school	Graduated post-secondary	Total
Non-use	6%	6%	4%	5%
CHC-only use	11%	12%	9%	10%
CAM single or dual use	2%	4%	4%	3%
PHC-only use	7%	6%	7%	7%
Non-CAM dual use	67%	62%	62%	63%
Tri-use	7%	10%	13%	11%
Total	100% (2,720)	100% (1,748)	100% (6,143)	100% (10,611)

(χ^2=113.35, df=10, p<.000; Cramer's V=.07, p<.000)

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files.
Note: CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care

Proportion of Medical Pluralism by Race, male subsample, Canadians aged 50+, 2003/2005

Medical Pluralism	White	Non-White	Total
Non-use	5%	4%	5%
CHC-only use	9%	12%	10%
Non-CHC dual use	3%	3%	3%
PHC-only use	7%	6%	7%
Non-CAM dual use	64%	62%	63%
Tri-use	11%	9%	11%
Total	100% (9,425)	100% (838)	100% (10,648)

(χ^2=128.19, df=10, p<.000; Cramer's V=.08, p<.000)

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files.
Note: CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care

Proportion of Medical Pluralism by Immigration Status, male subsample, Canadians aged 50+, 2003/2005

Medical Pluralism	Non-immigrants	Recent immigrants[a]	Long-term immigrants[b]	Total
Non-use	5%	5%	5%	5%
CHC-only use	9%	21%	11%	10%
CAM single or dual use	3%	4%	3%	3%
PHC-only use	7%	6%	7%	7%
Non-CAM dual use	64%	57%	63%	63%
Tri-use	11%	7%	11%	11%
Total	100% (7,880)	100% (534)	100% (2,250)	100% (10,664)

(χ^2=89.15, df=10, p<.000; Cramer's V=.07, p<.000)

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files.
Note: CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care

[a] Less than twenty years in Canada

[b] Twenty years or more in Canada

Proportion of Medical Pluralism by Number of Chronic Conditions, male subsample, Canadians aged 50+, 2003/2005

Medical Pluralism	None	One	Two	Three	Four +	Total
Non-use	15%	6%	2%	1%	1%	5%
CHC-only use	11%	13%	10%	9%	6%	10%
CAM single or dual use	4%	4%	4%	3%	2%	3%
PHC-only use	14%	8%	4%	4%	3%	7%
Non-CAM dual use	49%	60%	69%	70%	71%	63%
Tri-use	7%	9%	10%	13%	17%	11%
Total	100% (2,141)	100% (2,663)	100% (2,365)	100% (1,575)	100% (2,148)	100% (10,892)

(χ^2=1173.42, df=20, p<.000; Cramer's V=.17, p<.000)

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files.
Note: CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care

Proportion of Medical Pluralism by Functional Restriction, male sample, Canadians aged 50+, 2003/2005

Medical Pluralism	**Never restricted**	**Sometimes restricted**	**Always restricted**	**Total**
Non-use	7%	3%	3%	5%
CHC-only use	11%	10%	8%	10%
CAM single or dual use	4%	3%	2%	3%
PHC-only use	9%	6%	3%	7%
Non-CAM dual use	60%	66%	70%	63%
Tri-use	9%	13%	14%	11%
Total	100% (6,159)	100% (2,417)	100% (2,283)	100% (10,859)

(χ^2=272.82, df=10, p<.000; Cramer's V=.11, p<.000)

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files.
Note: CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care

Proportion of Medical Pluralism by Self-perceived Physical Health, male subsample, Canadians aged 50+, 2003/2005

Medical Pluralism	**Fair/Poor health**	**Good health**	**V.good/Excellent health**	**Total**
Non-use	2%	5%	7%	5%
CHC-only use	10%	11%	10%	10%
CAM single or dual use	1%	4%	4%	3%
PHC-only use	3%	6%	10%	7%
Non-CAM dual use	73%	65%	59%	63%
Tri-use	11%	11%	11%	11%
Total	100% (2,050)	100% (3,659)	100% (5,176)	100% (10,885)

(χ^2=262.78, df=10, p<.000; Cramer's V=.11, p<.000)

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files.
Note: CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care

Proportion of Medical Pluralism by Self-perceived Mental Health, male subsample, Canadians aged 50+, 2003/2005

Medical Pluralism	Fair/Poor health	Good health	V.good/Excellent health	Total
Non-use	3%	5%	5%	5%
CHC-only use	12%	11%	10%	10%
CAM single or dual use	2%	3%	3%	3%
PHC-only use	3%	6%	7%	7%
Non-CAM dual use	69%	65%	62%	63%
Tri-use	11%	9%	12%	11%
Total	100% (574)	100% (2,678)	100% (7,622)	100% (10,874)

(χ^2=56.28, df=10, p<.000; Cramer's V=.05, p<.000)

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files.
Note: CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care

Proportion of Medical Pluralism by Urban/Rural Region, male subsample, Canadians aged 50+, 2003/2005

Medical Pluralism	Urban	Rural	Total
Non-use	5%	6%	5%
CHC-only use	10%	10%	10%
CAM single or dual use	3%	3%	3%
PHC-only use	7%	8%	7%
Non-CAM dual use	63%	64%	63%
Tri-use	12%	9%	11%
Total	100% (8,052)	100% (2,841)	100% (10,893)

(χ^2=31.13, df=5, p<.000; Cramer's V=.05, p<.000)

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files.
Note: CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care

Proportion of Medical Pluralism by Province, male subsample, Canadians aged 50+, 2003/2005

Medical Pluralism	Maritime /Yukon/ NWT	Ontario	Prairies[a]	British Columbia	Total
Non-use	7%	4%	6%	5%	5%
CHC-only use	13%	8%	9%	11%	10%
CAM single or dual use	1 %	3%	6%	5%	3%
PHC-only use	6%	8%	4%	7%	7%
Non-CAM dual use	67%	64%	61%	60%	63%
Tri-use	6%	12%	13%	12%	11%
Total	100% (2,308)	100% (4,903)	100% (186)	100% (3,473)	100% (10,870)

(χ^2=188.52, df=15, p<.000; Cramer's V=.08, p<.000)

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files.
Note: CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care
[a] Prairies include Alberta, Saskatchewan and Manitoba.

Proportion of Medical Pluralism by Marital Status, male subsample, Canadians aged 50+, 2003/2005

Medical Pluralism	Married/ Common law	Widowed/ Divorced	Single	Total
Non-use	5%	7%	12%	5%
CHC-only use	10%	11%	16%	10%
CAM single or dual use	3%	3%	4%	3%
PHC-only use	7%	9%	10%	7%
Non-CAM dual use	65%	60%	50%	63%
Tri-use	11%	11%	8%	11%
Total	100% (9,077)	100% (1,305)	100% (498)	100% (10,880)

(χ^2=117.46, df=10, p<.000; Cramer's V=.07, p<.000)

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files.
Note: CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care

Proportion of Medical Pluralism by, male subsample, Canadians aged 50+, 2003/2005

Medical Pluralism	**Unattached alone**	**With spouse/ partner**	**With spouse/partner & child/sibling**	**Other arrangement**	**Total**
Non-use	8%	4%	7%	3%	5%
CHC-only use	11%	7%	14%	12%	10%
CAM single or dual use	3%	3%	4%	2%	3%
PHC-only use	9%	6%	7%	7%	7%
Non-CAM dual use	59%	68%	56%	65%	63%
Tri-use	10%	11%	12%	9%	11%
Total	100% (1,558)	100% (5,664)	100% (2,845)	100% (781)	100% (10,848)

(χ^2=253.01, df=15, p<.000)

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files.
Note: CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care

Appendix G. Bivariate results of medical pluralism (inductive patterns), female subsample, Canadians aged 50+, 2003/2005

Conditional probabilities of covariates for the six-class model, female subsample, Canadians aged 50+, 2003/2005

	Latent Class					
	1=High CHC/PHC and avg. CAM	2=Low CHC, avg. PHC, and low to avg. CAM	3= High CHC/PHC/CAM	4=Low to avg. CHC/PHC and high CAM	5= Avg. CHC, low to high PHC, and low CAM	6= Low CHC/PHC/CAM
Class proportion	0.53	0.26	0.06	0.06	0.05	0.04
Social Location						
Age (mean)	64.20	63.33	59.93	59.50	70.96	63.93
Income						
Low	0.09	0.11	0.05	0.07	0.17	0.15
Lower middle	0.21	0.21	0.14	0.16	0.27	0.24
Upper middle	0.53	0.53	0.56	0.56	0.48	0.51
High	0.17	0.16	0.25	0.22	0.09	0.10
Mean	2.77	2.74	3.01	2.92	2.48	2.56
Education						
Less than secondary	0.29	0.32	0.15	0.20	0.49	0.39
Graduated secondary	0.18	0.19	0.15	0.18	0.15	0.19
Some/Completed post-secondary	0.50	0.46	0.68	0.59	0.32	0.39
Mean	2.21	2.14	2.53	2.40	1.82	2.00
Ethnicity						
White	0.90	0.88	0.89	0.89	0.78	0.82

	Latent Class					
	1=High CHC/PHC and avg. CAM	2=Low CHC, avg. PHC, and low to avg. CAM	3= High CHC/PHC/CAM	4=Low to avg. CHC/PHC and high CAM	5= Avg. CHC, low to high PHC, and low CAM	6= Low CHC/PHC/CAM
non-White	0.07	0.08	0.08	0.08	0.16	0.13
Immigration						
not an immigrant to Canada	0.75	0.75	0.77	0.77	0.66	0.71
<20 years in Canada	0.03	0.04	0.03	0.03	0.08	0.08
>=20 years in Canada	0.19	0.18	0.19	0.17	0.22	0.18
Spatial Assets						
Urban/Rural						
Urban	0.81	0.80	0.81	0.79	0.83	0.78
Rural	0.19	0.20	0.19	0.21	0.17	0.22
Province						
Maritime/Territories/Yukon	0.09	0.09	0.05	0.06	0.09	0.11
Quebec	0.23	0.29	0.22	0.29	0.30	0.32
Ontario	0.41	0.35	0.36	0.30	0.35	0.30
Prairie Provinces	0.06	0.07	0.08	0.08	0.06	0.08
Alberta	0.08	0.08	0.12	0.11	0.06	0.07
British Columbia	0.13	0.12	0.17	0.16	0.14	0.14
Collectivities						
Marital Status						
Married/common law	0.64	0.63	0.70	0.68	0.46	0.55
Widowed/separated/divorced	0.31	0.31	0.25	0.26	0.46	0.35
Single	0.05	0.05	0.06	0.06	0.08	0.10
Household						

	Latent Class					
	1=High CHC/PHC and avg. CAM	2=Low CHC, avg. PHC, and low to avg. CAM	3= High CHC/PHC/CAM	4=Low to avg. CHC/PHC and high CAM	5= Avg. CHC, low to high PHC, and low CAM	6= Low CHC/PHC/CAM
No. Of persons living in household (mean)	2.07	2.12	2.19	2.21	2.04	2.19
Chronic Conditions (mean)	2.93	2.30	3.13	2.44	2.86	1.52
Functional Ability						
Never	0.51	0.63	0.45	0.58	0.46	0.69
Sometimes	0.24	0.20	0.27	0.23	0.24	0.16
Often	0.25	0.17	0.27	0.19	0.29	0.14
Mean	1.73	1.54	1.82	1.61	1.82	1.45
Perceived Physical Health						
Fair/poor	0.21	0.16	0.19	0.14	0.29	0.14
Good	0.34	0.32	0.33	0.30	0.37	0.30
Very good	0.30	0.33	0.32	0.34	0.24	0.32
Excellent	0.14	0.19	0.16	0.21	0.10	0.24
Mean	2.37	2.55	2.44	2.62	2.16	2.66
Perceived Mental Health						
Fair/poor	0.06	0.04	0.06	0.05	0.07	0.05
Good	0.23	0.22	0.22	0.21	0.29	0.22
Very good	0.35	0.35	0.37	0.35	0.32	0.34
Excellent	0.36	0.39	0.35	0.38	0.31	0.38
Mean	3.02	3.08	3.00	3.07	2.89	3.06

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files.

Appendix H. Bivariate results (inductive pattern), male subsample, Canadians aged 50+, 2003/2005

Conditional probabilities of covariates for the three-class model, male subsample, Canadians aged 50+, 2003/2005.

	Class		
	1=High CHC/PHC and low CAM	2=Low CHC/PHC/CAM	3=High CHC/PHC/CAM
Class proportions	0.65	0.26	0.09
Social Location			
Age (mean)	63.52	59.66	61.13
Income Adequacy			
Low	0.06	0.08	0.03
Lower middle	0.18	0.17	0.14
Upper middle	0.44	0.43	0.41
High	0.32	0.31	0.42
Mean	3.03	2.98	3.22
Education			
Less than secondary	0.26	0.26	0.17
Graduated secondary	0.15	0.17	0.17
Some/Completed post-secondary	0.56	0.54	0.64
Mean	2.32	2.28	2.48
Race			
White	0.87	0.84	0.91
non-white	0.11	0.14	0.06
Immigration			
Not an immigrant	0.72	0.71	0.77
<20 years in Canada	0.05	0.06	0.02
>=20 years in Canada	0.21	0.21	0.19
Spatial Assets			
Urban/Rural			
Urban	0.74	0.72	0.78

	Class		
	1=High CHC/PHC and low CAM	2=Low CHC/PHC/CAM	3=High CHC/PHC/CAM
Rural	0.26	0.28	0.22
Province			
Maritime/Territories/Yukon	0.22	0.23	0.11
Eastern provinces	0.45	0.41	0.54
Western provinces	0.33	0.36	0.35
Collectivities			
Marital Status			
Married/common law	0.85	0.80	0.84
Widowed/separated/divorced	0.11	0.13	0.12
Single	0.04	0.07	0.03
Household			
No. of persons living in household (mean)	2.40	2.53	2.47
Functional Ability			
Never	0.53	0.67	0.50
Sometimes	0.23	0.19	0.25
Often	0.23	0.14	0.25
Mean	1.70	1.46	1.75
Chronic Conditions(mean)	2.27	1.43	2.48
Perceived Physical Health			
Fair/poor	0.22	0.12	0.17
Good	0.34	0.33	0.34
Very good	0.30	0.34	0.34
Excellent	0.15	0.21	0.15
Mean	2.37	2.64	2.47
Perceived Mental Health			
Fair/poor	0.06	0.04	0.05
Good	0.25	0.25	0.19
Very good	0.33	0.32	0.34
Excellent	0.36	0.39	0.42
Mean	2.99	3.06	3.13

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted.
Note: CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care (flu shot).

Appendix I. Block 1 of the multinomial logit model of medical pluralism (deductive patterns) on hypothesized predictor variables, main effects/ interaction model, full sample, Canadians aged 50+, 2003/2005

	Multinomial Logit Regression Model (Vs.) Tri-Use[a]									
	Non- use		CHC only use		CAM single or dual use[b]		PHC[c] only use		Non-CAM dual use[d]	
Independent Variables	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*
Spatial Assets										
Urban/rural										
Urban	0.25	***1.29	0.21	***1.23	0.16	***1.17	0.04	1.04	-0.03	**0.97
Rural (ref)	---	---	---	---	---	---	---	---	---	---
Province										
Maritime/Terr./ Yukon	0.96	***2.61	1.26	***3.52	0.05	1.05	0.75	***2.11	1.02	***2.77
Ontario	1.03	***2.81	0.79	***2.21	0.46	***1.59	0.86	***2.36	0.30	***1.36
Quebec	-0.05	0.96	-0.21	***0.81	-0.42	***0.66	0.44	***1.55	0.26	***1.29
Sask/Manitoba	0.31	***1.37	0.20	***1.22	0.24	***1.27	0.02	1.02	-0.05	0.95
Alberta	-0.01	0.99	-0.06	0.94	0.16	**1.17	0.13	1.14	-0.20	***0.82
British Columbia(ref)	---	---	---	---	---	---	---	---	---	---
Collectivities										
Marital Status										
Married/common law	-0.83	***0.44	-0.23	***0.79	-0.28	***0.76	-0.36	***0.70	0.02	1.02
Widow/divorced	-0.64	***0.53	-0.18	***0.84	-0.37	***0.69	-0.18	*0.84	0.14	**1.15
Single (ref)	---	---	---	---	---	---	---	---	---	---
Household										
# Persons in house	0.25	***1.29	0.21	***1.23	0.16	***1.17	0.04	*1.04	-0.03	**0.97

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files *p<.05 **p<.01 ***p<.001. *Note:* CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care (flu shot). The reference category is tri-use. Unstandardized (Beta) and standardized coefficients (Exp(B)) are presented. [a] Uses CHC+CAM+PHC ; [b] Uses CAM only *or* uses CAM + PHC ; [c] Uses PHC only (=flu shot); [d] Uses CHC + PHC only.

Appendix J. Block 2, multinomial logit model of medical pluralism (deductive patterns), main effects model, full sample, Canadians aged 50+, 2003/2005

	Multinomial Logit Regression Model (Vs.) Tri-Use[a]									
	Non- use		CHC only use		CAM single or dual use[b]		PHC[c] only use		Non-CAM dual use[d]	
Independent Variables	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*
Spatial Assets										
Urban/rural										
Urban	-		-				-			
	0.20	***0.82	0.02	0.99	-0.19	***0.83	0.00	1.00	0.14	***1.15
Rural (ref)	---	---	---	---	---	---	---	---	---	---
Province										
Maritime/Terr./ Yukon	0.97	***2.63	1.31	***3.70	0.05	1.05	0.72	***2.05	1.06	***2.88
Ontario	1.04	***2.82	0.81	***2.24	0.46	***1.59	0.81	***2.25	0.32	***1.38
Quebec	-		-							
	0.03	0.97	0.23	***0.79	-0.43	***0.65	0.48	***1.62	0.27	***1.3
Sask/Manitoba	0.38	***1.47	0.27	***1.31	0.30	***1.35	0.01	1.01	-0.07	0.93
Alberta	-		-							
	0.01	0.99	0.00	1.00	0.15	***1.17	0.14	1.15	-0.13	**0.88
British Columbia(ref)	---	---	---	---	---	---	---	---	---	---
Collectivities										
Marital Status										
Married/common law	-		-				-			
	0.58	***0.56	0.05	0.95	-0.07	0.93	0.33	***0.72	-0.02	0.98
Widow/divorced	-						-			
	0.30	***0.74	0.02	1.02	-0.05	0.95	0.19	**0.83	-0.08	0.93
Single (ref)	---	---	---	---	---	---	---	---	---	---

Multinomial Logit Regression Model (Vs.) Tri-Use[a]										
	Non- use		CHC only use		CAM single or dual use[b]		PHC[c] only use		Non-CAM dual use[d]	
Independent Variables	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*
Household										
# Persons in house	0.10	***1.10	0.06	***1.06	-0.01	0.99	0.04	1.04	0.04	***1.04
Social Location										
Age	-0.01	0.99	0.00	1.00	-0.01	1.00	-0.02	0.98	0.02	1.02
Age-squared	-1.50	***0.22	-1.04	***0.36	-1.23	**0.29	-0.14	0.87	0.11	1.12
Gender										
Male	1.06	***2.90	0.56	***176	0.18	***1.20	0.72	***2.05	0.45	***1.57
Female (ref)	---	---	---	---	---	---	---	---	---	---
Income adequacy										
Low	0.87	***2.39	0.58	***1.78	0.10	1.10	0.73	***2.08	0.50	***1.64
Lower middle	0.57	***1.77	0.27	***1.31	0.00	1.00	0.38	***1.46	0.29	***1.34
Upper middle	0.24	***1.28	0.07	**1.07	0.02	1.02	0.15	***1.17	0.08	**1.08
High (ref)	---	---	---	---	---	---	---	---	---	---
Education										
Less than grade 12	0.73	***2.08	0.57	***1.77	0.24	***1.28	0.51	***1.66	0.37	***1.45
Completed grade 12	0.51	***1.67	0.45	***1.57	0.19	***1.21	0.36	***1.43	0.26	***1.30
Some/completed post-secondary (Ref)	---	---	---	---	---	---	---	---	---	---
Race										
White	0.14	*1.15	0.10	*1.11	0.05	1.05	-0.18	**0.83	-0.06	0.94
Non-White (ref)										

Multinomial Logit Regression Model (Vs.) Tri-Use[a]										
	Non- use		CHC only use		CAM single or dual use[b]		PHC only use [c]		Non-CAM dual use[d]	
Independent Variables	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*
Immigration Status										
Non- immigrant	-0.31	***0.73	-0.41	***0.67	-0.10	*0.91	0.05	1.04	-0.15	***0.86
Recent immigrant	0.30	***1.34	0.45	***1.57	0.20	*1.22	-0.10	0.90	0.27	***1.31
Long-term immigrant (ref)										

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files
*p<.05 **p<.01 ***p<.001 *Note:* CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care (flu shot). The reference category is tri-use. Models control for the effects of spatial assets (urban/rural; province of residence) and collectivities (marital status and household size). Unstandardized (Beta) and standardized coefficients (Exp(B)) are presented. [a] Uses CHC+CAM+PHC; [b] Uses CAM only *or* uses CAM + PHC; [c] Uses PHC only (=flu shot); [d] Uses CHC + PHC only.

Appendix K. Block 2, multinomial logit model of medical pluralism (deductive patterns), interaction model, full sample, Canadians aged 50+, 2003/2005

	Multinomial Logit Regression Model (Vs.) Tri-Use[a]									
	Non- use		CHC only use		CAM single or dual use[b]		PHC[c] only use		Non-CAM dual use[d]	
Independent Variables	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*
Spatial Assets										
Urban/rural										
Urban	-0.20	***0.82	-0.02	0.98	-0.19	***0.83	-0.01	0.99	0.14	***1.15
Rural (ref)	---	---	---	---	---	---	---	---	---	---
Province										
Maritime/Terr./ Yukon	0.97	***2.63	1.31	***3.70	0.05	1.05	0.72	***2.05	1.06	***2.88
Ontario	1.04	***2.83	0.81	***2.24	0.46	***1.59	0.81	***2.25	0.32	***1.38
Quebec	-0.03	0.97	-0.23	***0.79	-0.43	***0.65	0.48	***1.62	0.27	***1.3
Sask/Manitoba	0.38	***1.47	0.27	***1.31	0.30	***1.35	0.00	1.00	-0.07	0.93
Alberta	-0.01	0.99	-0.01	0.99	0.15	**1.16	0.14	1.15	-0.13	**0.88
British Columbia(ref)	---	---	---	---	---	---	---	---	---	---
Collectivities										
Marital Status										
Married/common law	-0.56	***0.57	-0.04	0.96	-0.06	0.94	-0.30	***0.74	-0.02	0.98
Widow/divorced	-0.33	***0.72	0.00	1.00	-0.06	0.94	-0.21	**0.81	-0.08	0.92
Single (ref)	---	---	---	---	---	---	---	---	---	---
Household										

	Multinomial Logit Regression Model (Vs.) Tri-Use[a]									
	Non- use		CHC only use		CAM single or dual use[b]		PHC[c] only use		Non-CAM dual use[d]	
Independent Variables	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*
# Persons in house	0.09	***1.09	0.06	***1.06	-0.02	0.99	0.03	1.03	0.04	**1.04
Social Location										
Age * gender (ref, female)	0.04	***1.04	0.02	***1.02	0.01	***1.01	0.03	***1.03	0.01	***1.01
Income adequacy										
Low	0.86	***2.37	0.57	***1.76	0.09	1.09	0.72	***2.06	0.50	***1.64
Lower middle	0.59	***1.80	0.28	***1.32	0.01	1.01	0.39	***1.47	0.29	***1.34
Upper middle	0.25	***1.29	0.08	**1.08	0.02	1.02	0.16	***1.17	0.08	**1.08
High (ref)	---	---	---	---	---	---	---	---	---	---
Education										
Less than grade 12	0.72	***2.06	0.56	***1.76	0.24	***1.27	0.50	***1.65	0.37	***1.45
Completed grade 12	0.51	***1.66	0.45	***1.56	0.18	***1.20	0.35	***1.42	0.26	***1.30
Some/completed post-secondary (Ref)	---	---	---	---	---	---	---	---	---	---
Race										
White	0.13	*1.14	0.10	*1.11	0.05	1.05	-0.19	**0.83	-0.06	0.94
Non-White (ref)										
Immigration Status										
Non- immigrant	-0.32	***0.73	-0.41	***0.67	-0.10	*0.91	0.04	1.04	-0.15	***0.86
Recent immigrant	0.29	**1.34	0.45	***1.57	0.20	*1.22	-0.10	0.90	0.27	***1.31
Long-term immigrant (ref)										

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files
*p<.05 **p<.01 ***p<.001 *Note:* CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care (flu shot). The reference category is tri-use. Models control for the effects of spatial assets (urban/rural; province of residence) and collectivities (marital status and household size).

Unstandardized (Beta) and standardized coefficients (Exp(B)) are presented. [a] Uses CHC+CAM+PHC; [b] Uses CAM only *or* uses CAM + PHC; [c] Uses PHC only (=flu shot); [d] Uses CHC + PHC only.

Appendix L. Block 1, multinomial regression model of medical pluralism (deductive patterns) on hypothesized predictor variables, female subsample, Canadians aged 50+, 2003/2005

	Multinomial Logit Regression Model (Vs.) Tri-Use[a]									
	Non- use		CHC only use		CAM single or dual use[b]		PHC[c] only use		Non-CAM dual use[d]	
Independent Variables	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*
Spatial Assets										
Urban/rural										
Urban	-0.11	0.89	0.17	1.19	-0.15	0.86	-0.08	0.93	0.19	***1.21
Rural (ref)	---	---	---	---	---	---	---	---	---	---
Province										
Maritime/Terr./ Yukon	1.29	***3.63	1.45	***4.27	-0.57	*0.57	0.75	***2.13	1.10	***3.01
Ontario	1.21	***3.37	0.83	***2.29	0.56	***1.74	0.79	***2.20	0.39	***1.47
Quebec	0.33	1.39	-0.25	0.78	0.07	1.08	0.42	***1.53	0.38	***1.47
Sask/Manitoba	0.22	1.25	0.28	1.32	0.03	1.03	0.20	*1.23	0.06	1.06
Alberta	-1.06	*0.35	-0.35	0.70	-0.10	0.90	0.01	1.01	-0.22	***0.80
British Columbia(ref)	---	---	---	---	---	---	---	---	---	---
Collectivities										
Marital Status										
Married/common law	-1.40	***0.25	-1.55	***0.21	-0.38	**0.69	-0.14	0.87	0.04	1.04
Widow/divorced	-0.70	***0.50	-0.20	0.82	-0.34	*0.71	0.12	1.13	0.29	***1.34
Single (ref)	---	---	---	---	---	---	---	---	---	---
Household										
# Persons in house	0.24	***1.27	0.21	***1.23	0.05	1.05	0.00	1.00	-0.04	***0.96

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files
*p<.05 **p<.01 ***p<.001 *Note:* CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care (flu shot, mammogram, Pap Test). The reference category is tri-use. Models control for the effects of spatial assets (urban/rural; province of residence) and collectivities (marital status and household size). Unstandardized (Beta) and standardized coefficients (Exp(B)) are presented.
[a] Uses CHC+CAM+PHC; [b] Uses CAM only *or* uses CAM + PHC ; [c] Uses PHC only (=flu shot, mammogram, Pap Test); [d] Uses CHC + PHC only.

Appendix M. Block 2, multinomial regression model of medical pluralism (deductive patterns) on hypothesized predictor variables, female subsample, Canadians aged 50+, 2003/2005

	Multinomial Logit Regression Model (Vs.) Tri-Use[a]									
	Non- use		CHC only use		CAM single or dual use[b]		PHC[c] only use		Non-CAM dual use[d]	
Independent Variables	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*
Spatial Assets										
Urban/rural										
Urban	-0.17	0.84	0.01	1.01	-0.12	0.89	-0.02	0.99	0.18	1.20***
Rural (ref)	---	---	---	---	---	---	---	---	---	---
Province										
Maritime/Terr./ Yukon	1.61	***4.98	1.83	***6.21	-0.66	**0.52	0.71	***2.03	1.11	***3.03
Ontario	1.50	***4.47	1.10	***2.99	0.43	***1.54	0.73	***2.07	0.38	***1.46
Quebec	0.53	**1.70	-0.14	0.87	0.07	1.07	0.42	***1.52	0.36	***1.43
Sask/Manitoba	0.44	1.56	0.31	1.37	0.01	1.01	0.17	*1.19	0.02	1.02
Alberta	-0.93	*0.39	-0.03	0.97	-0.11	0.90	0.03	1.03	-0.18	***0.83
British Columbia(ref)	---	---	---	---	---	---	---	---	---	---
Collectivities										
Marital Status										
Married/common law	-1.27	***0.28	-1.54	***0.21	-0.39	**0.68	-0.21	**0.82	0.00	1.00

	Multinomial Logit Regression Model (Vs.) Tri-Use[a]									
	Non- use		CHC only use		CAM single or dual use[b]		PHC[c] only use		Non-CAM dual use[d]	
Independent Variables	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*
Widow/divorced	-1.42	***0.24	-0.95	***0.39	-0.37	**0.69	-0.14	0.87	-0.06	0.95
Single (ref)	---	---	---	---	---	---	---	---	---	---
Household										
# Persons in house	0.29	***1.34	0.18	***1.19	0.02	1.02	0.09	***1.09	0.06	***1.06
Social Location										
Age	0.05	***1.05	0.06	***1.06	-0.02	***0.98	0.01	***1.01	0.04	***1.04
Income adequacy										
Low	1.81	***6.08	1.66	***5.27	0.26	1.29	0.77	***2.16	0.46	***1.59
Lower middle	1.45	***4.26	1.54	***4.66	0.36	**1.43	0.44	***1.56	0.30	***1.35
Upper middle	0.98	***2.66	1.15	***3.15	0.27	**1.32	0.23	***1.26	0.08	**1.08
High (ref)	---	---	---	---	---	---	---	---	---	---
Education										
Less than grade 12	0.83	***2.29	1.11	***3.02	0.35	***1.42	0.50	***1.65	0.41	***1.51
Completed grade 12	0.46	**1.58	0.70	***2.01	0.10	1.11	0.41	***1.51	0.29	***1.34
Some/completed post-secondary (Ref)	---	---	---	---	---	---	---	---	---	---
Race										
White	-0.35	0.71	-0.69	***0.50	0.03	1.03	0.11	1.12	0.03	*1.03
Non-White (ref)										
Immigration Status										
Native-born Canadian	-0.17	0.84	-0.50	***0.60	0.10	1.10	0.01	1.01	-0.15	***0.87
Recent immigrant	1.25	***3.47	1.37	***3.94	0.32	1.38	-	0.77*	0.26	***1.29

Multinomial Logit Regression Model (Vs.) Tri-Use[a]										
	Non- use		CHC only use		CAM single or dual use[b]		PHC[c] only use		Non-CAM dual use[d]	
Independent Variables	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*
							0.27			
Long-term immigrant (ref)										

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files

*p<.05 **p<.01 ***p<.001 *Note:* CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care (flu shot, mammogram, Pap Test). The reference category is tri-use. Models control for the effects of spatial assets (urban/rural; province of residence) and collectivities (marital status and household size). The age squared variable was not statistically significant so the model was re-run without it. Unstandardized (Beta) and standardized coefficients (Exp(B)) are presented.

[a] Uses CHC+CAM+PHC; [b] Uses CAM only *or* uses CAM + PHC ; [c] Uses PHC only (=flu shot, mammogram, Pap Test); [d] Uses CHC + PHC only.

Appendix N. Block 1, multinomial regression model of medical pluralism (deductive patterns) on hypothesized predictor variables, male subsample, Canadians aged 50+, 2003/2005

	Multinomial Logit Regression Model (Vs.) Tri-Use[a]									
	Non- use		CHC only use		CAM single or dual use[b]		PHC[c] only use		Non-CAM dual use[d]	
Independent Variables	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*
Spatial Assets										
Urban/rural										
Urban	-0.37	**0.69	0.00	1.00	-0.37	**0.69	-0.34	***0.71	-0.06	0.94
Rural (ref)	---	---	---	---	---	---	---	---	---	---
Province										
Maritime/Terr./ Yukon	0.86	***2.37	0.96	***2.62	-0.54	**0.58	0.71	***2.04	0.84	***2.30
Eastern	-0.20	0.82	-0.24	**0.79	-0.43	***0.65	0.17	1.19	0.08	1.08
Western (ref)	---	---	---	---	---	---	---	---	---	---
Collectivities										
Marital Status										
Married/common law	-1.51	***0.22	-1.18	***0.31	-0.62	0.54*	-0.77	***0.46	-0.02	0.98
Widow/divorced	-0.84	***0.43	-0.71	**0.49	-0.63	0.53*	-0.37	0.69	-0.08	0.92
Single (ref)	---	---	---	---	---	---	---	---	---	---
Household										
# Persons in house	0.18	***1.20	0.32	***1.38	0.14	*1.15	0.04	1.04	-0.06	0.94

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files
*p<.05 **p<.01 ***p<.001 *Note:* CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care (flu shot, PSA Test). The reference category is tri-use. Models control for the effects of spatial assets (urban/rural; province of residence) and collectivities (marital status and household size). Unstandardized (Beta) and standardized coefficients (Exp(B)) are presented.[a] Uses CHC+CAM+PHC; [b] Uses CAM only *or* uses CAM + PHC ; [c] Uses PHC only (=flu shot, PSA Test); [d] Uses CHC + PHC only.

Appendix O. Block 2, multinomial logit model of medical pluralism (deductive patterns) on hypothesized predictor variables, male subsample, Canadians aged 50+, 2003/2005

	Multinomial Logit Regression Model (Vs.) Tri-Use[a]									
	Non- use		CHC only use		CAM single or dual use[b]		PHC[c] only use		Non-CAM dual use[d]	
Independent Variables	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*
Spatial Assets										
Urban/rural										
Urban	-0.36	**0.70	-0.02	0.98	-0.32	*0.73	-0.31	**0.73	-0.09	0.93
Rural (ref)	---	---	---	---	---	---	---	---	---	---
Province										
Maritime/Terr./ Yukon	0.78	***2.17	0.95	***2.58	-0.67	**0.51	0.62	***1.85	0.83	***2.29
Eastern	-0.12	0.89	-0.18	0.84	-0.47	***0.63	0.24	*1.27	0.13	1.14
Western (ref)	---	---	---	---	---	---	---	---	---	---
Collectivities										
Marital Status										
Married/common law	-1.04	***0.35	0.35	***0.46	-0.26	0.77	-0.52	*0.60	-0.04	0.96
Widow/divorced	-0.47	0.63	0.63	*0.61	-0.37	0.69	-0.27	0.76	-0.29	0.75
Single (ref)	---	---	---	---	---	---	---	---	---	---
Household										
# Persons in house	0.01	1.01	0.11	*1.12	-0.03	0.97	0.01	1.01	-0.03	0.97
Social Location										
Age	-0.07	***0.94	-0.05	***0.95	-0.06	***0.94	-0.01	0.99	0.03	***1.03

Multinomial Logit Regression Model (Vs.) Tri-Use[a]										
	Non- use		CHC only use		CAM single or dual use[b]		PHC[c] only use		Non-CAM dual use[d]	
Independent Variables	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*
Income adequacy										
Low	0.91	***2.48	1.10	***3.01	0.56	1.76	1.13	***3.11	0.57	***1.76
Lower middle	0.42	*1.53	0.44	**1.56	0.06	1.06	0.57	***1.76	0.12	1.13
Upper middle	0.26	*1.30	0.24	*1.27	0.08	1.09	0.40	***1.49	0.13	1.14
High (ref)	---	---	---	---	---	---	---	---	---	---
Education										
Less than grade 12	0.82	***2.27	0.68	***1.98	0.29	1.33	0.28	*1.32	0.40	***1.49
Completed grade 12	0.53	***1.69	0.47	***1.60	0.32	*1.38	0.06	1.07	0.21	*1.23
Some/completed post-secondary (Ref)	---	---	---	---	---	---	---	---	---	---
Race										
White	0.03	1.03	-0.35	*0.71	-0.51	*0.60	-0.10	0.90	-0.24	0.79
Non-White (ref)										
Immigration Status										
Native-born Canadian	-0.34	*0.71	-0.41	***0.67	0.40	*1.50	-0.25	*0.78	-0.11	0.89
Recent immigrant	0.31	1.36	0.69	**1.99	0.51	1.66	-0.03	0.97	0.32	1.38
Long-term immigrant (Ref)										

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files *p<.05 **p<.01 ***p<.001 *Note:* CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care (flu shot, PSA Test). The reference category is tri-use. Models control for the effects of spatial assets (urban/rural; province of residence) and collectivities (marital status and household size). The age squared variable was not statistically significant so the model was re-run without it. Unstandardized (Beta) and standardized coefficients (Exp(B)) are presented.[a] Uses CHC+CAM+PHC; [b] Uses CAM only *or* uses CAM + PHC ; [c] Uses PHC only (=flu shot, PSA Test); [d] Uses CHC + PHC only.

Appendix P. Block 1, multinomial logit model of medical pluralism (inductive patterns) on hypothesized predictor variables, full sample, Canadians aged 50+, 2003/2005

Multinomial Logit Model
(Vs. Class 4= High CHC/PHC/CAM)

	Class 1=High CHC/PHC and avg.-low CAM		Class 2=Avg. CHC/PHC and avg.-low CAM		Class 3=Low CHC/PHC/CAM		Class 5=High CAM and low CHC/PHC	
Independent Variables	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*
Spatial Assets								
Urban/rural								
Urban	0.07	*1.07	-0.17	***0.85	-0.29	***0.75	-0.24	***0.79
Rural (ref)	---	---	---	---	---	---	---	---
Province								
Maritime/Terr./ Yukon	0.86	***2.36	0.92	***2.51	0.83	***2.29	0.03	1.03
Ontario	0.32	***1.38	0.57	***1.77	1.10	***3.01	0.65	***1.92
Quebec	0.46	***1.58	0.14	***1.15	0.24	***1.27	-0.28	***0.75
Sask/Manitoba	0.07	1.07	0.27	***1.32	0.44	***1.56	0.09	1.10
Alberta	-0.18	***0.83	0.03	1.03	0.06	1.06	-0.21	*0.81
British Columbia(ref)	---	---	---	---	---	---	---	---
Collectivities								
Marital Status								
Married/common law	0.16	**1.17	-0.16	**0.85	-0.64	***0.53	-0.37	***0.69
Widow/divorced	0.21	***1.24	-0.12	*0.89	-0.49	***0.61	-0.45	***0.64
Single (ref)	---	---	---	---	---	---	---	---
Household								
# Persons in house	-0.08	***0.93	0.10	***1.10	0.18	***1.20	0.13	***1.13

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files *p<.05 **p<.01 ***p<.001 *Note:* CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care (flu shot). The reference category is tri-use (i.e., High CHC/PHC/CAM). Models control for the effects of spatial assets (urban/rural; province of residence) and collectivities (marital status and household size). Unstandardized (Beta) and standardized coefficients (Exp(B)) are presented.

Appendix Q. Block 2, multinomial logit model of medical pluralism (inductive patterns) on hypothesized predictor variables, full sample, Canadians aged 50+, 2003/2005

	Multinomial Logit Model (Vs. Class 4= High CHC/PHC/CAM)							
	Class 1=High CHC/PHC and avg.-low CAM		Class 2=Avg. CHC/PHC and avg.-low CAM		Class 3=Low CHC/PHC/CAM		Class 5=High CAM and low CHC/PHC	
Independent Variables	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*
Spatial Assets								
Urban/rural								
Urban	0.11	***1.12	-0.10	**0.90	-0.18	***0.84	-0.21	***0.81
Rural (ref)	---	---	---	---	---	---	---	---
Province								
Maritime/Terr./ Yukon	0.85	***2.34	0.90	***2.45	0.79	***2.20	0.02	1.02
Ontario	0.29	***1.34	0.51	***1.66	1.05	***2.86	0.64	***1.91
Quebec	0.47	***1.61	0.13	***1.14	0.27	***1.31	-0.28	***0.76
Sask/Manitoba	-0.01	1.00	0.24	***1.27	0.43	***1.54	0.12	1.13
Alberta	-0.13	**0.88	0.06	1.07	0.07	1.07	-0.20	*0.82
British Columbia(ref)	---	---	---	---	---	---	---	---
Collectivities								
Marital Status								
Married/common law	0.03	1.03	-0.14	*0.87	-0.54	***0.58	-0.24	**0.78
Widow/divorced	-0.06	0.94	-0.09	0.91	-0.27	***0.76	-0.24	*0.79
Single (ref)	---	---	---	---	---	---	---	---
Household								
# Persons in house	0.06	***1.06	0.08	***1.08	0.12	***1.12	0.01	1.01
Social Location								
Age	0.05	***1.05	0.00	1.00	-0.03	***0.97	-0.05	***0.95
Gender								
Male	0.84	***2.32	0.99	***2.68	1.43	***4.17	0.41	***1.50

Multinomial Logit Model (Vs. Class 4= High CHC/PHC/CAM)								
	Class 1=High CHC/PHC and avg.-low CAM		Class 2=Avg. CHC/PHC and avg.-low CAM		Class 3=Low CHC/PHC/CAM		Class 5=High CAM and low CHC/PHC	
Independent Variables	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*
Female (ref)	---	---	---	---	---	---	---	---
Income adequacy								
Low	0.56	***1.75	0.64	***1.90	0.86	***2.37	0.28	**1.32
Lower middle	0.35	***1.42	0.33	***1.39	0.57	***1.77	0.10	1.11
Upper middle	0.13	***1.14	0.14	***1.15	0.27	***1.31	0.12	*1.13
High (ref)	---	---	---	---	---	---	---	---
Education								
Less than grade 12	0.59	***1.80	0.83	***2.29	0.94	***2.55	0.20	***1.23
Completed grade 12	0.48	***1.61	0.67	***1.95	0.72	***2.06	0.34	***1.41
Some/completed post-secondary (Ref)	---	---	---	---	---	---	---	---
Race								
White	0.20	***1.22	0.16	**1.17	0.29	***1.34	-0.08	0.93
Non-White (ref)								
Immigration Status								
Native-born Canadian	0.01	1.01	-0.10	**0.91	-0.11	*0.90	0.08	1.09
Recent immigrant	0.18	**1.20	0.32	***1.38	0.19	*1.21	0.24	*1.27
Long-term immigrant (Ref)								

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files
*p<.05 **p<.01 ***p<.001 *Note:* CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care (flu shot). The reference category is tri-use (i.e., High CHC/PHC/CAM). Models control for the effects of spatial assets (urban/rural; province of residence) and collectivities (marital status and household size). The age squared variable and age*gender interaction terms were not statistically significant so the model was re-run without it. Unstandardized (Beta) and standardized coefficients (Exp(B)) are presented.

Appendix R. Block 1, multinomial logit model of medical pluralism (inductive patterns) on hypothesized predictor variables, female subsample, Canadians aged 50+, 2003/2005

	Multinomial Logit Analysis (Vs. Class 3: High CHC/PHC/CAM)									
	Class 1=High CHC/PHC and avg. CAM		Class 2=Low CHC, avg. PHC and low to avg. CAM		Class 4=Low to avg. CHC/PHC and high CAM		Class 5=Avg. CHC,low to high PHC, and low CAM		Class 6=Low CHC/PHC/ CAM	
Independent Variables	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*
Spatial Assets										
Urban/rural										
Urban	0.02	***1.02	-0.14	**0.87	-0.26	***0.77	0.03	1.03	-0.27	***0.77
Rural (ref)	---	---	---	---	---	---	---	---	---	---
Province										
Maritime/Terr./ Yukon	0.55	***1.73	0.73	***2.08	-0.41	**0.66	0.61	***1.83	0.67	***1.96
Ontario	0.07	1.08	0.58	***1.79	0.15	1.16	0.10	1.11	0.43	***1.54
Quebec	0.25	***1.28	0.04	1.04	-0.44	***0.64	-0.19	0.82	-0.23	*0.80
Sask/Manitoba	-0.12	0.88	0.13	1.14	-0.10	0.90	-0.28	0.76	0.02	1.02
Alberta	-0.30	***0.74	-0.17	*0.84	-0.16	0.85	-0.85	***0.43	-0.44	***0.64
British Columbia(ref)	---	---	---	---	---	---	---	---	---	---
Collectivities										
Marital Status										
Married/com. law	0.11	1.12	-0.01	0.99	-0.33	**0.72	-1.32	***0.27	-1.08	***0.34
Widow/divorced	0.39	***1.47	0.21	*1.23	-0.28	*0.76	0.25	*1.28	-0.36	***0.70

Multinomial Logit Analysis (Vs. Class 3: High CHC/PHC/CAM)										
	Class 1=High CHC/PHC and avg. CAM		Class 2=Low CHC, avg. PHC and low to avg. CAM		Class 4=Low to avg. CHC/PHC and high CAM		Class 5=Avg. CHC,low to high PHC, and low CAM		Class 6=Low CHC/PHC/ CAM	
Independent Variables	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*
Single (ref)	---	---	---	---	---	---	---	---	---	---
Household										
# Persons in house	-0.11	***0.90	0.07	***1.07	0.12	***1.12	0.16	***1.18	0.21	***1.23

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files
*p<.05 **p<.01 ***p<.001 *Note:* CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care (flu shot, mammogram, Pap Test). The reference category is tri-use (i.e., High CHC/PHC/CAM). Models control for the effects of spatial assets (urban/rural; province of residence) and collectivities (marital status and household size). Unstandardized (Beta) and standardized coefficients (Exp(B)) are presented.

Appendix S. Block 2, multinomial logit model of medical pluralism (inductive patterns) on hypothesized predictor variables, female subsample, Canadians aged 50+, 2003/2005

	Multinomial Logit Analysis (Vs. Class 3: High CHC/PHC/CAM)									
	Class 1=High CHC/PHC and avg. CAM		Class 2=Low CHC, avg. PHC and low to avg. CAM		Class 4=Low to avg. CHC/PHC and high CAM		Class 5=Avg. CHC,low to high PHC, and low CAM		Class 6=Low CHC/PHC/ CAM	
Independent Variables	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*
Spatial Assets										
Urban/rural										
Urban	0.04	1.04	-0.10	*0.91	-0.24	***0.78	0.13	0.88	0.23	**0.80
Rural (ref)	---	---	---	---	---	---	---	---	---	---
Province										
Maritime/Terr./ Yukon	0.50	***1.65	0.69	***1.99	-0.42	**0.66	0.81	***2.24	0.72	***2.05
Ontario	0.02	1.02	0.50	***1.65	0.13	1.14	0.18	1.20	0.43	***1.54
Quebec	0.22	***1.25	0.00	1.00	-0.46	***0.63	-0.15	0.86	-0.20	*0.82
Sask/Manitoba	-0.21	**0.81	0.08	1.09	-0.08	0.93	-0.33	*0.72	0.01	1.01
Alberta	-0.23	***0.79	-0.10	0.90	-0.13	0.88	-0.58	***0.56	-0.26	*0.77
British Columbia(ref)	---	---	---	---	---	---	---	---	---	---
Collectivities										
Marital Status										
Married/common law	0.02	1.02	-0.06	0.94	-0.23	*0.80	-1.17	***0.31	-1.05	***0.35
Widow/divorced	-0.08	0.92	-0.08	0.92	-0.21	0.81	-0.91	***0.40	-0.97	***0.38
Single (ref)	---	---	---	---	---	---	---	---	---	---
Household										
# Persons in house	0.05	*1.05	0.10	***1.10	0.04	1.04	0.24	***1.27	0.23	***1.26
Social Location										
Age	0.08	***1.09	0.07	***1.07	0.07	***1.07	0.20	***1.22	0.17	***1.19

Multinomial Logit Analysis (Vs. Class 3: High CHC/PHC/CAM)										
	Class 1=High CHC/PHC and avg. CAM		Class 2=Low CHC, avg. PHC and low to avg. CAM		Class 4=Low to avg. CHC/PHC and high CAM		Class 5=Avg. CHC,low to high PHC, and low CAM		Class 6=Low CHC/PHC/ CAM	
Independent Variables	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*
Age-squared	-0.61	*0.54	-1.15	***0.32	-1.76	***0.17	-1.43	***0.24	-2.78	***0.06
Income adequacy										
Low	0.74	***2.10	0.89	***2.45	0.57	***1.76	1.05	***2.85	1.68	***5.36
Lower middle	0.44	***1.55	0.48	***1.62	0.33	***1.39	0.75	***2.12	1.24	***3.47
Upper middle	0.15	***1.16	0.20	***1.22	0.14	*1.15	0.27	*1.31	0.74	***2.10
High (ref)	---	---	---	---	---	---	---	---	---	---
Education										
Less than grade 12	0.75	***2.12	1.04	***2.84	0.28	***1.32	1.49	***4.45	1.31	***3.69
Completed grade 12	0.52	***1.69	0.80	***2.23	0.45	***1.57	0.73	***2.08	0.95	***2.58
Some/completed post-secondary (Ref)	---	---	---	---	---	---	---	---	---	---
Race										
White	-0.02	0.98	-0.05	0.95	-0.06	0.94	-1.30	***0.27	-0.40	***0.67
Non-White (ref)										
Immigration Status										
Native-born Canadian	0.01	1.01	-0.08	0.92	-0.05	0.95	-0.36	***0.70	-0.13	0.88
Recent immigrant	0.17	1.19	0.38	**1.46	0.19	1.21	0.61	***1.84	0.88	***2.42
Long-term immigrant (Ref)										

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files
*p<.05 **p<.01 ***p<.001 *Note:* CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care (flu shot, mammogram, Pap Test). The reference category is tri-use (i.e., High CHC/PHC/CAM). Models control for the effects of spatial assets (urban/rural; province of residence) and collectivities (marital status and household size). The age*gender interaction terms wasnot statistically significant so the model was re-run without it. Unstandardized (Beta) and standardized coefficients (Exp(B)) are presented.

Appendix T. Block 1, multinomial logit model of medical pluralism (inductive pattern) on hypothesized predictor variables, male subsample, Canadians aged 50+, 2003/2005

	Multinomial Logit analyses (Vs. Class 3=High CHC/PHC/CAM)			
	Class 1=High CHC/PHC and low CAM		Class 2=Low CHC/PHC/CAM	
Independent Variables	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*
Spatial Assets				
Urban/rural				
Urban	-0.06	0.93	0.20	***1.22
Rural (ref)	---	---	---	---
Province				
Maritime/Terr./ Yukon	0.79	***2.21	0.72	***2.06
Eastern	-0.12	0.88	-0.30	***0.74
Western (ref)				
Collectivities				
Marital Status				
Married/common law	0.07	1.07	-1.09	***0.34
Widow/divorced	-0.11	0.90	-0.70	***0.50
Single (ref)	---	---	---	---
Household				
# Persons in house	-0.07	0.93	0.20	***1.22

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files
*p<.05 **p<.01 ***p<.001 *Note:* CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care (flu shot, PSA Test). The reference category is tri-use (i.e., High CHC/PHC/CAM). Models control for the effects of spatial assets (urban/rural; province of residence) and collectivities (marital status and household size). Unstandardized (Beta) and standardized coefficients (Exp(B)) are presented.

Appendix U. Block 2, multinomial logit model of medical pluralism (inductive pattern) on hypothesized predictor variables, male subsample, Canadians aged 50+, 2003/2005

	Multinomial Logit analyses (Vs. Class 3=High CHC/PHC/CAM)			
	Class 1=High CHC/PHC and low CAM		Class 2=Low CHC/PHC/CAM	
Independent Variables	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*
Spatial Assets				
Urban/rural				
Urban	-0.15	0.86	-0.35	***0.71
Rural (ref)	---	---	---	---
Province				
Maritime/Terr./ Yukon	0.85	***2.35	0.67	***1.96
Eastern	-0.11	0.90	-0.26	**0.77
Western (ref)				
Collectivities				
Marital Status				
Married/common law	0.11	1.11	-0.62	**0.54
Widow/divorced	-0.26	0.77	-0.46	*0.63
Single (ref)	---	---	---	---
Household				
# Persons in house	-0.10	*0.90	-0.02	0.98
Social Location				
Age	0.07	**1.08	0.08	**1.08
Age-squared	-0.87	*0.42	-2.15	***0.12

Multinomial Logit analyses (Vs. Class 3=High CHC/PHC/CAM)				
	Class 1=High CHC/PHC and low CAM		Class 2=Low CHC/PHC/CAM	
Independent Variables	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*
Income adequacy				
Low	0.54	*1.71	0.99	***2.68
Lower middle	0.06	1.07	0.37	**1.44
Upper middle	0.03	1.03	0.19	*1.21
High (ref)	---	---	---	---
Education				
Less than grade 12	0.36	***1.43	0.60	***1.83
Completed grade 12	-0.03	0.97	0.18	1.20
Some/completed post-secondary (Ref)	---	---	---	---
Race				
White	-0.55	***0.58	-0.52	**0.60
Non-White (ref)				
Immigration Status				
Native-born Canadian	-0.30	**0.74	-0.41	***0.67
Recent immigrant	0.72	**2.05	0.88	**2.40
Long-term immigrant (Ref)				

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files
*p<.05 **p<.01 ***p<.001 *Note:* CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care (flu PSA Test). The reference category is tri-use (i.e., High CHC/PHC/CAM). Models control for the effects of spatial assets (urban/rural; province of residence) and collectivities (marital status and household size). The age*gender interaction terms was not statistically significant so the model was re-run without it. Unstandardized (Beta) and standardized coefficients (Exp(B)) are presented.

Appendix V. Final logit model of medical pluralism (deductive patterns) on hypothesized predictor variables, type of chronic condition, and controls, full sample, Canadians aged 50+, 2003/3005

Multinomial Logit Regression Model
(Vs.) Tri-Use[a]

	Non- use		CHC only use		CAM single or dual use[b]		PHC[c] only use		Non-CAM dual use[d]	
Independent Variables	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*
Spatial Assets										
Urban/rural										
Urban	-0.23	***0.79	-0.04	0.96	-0.20	***0.82	-0.05	0.95	0.12	***1.13
Rural (ref)	---	---	---	---	---	---	---	---	---	---
Province										
Maritime/Terr/ Yukon	1.15	***3.15	1.35	***3.87	0.12	1.13	0.81	***2.26	1.05	***2.86
Ontario	0.90	***2.47	0.681	***2.04	0.46	***1.58	0.69	***1.98	0.22	***1.24
Quebec	0.08	1.08	-0.22	***0.82	-0.39	***0.68	0.55	***1.73	0.27	***1.31
Sask/Manitoba	0.38	***1.45	0.24	***1.26	0.31	***1.37	-0.01	*0.99	-0.11	*0.90
Alberta	0.07	1.07	-0.01	0.99	0.18	**1.20	0.17	*1.19	-0.15	***0.86
British Columbia(ref)	---	---	---	---	---	---	---	---	---	---
Collectivities										
Marital Status										
Married/commonlaw	-0.59	***0.57	-0.05	0.96	-0.06	0.95	-0.32	***0.73	-0.02	0.98
Widow/divorced	-0.32	***0.74	0.01	1.01	-0.06	0.94	-0.19	**0.83	-0.08	0.92
Single (ref)	---	---	---	---	---	---	---	---	---	---
Household										
# Persons in house	0.07	***1.07	0.05	1.05	-0.02	0.98	0.03	1.03	0.04	***1.04
Social Location										
Age	-0.01	0.99	0.00	1.00	-0.01	0.99	-0.02	0.98	0.02	1.02
Age-squared	-1.50	***0.22	-1.04	***0.36	-1.23	**0.29	-0.14	0.87	0.11	1.12

Multinomial Logit Regression Model (Vs.) Tri-Use[a]										
	Non- use		CHC only use		CAM single or dual use[b]		PHC[c] only use		Non-CAM dual use[d]	
Independent Variables	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*
Gender										
Male	3.61	***36.79	1.58	***4.85	1.08	***2.95	2.56	***12.91	0.90	***2.45
Female (ref)	---	---	---	---	---	---	---	---	---	---
Age*Gender	0.05	***1.05	0.02	1.02	0.02	***1.02	0.03	***1.03	0.01	1.01
Income adequacy										
Low	1.37	***3.92	0.78	***2.19	0.28	***1.32	1.09	***2.99	0.58	***1.79
Lower middle	0.89	***2.43	0.42	***1.53	0.14	**1.15	0.62	***1.87	0.34	***1.41
Upper middle	0.35	***1.42	0.12	***1.13	0.07	*1.07	0.24	***1.27	0.09	***1.10
High (ref)	---	---	---	---	---	---	---	---	---	---
Education										
Less than grade 12	0.91	***2.49	0.62	***1.86	0.32	***1.38	0.65	***1.92	0.37	***1.45
Completed grade 12	0.52	***1.68	0.44	***1.55	0.20	***1.22	0.36	***1.43	0.25	***1.28
Some/completed post-secondary (Ref)	---	---	---	---	---	---	---	---	---	---
Race										
White	0.14	*1.15	0.12	*1.13	0.00	1.00	-0.20	**0.82	-0.02	0.98
Non-White (ref)										
Immigration Status										
Not an immigrant	-0.27	***0.77	-0.38	***0.69	-0.08	0.93	0.10	*1.11	-0.13	***0.88
Recent (<20 yrs)	0.08	1.09	0.31	***1.37	0.17	1.18	-0.27	*0.76	0.20	**1.22
Long (>=20 yrs) (ref)	---	---	---	---	---	---	---	---	---	---
Health Needs										
Type of Chronic Disorder										
Musculoskeletal	-1.23	***0.29	-0.84	***0.43	-0.20	***0.82	-0.95	***0.39	-0.61	***0.51
No musculoskeletal (ref)	---	---	---	---	---	---	---	---	---	---
Endocrine	-0.94	***0.39	-0.47	***0.62	-0.34	***0.71	-0.53	***0.59	-0.17	***0.85
No endocrine (ref)	---	---	---	---	---	---	---	---	---	---

Multinomial Logit Regression Model
(Vs.) Tri-Use[a]

	Non- use		CHC only use		CAM single or dual use[b]		PHC[c] only use		Non-CAM dual use[d]	
Independent Variables	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*
Circulatory	-1.31	***0.27	-0.10	***0.90	-0.53	***0.59	-0.68	***0.51	0.18	***1.20
No circulatory (ref)	---	---	---	---	---	---	---	---	---	---
Functional ability										
Never restricted	0.99	***2.69	0.47	***1.60	0.25	***1.29	0.88	***2.41	0.28	***1.32
Sometimes restricted	0.31	***1.36	0.16	**1.18	0.16	***1.18	0.32	***1.37	0.06	*1.06
Often restricted (ref)	---	---	---	---	---	---	---	---	---	---
Perceived Physical Health										
Fair/poor	-0.81	***0.45	0.03	1.03	-0.48	***0.62	-0.46	***0.63	0.29	***1.33
Good	-0.47	***0.62	-0.05	0.96	-0.34	***0.71	-0.39	***0.68	0.14	***1.15
Very good	-0.31	***0.74	-0.03	0.97	-0.21	***0.81	-0.31	***0.74	0.06	1.06
Excellent (ref)	---	---	---	---	---	---	---	---	---	---
Perceived Mental Health										
Fair/poor	-0.09	0.92	-0.02	0.98	-0.06	0.94	-0.37	***0.69	-0.07	0.93
Good	0.03	1.03	-0.05	0.96	0.12	**1.12	0.08	1.08	-0.02	0.99
Very good	-0.11	**0.89	-0.10	***0.91	-0.03	0.97	--0.05	0.95	-0.06	**0.94
Excellent (ref)	---	---	---	---	---	---	---	---	---	---
Model χ^2=29,550										
Df=155										
Rsquared=0.25										

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files
*p<.05 **p<.01 ***p<.001 *Note:* CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care (flu shot). The reference category is tri-use. Models control for the effects of spatial assets (urban/rural; province of residence) and collectivities (marital status and household size). Unstandardized (Beta) and standardized coefficients (Exp(B)) are presented. [a] Uses CHC+CAM+PHC; [b] Uses CAM only *or* uses CAM + PHC; [c] Uses PHC only (=flu shot); [d] Uses CHC + PHC only.

Appendix W. Final logit model of medical pluralism (deductive patterns) on hypothesized predictor variables, full sample, immigrant Canadians aged 50+, 2003/3005

	Multinomial Logit Regression Model (Vs.) Tri-Use[a]									
	Non- use		CHC only use		CAM single or dual use[b]		PHC[c] only use		Non-CAM dual use[d]	
Independent Variables	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*
Spatial Assets										
Urban/rural										
Urban	0.11	1.11	0.11	1.11	-0.18	0.83	0.23	1.26	0.33	***1.39
Rural (ref)	---	---	---	---	---	---	---	---	---	---
Province										
Maritime/Terr./ Yukon	1.03	***2.80	1.09	***2.96	0.27	1.32	1.55	***4.70	1.18	***3.24
Ontario	1.60	***4.97	1.42	***4.13	0.53	***1.69	1.40	***4.03	0.88	***2.40
Quebec	0.34	***1.41	0.12	*1.13	-0.33	***0.72	0.80	***2.23	0.47	***1.60
Sask/Manitoba	0.77	***2.15	0.64	***1.89	0.14	1.15	0.04	1.04	0.44	***1.55
Alberta	0.26	***1.30	0.17	1.18	0.34	**1.41	0.47	**1.61	0.01	1.01
British Columbia(ref)	---	---	---	---	---	---	---	---	---	---
Collectivities										
Marital Status										
Married/common law	-0.19	0.82	0.01	1.01	-0.18	0.84	0.09	1.09	0.05	1.05
Widow/divorced	0.09	1.09	0.12	1.13	-0.09	0.92	0.04	1.04	-0.08	*0.93
Single (ref)	---	---	---	---	---	---	---	---	---	---
Household										
# Persons in house	0.03	1.03	0.12	***1.12	0.01	1.01	-0.08	0.93	0.04	1.04

	Multinomial Logit Regression Model (Vs.) Tri-Use[a]									
	Non- use		CHC only use		CAM single or dual use[b]		PHC[c] only use		Non-CAM dual use[d]	
Independent Variables	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*
Social Location										
Age	-0.03	***0.97	-0.02	***0.98	-0.05	***0.95	0.01	**1.01	0.04	***1.04
Gender										
Male	0.96	***2.60	0.48	***1.61	0.14	*1.15	0.65	***1.92	0.52	***1.69
Female (ref)	---	---	---	---	---	---	---	---	---	---
Income adequacy										
Low	1.39	***4.01	0.70	***2.02	0.19	1.20	1.02	***2.76	0.44	***1.55
Lower middle	0.71	***2.03*	0.40	***1.49	-0.21	0.82	0.52	***1.68	0.15	*1.16
Upper middle	0.29	***1.34	0.09	1.09	-0.22	**0.81	0.12	1.13	-0.01	0.99
High (ref)	---	---	---	---	---	---	---	---	---	---
Education										
Less than grade 12	0.69	***2.00	0.55	***1.72	0.43	***1.53	0.31	**1.37	0.55	***1.73
Completed grade 12	0.38	***1.46	0.53	***1.70	0.06	1.06	0.23	*1.26	0.29	***1.33
Some/completed post-secondary (Ref)	---	---	---	---	---	---	---	---	---	---
Race										
White	0.31	***1.37	0.34	***1.40	0.14	1.15	-0.15	0.86	0.02	1.02
Non-White (ref)										
Immigration Length										
Time since immigration (years)	-0.01	1.00	-0.01	***0.99	-0.01	**0.99	0.00	1.00	-0.01	***0.99
Health Needs										
Chronic Conditions										
# chronic conditions	-0.74	***0.48	-0.31	***0.74	-0.12	***0.89	-0.37	***0.69	-0.08	***0.93

Multinomial Logit Regression Model
(Vs.) Tri-Use[a]

	Non- use		CHC only use		CAM single or dual use[b]		PHC[c] only use		Non-CAM dual use[d]	
Independent Variables	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*	*Beta*	*Exp(B)*
Functional ability										
Never restricted	0.87	***2.38	0.57	***1.77	0.51	***1.66	0.83	2.30	0.55	***1.72
Sometimes restricted	0.05	1.05	0.15	*1.16	0.29	**1.34	0.09	1.09	0.06	1.06
Often restricted (ref)	---	---	---	---	---	---	---	---	---	---
Perceived Physical Health										
Fair/poor	-0.77	***0.46	0.24	1.27*	-0.52	***0.59	-0.52	***0.59	0.32	***1.38
Good	-0.44	***0.65	0.10	1.11	-0.18	0.83	-0.51	***0.60	0.28	***1.32
Very good	-0.03	0.97	0.10	1.11	-0.01	0.99	-0.30	**0.74	0.23	**1.26
Excellent (ref)	---	---	---	---	---	---	---	---	---	---
Perceived Mental Health										
Fair/poor	-0.01	0.99	0.01	1.01	0.34	1.41	-0.38	0.68	-0.25	**0.78
Good	-0.11	0.89	-0.10	0.91	0.14	1.15	0.03	1.03	0.05	1.05
Very good	-0.16	0.86	-0.05	0.96	0.16	1.18*	-0.03	0.97	-0.03	0.97
Excellent (ref)	---	---	---	---	---	---	---	---	---	---

Source: Canadian Community Health Survey (CCHS) cycle 2.1, 2003 and cycle 3.1, 2005, weighted files
*p<.05 **p<.01 ***p<.001. *Note:* CHC=conventional health care; CAM=complementary and alternative medicine; PHC=public health care (flu shot). The reference category is tri-use. Models control for the effects of spatial assets (urban/rural; province of residence) and collectivities (marital status and household size). The age squared variable and the interaction term (gender*age) is not statistically significant so the models were re-run without it. Unstandardized (Beta) and standardized coefficients (Exp(B)) are presented. [a] Uses CHC+CAM+PHC; [b] Uses CAM only *or* uses CAM + PHC; [c] Uses PHC only (=flu shot) [d] Uses CHC + PHC only.