University of Alberta

Ethnic Variations in Care of Older Adults in Canada

by

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ABSTRACT

With population aging, the ethnic diversity among older adults in Canada is of great significance as the main source of immigrants to Canada has shifted from Europe to Asia, Africa, and the Middle East. Researchers have pointed out the need to use an ethnno-cultural lens in order to address social and health inequalities. Ethnic diversity and multiculturalism in Canadian society highlight the importance of understanding needs of ethnically diverse older adults and their caregivers to prevent marginalzation of certain groups of older adults. While prior research confirms that there are ethnic differences in beliefs about and attitudes toward family caregiving for older adults, there appeared to be a lack of evidence about ethnic variations in actual caregiving behaviors. The objective of this research is to increase understanding about ethnicity and care in Canada through an examination of ethnic variations in the family and friend care context and in access to health services.

The data used for this study were from Statistics Canada's 2002 General Social Survey on Aging and Social Support linked with selected modules of the 2001 Canadian Community Health Survey. The statistical analyses included multinomial logistic regression, logistic regression, and Tobit models.

Overall, findings from this research pointed out that regardless of ethnicity, family and friend caregivers manage care responsibilities among a small number of care network members. Ethnicity was not a strong predictor of care network types, but it influenced the interface between family and friend care and formal care as well as the use of health services. Findings indicated that there may be ethnic-specific social capital that cannot be explained by care network structure, which influenced older adults' use of health services. These findings point to the need for futrther research to better understand ethnicity and social capital for caregiving. As well, the findings of this research highlight the need for enhancing support for family and friend caregivers. As the Canadian population continues to age, public programs to help sustain their care networks are crucial, particularly as many older adults have only a few people who provide care to them.

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CHAPTER 1:

INTRODUCTION

Care for older adults continues to be an important issue as population aging continues. Not only has the proportion of older adults been rising in Canada but the population has become more diverse as the number of immigrants to Canada increases and sources of immigrants change (Statistics Canada, 2003a). According to the 2001 Census, immigrants comprised 18 % of Canada's population, and 30 % of the population aged 65 and older (Statistics Canada, 2006). The proportion of the population comprising ethnic minorities also has grown significantly over the past 20 years, from 5% in 1981 to 16.5% in 2006 (Statistics Canada, 2003b). Additionally, the main source of immigrants to Canada has shifted from Europe to Asia, Africa, and the Middle East (Statistics Canada, 2006). As a result of shifting patterns of immigration, characteristics of older adults, including their cultures, languages, and religions, are becoming increasingly diverse (Statistics Canada, 2003b). Growing ethnic diversity brings with it an issue of social cohesion. Soroka, Joonston and Banting (2007) argue that social cohesion has become the key critical policy agendas in diverse societies.

Researchers have argued the need to use an ethnno-cultural lens in order to address social and health inequalities (Varcoe, Browne, Wong, & Smye, 2009) and to identify and remove barriers for equitable social participation of ethnic minority groups and immigrants (The Vanier Institute of the Family, 2010). With respect to family care of older adutls, increasing diversity and multiculturalism in Canadian society highlight the importance of understanding needs of ethnically diverse older adults and their caregivers to prevent marginalization of certain groups of older adults.

Family and friends reportedly provide 80% to 90% of care, yet demands on them continue to increase due to a current emphasis on community-based care (Fast, 2005). The increased reliance on family members and friends in Canada has highlighted the importance of their contribution as an integrated part of the health care system. The current direction in the health and continuing care policy domain in Canada is based on the assumption that family and friend care is more cost-effective and better in quality than formal care and that most older adults have family members or friends who are able and willing to provide care (Fast, 2005). Family support is generally considered to be the basic source of care (Burr & Mutchler, 1999; De Jong Gierveld, 2009; Lowenstein, 2007) across ethnic groups. However, norms about family

caregiving and expectations of care within families differ across cultures (Arnett, 1995; Coleman, Ganong, & Rothrauff, 2006; Dilworth-Anderson, William, & Gibson, 2002; Lowenstein, 2007). While Northern and Western European families are often reported to take an individualistic approach to caregiving, care systems of families in other European regions, as well as in Latin America and Asia, are collectivistic (Mitchell, 2003; Penning & Chappell, 1987). In the individualistic culture, independence among family members and self-sufficiency are valued, and support for family members tends to be more voluntary and less clearly defined (Coleman et al., 2006; Penning & Chappell, 1987). In the collectivistic culture, there are high expectations and a strong sense of filial obligation about care of older family members (Connidis, 2010; Lowenstein, 2007; Mitchell, 2003). A question arises then as to whether these differences may influence levels of family involvement in caregiving and the context of family and friend care.

The formal health care sector is also an important component of care for older adults who have long-term care needs. It is often believed that most older adults from collectivist families are well cared for by their families due to their traditional family values and strong family solidarity and that they tend to utilize less health services (National Advisory Council on Aging, 2005). Research shows that there are ethnic variations in health services utilization as well as help-seeking behaviors in care of older adults (Braun & Browne, 1998; Dilworth-Anderson, William, & Gibson, 2002; Valle, Yamada & Barrio, 2004). Older adults from ethnic minority families have been reported to be less likely to use various types of care services (Brotman, 2002). Ethnic variations in the utilization might be due to cultural attributes, such as strong family orientations and high expectations of family care, less importance placed on relationships with those outside of families, and stigma attached to receiving help from non-family members (Dilworth-Anderson et al., 2002; Lai, 2005). There are also structural problems influencing ethnic variations, such as language barriers, lack of culturally sensitive services, discrimination, and socioeconomic factors (Guberman & Maheu, 2003; Lai, 2005; Neufeld et al., 2002).

With differences in norms about family caregiving and utilization of health services, older adults and their caregivers from diverse ethnic groups may face different care-related issues. Researchers have pointed out that good collaboration between families and the formal care sector is crucial to the establishment of sustainable care arrangements for older adults (Lowenstein, 2007). Ethno-cultural differences in the management of care of older aduts have

important implications for informing policy decisions, program development, and service provision for older adults as well as for their caregivers. The National Advisory Council on Aging (2005) clearly stated that it is crucial to consider ethnic diversity as an important issue when planning for an aging society, at both the national and local levels. Understanding ethnic diversity in care of older adults, as well as factors that might explain such differences, is thus crucial. Despite Canada's increasing ethnic diversity, ethno-cultural groups are often under-represented in research and practice, and aging-related programs and policies in Canada tend to treat older adults as a homogeneous group (Guberman & Maheu, 2003; National Advisory Council on Aging, 2005).

   The objective of this research was to provide empirical evidence and to increase understanding about ethnicity and care in Canada through an examination of ethnic variations in the family and friend care context and in access to health services. By exploring both family and friend care and formal health care sectors, this research aims to understand differences and similarities among ethnic groups in how care of older adults is organized in the family and friend care sector as well as how care is shared between the two sectors.

CHAPTER 2:

CONCEPTUAL FRAMEWORK

In this chapter, the definition of ethnicity is first discussed, followed by a discussion of theoretical frameworks guiding this study. The conceptual framework that guides this research draws from three theoretical perspectives: human ecology theory (Bronfenbrenner, 1994; Bubolz & Sontag, 1993; Dupuis, 2009; social capital theory (Coleman, 1988; Gray, 2009; Lin, 2001); and the Andersen-Newman service utilization model (Andersen & Newman, 1973). Human ecology theory helped in the conceptualization and organization of the three research objectives, in which the context of family and friend care, the interaction between family and friend care and formal in-home care, and the interaction between family and friend care and health services use were examined. The social capital theory helped to conceptualize care networks as a context of family and friend care. The Andersen-Newman service utilization model is added to organize factors influential to older adults' utilization of health services.

Concept of Ethnicity

Ethnicity in this study is defined as membership in a social and cultural group that provides foundations for norms, moral standards, and expectations of behaviours to its members (Arnett, 1995; Johnson, 1995). In this regard, members of an ethnic group share distinctive social and cultural heritage, and can be considered to have shared customs and beliefs. Ethnic origin and ethnic identity play important roles in the transmission of family care traditions across generations. This study conceptualizes ethnic identity and ethnic origin as two major constructs of ethnicity and considers ethnic identity as the most relevant indicator of an individual's ethnicity.
There are great variations in the way in which ethnicity is defined and measured (Jedwab, 2003; Kreuter, Lukwago, Bucholtz, Clark, & Sanders-Thompson, 2003; Rummens, 2003; Valle, 1998). The few Canadian studies that examined ethnic variations in family and friend support and care of older adults pointed out that finding clear conceptual and operational definitions of ethnicity is a complex task (Keefe, Rosenthal, & Beland, 2000; Payne & Strain, 1990; Penning & Chappell, 1987). Payne and Strain (1990) claimed that the reason for the difficulty in defining ethnicity is its multidimensionality as one's ethnicity could be based on multiple factors, such

as ancestry, ethnic identity, language, religion, nationality, and racial background.

Researchers have used one of these (ancestry, ethnic identity, language, religion, nationality, and racial background) or combinations of these factors, to determine individual ethnicity (Bizier, Kaddatz, & Laroche, 2004; Jedwab, 2003). While some view race as the basis of ethnicity, others claim that features such as language and religion are more important (Pinderhughes, 1989). In a study that reviewed the conceptualization of ethnicity in the field of sociology of health and illness, Aspinall (2001) pointed out that the two most common ways to define ethnicity are based on respondents' ethnic origin or identity. Ethnic origin refers to ethnic groups of one's ancestors, whereas ethnic identity is based on a feeling of belonging to a particular group (Penning & Chappell, 1987). There appears to be a strong link between the two major constructs of ethnicity. For some people ethnic origin is the determining factor of ethnic identity, for others ethnic origin and ethnic identity are interchangeable terms (Aspinall, 2001). In a survey conducted by the Association for Canadian Studies/Environics, Anglophones cited ancestry as the most important identity trait, while Francophones chose language as more important than ancestry in defining their ethnic identity (Jedwab, 2003). Thus it is clear that individuals recognize their own ethnicity through different means.

Johnson (1995) cited a statement from the Encyclopedia of American Ethnic Groups pointing out that "the concept of ethnicity must be pragmatic and focused on specific analytic problems" (p.308). The distinctive social and cultural customs in family background and family traditions reflect the ethnic origin of family members and are passed from generation to generation (Arnett, 1995; Penning & Chappell, 1987; Rummens, 2003). Past studies have used ethnic origin to identify individuals' ethnicity in the examination of ethnic variations in care and support for older adults (Payne & Strain, 1990; Thornton, White-Means, & Choi, 1993). However, ethnic origin of ancestors is not always the same as the individual's ethnic identity (Rummens, 2003).

Ethnic identity, or how individuals perceive themselves, is linked to shared experiences and common references, and this perceived identity can have behavioural consequences (Jedwab, 2003). In addition, ethnic identity "mediates the effects of family process on ethnic behaviours" (Kim Park, 2007, p. 410). Ethno-cultural customs and traditions of family relationships and care are passed from one generation to the next, but ethnic identity mediates the extent to which such traditions are passed on. Thus, ethnic origin and ethnic

identity are both important factors in explaining the variations among ethnic groups in their care of older adults and their use of health services.

Human Ecology Theory

Human ecology theory provides a framework for understanding ethic variations in the care of older adults. Human ecology theory emphasizes the importance of environments in which people live, especially how individuals interact with their environments, and highlights the need to conceptualize the person in context when examining human behaviour (Bronfenbrenner, 1994; Dupuis, 2009). More specifically, the theory posits that a change in one part of an environment induces a change in another part of the environment (Bubolz & Sontag, 1993). Environments consist of natural-physical surroundings for human beings and social-cultural contexts for their behaviour (Bubolz & Sontag, 1993). This study examines care of older adults in a social-cultural context.

Multiple Contexts of Older Adults' Care Environment

Human ecology theory assumes that human behaviour, including care of older adults, arises from multiple contexts that range from microsytems to macrosystems (Bronfenbrenner, 1994; Bryans, Cornish, & McIntosh, 2009; Keating & Phillips, 2008). Thus, multiple layers of contexts identified in human ecology theory are involved in the care environment of older adults (Zarit, 2008). According to human ecology theory, structural and cultural systems at the societal level—the societal context—influence fundamental elements of individuals' lives such as belief and value systems, customs, bodies of knowledge, and material resources (Bronfenbrenner, 1994). Canada is a multicultural country consisting of individuals belonging to a number of different ethnic groups, and the government supports multiculturalism as a federal policy, recognizing and supporting cultural differences and culturally distinct practices (Banting, Courchene, & Seidle, 2007). The way family members interact in responding to care needs of older adults may vary across ethnic groups as caregivers' expected roles and older adults' preferences about care differ in cultural belief systems (Arnett, 1995). Various studies have reported ethno-cultural differences in family relationships and expectations of family care (Dilworth-Anderson et al., 2002; Johnson, 1995; Lai, 2007; Penning & Chappell, 1987), and differences in family relationships and ties have been discussed by a number of scholars as significant attributes for ethno-cultural variations in caregiving.

For example, families from Northern and Western Europe are often reported to emphasize collateral ties and independence among family members

(Connidis, 2010; Lowenstein, 2007; Mitchell, 2003). Self-sufficiency is valued in such families and support for family members tends to be more voluntary and less clearly defined. On the other hand, families from Southern and Eastern European regions, Latin America, and Asia have been reported to focus on vertical family ties that emphasize interdependence among family members (Lai, 2007; Lowenstein, 2007; Mitchell, 2003). Differences in the emphasis on family ties are likely to create different care environments for older adults (Johnson, 1995), and different ethnic groups may draw on family and community resources to varying degrees (Zontini & Reynolds, 2007). As the main source of immigrants to Canada has shifted from Europe to Asia, Africa, and the Middle East (Statistics Canada, 2007), Canada's ethnic composition has been changing, with growing proportions of non-European origin. It is not known if these differences result in ethno-cultural variations in care management for older adults.

Considering Canada's societal context as one of the most ethnically diverse countries in the world (Statistics Canada 2003b), this study especially focuses on older adults who are recipients of care due to chronic health conditions and examines ethnic variations in the following two contexts: (i) family and friend care context and (ii) community care context. Recent studies show that friends are an important source of care for older adults (Keating, Otfinowski, Wenger, Fast, & Derksen, 2003), and this study includes friends and family members as a single context. The care environment in the family and friend context includes how caregiving is managed among family members and friends. In the community context, this study examines access to formal health care services for the care of older adults.

Figure 1: Human ecology model of an older adult's care environment

	Societal context
	3. Community care context
Older adult	1. Family/friend care
	2. Interactions between contexts
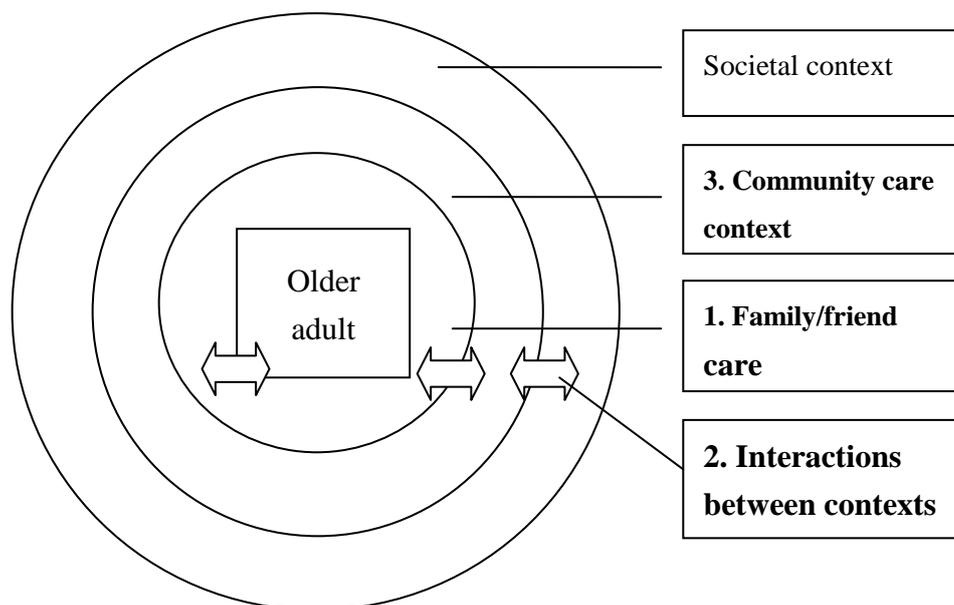
Family and Friend Care Context

Family members are generally considered to be the first source from which older adults receive care when it is needed (Blasinsky, 1998; Davey, Janke, & Salva, 2005; Penning, 1990). The family and friend care context is the primary environment surrounding older adults who are in need of care, and provides an important basis for the way care is organized (Davey, et al., 2005). The focus of family caregiving literature has long been on individual and primary caregivers, and most caregiving issues have been examined using the caregiver-care receiver dyad (Fast, Keating, Otfinoski, & Derksen, 2004; Keating et al., 2003). However, care for older adults may also be provided by groups of people who have kin or other social relationships with the older adults. Keating and Dosman (2009) suggested that focusing on care networks can help us understand whether those who are most in need of care have sufficient care networks. Recent Canadian health policy emphasizes community-based care and highlights the importance family and friend care networks as the main source of care of older adults (Keating et al., 2003). This research first focuses on the family and friend care context, and examines ethnic variations in the structure of older adult's care networks. The first research question is: ***Does the context of family care, as embodied in the structure of care networks, vary by ethnic group?***

Community Care Context

Services in the community, including formal home care and other health services available in the community, provide another context that could be a source of resources for care of older adults. Canada's Chief Public Health Officer's Report (2010) pointed out issues of care and services to be one of the priority areas for action toward healthy aging and stated that having access to health care services is essential to aging well. Recent studies point out the benefit of supplementing family and friend care with formal care for reduction of costs to caregivers and for the long-term sustainability of the family and friend care system (Carpentier, Pomey, Contreras, & Orazabal, 2008; Lowenstein, 2007; Ward-Griffin & Marshall, 2003; Williams & Dilworth-Anderson, 2002).

According to Badir (1993), families, through the process of socialization, provide guidelines to members for daily interactions and influence the way individuals make decisions. One of the main assumptions of human ecology theory is that what is happening in one context is likely to influence other contexts (Bubloz & Sontag, 1993; White & Klein, 2008). Thus, the ways in which older adults interact with services in the community are likely to be influenced by their family and friends, and situations in the community can also influence the family and friend care context as well as older adults' access to community services. For example, when an older adult is in need of care, his or her care network serves not only as the primary source of care, but also as a social bridge for access to services (Leclere, Jensen, & Biddlecom, 1994; Li, 2004; Valle, Yamada, & Barrio, 2004; Williams & Dilworth-Anderson, 2002).

Therefore, the second focus of this study is on the interface between family and friend care and formal care, especially on the way older adults' care networks influence their receipt of care from the two sources and how the interface may vary across ethnic groups. The second research question is: ***Are there ethnic differences in the interface between family and friend care and formal home care?***

In addition to formal home care, there are other health services available in the community, which can be a part of the community care context. With regard to utilization of health services, Nie et al. (2008) found that appropriate treatment of chronic diseases could help to reduce unnecessary hospitalizations and emergency room visits (Nie, et al., 2008). However, past studies have reported that there are ethnic disparities in the use of health services and in the outcomes of these services (Kobayashi, Prus, &

Lin, 2008; Nazroo 2006; Quan, et al., 2006). Members of ethnic minorities are often reported to have lower rates of health services utilization (Lai & Chau, 2007; Min, 2005; National Advisory Council on Aging, 2005; Quan et a., 2006). Lower rates of utilization do not necessarily reflect lower levels of need because those who have high needs may underutilize services that they need due to barriers they experience (Lai, 2008). Underutilization of health services could be an obstacle for early intervention and prevention of health conditions (Brown & Gonzalez, 2008). Barriers raised by differences in language and culture, and cultural bias against certain ethno-cultural groups, can reduce access to community care and contribute to variations in care of older adults (Dilworth-Anderson, Williams, & Gibson, 2002; Giunta, Chow, Scharlach, & Santo, 2004; Lai, 2007; Quan et al., 2006; Wallace, Levy-Storms, Kingston, & Andersen, 1998).

The third focus of this study is on the community context, and it examines older adults' utilization of different types of health services. The third research question for this study is: ***Are there ethnic differences in the utilization of formal health services?***

Organization of This Study

Family and friend care, formal care, and interactions between the two care contexts were examined in this study. Human ecology theory helped to conceptualize three research questions: (1) *Does the context of family care, as embodied in the structure of care networks, vary by ethnic groups? (2) Are there ethnic differences in the interface between family and friend care and formal in-home care? (3) Are there ethnic differences in the utilization of different types of health services?* The first and second research questions were guided by social capital theory; the third research question was guided by Andersen and Newman's behavioural model of health service utilization (Andersen & Newman, 1973).

Social Capital Theory

Social capital theory, especially the network theory of social capital (Lin, 2001), helps to conceptualize care networks as a context of family and friend care. Human ecology theory emphasizes that interactions among humans and between humans and their environments are a basis for determining the quality of life (Bubloz & Sontag, 1993); social capital theory focuses on human interactions as a means for generating resources. Social capital in this study is defined as "the array of social contacts that give access to social, emotional, and practical support" (Gray, 2009, p. 6). Combining the social capital

perspective with human ecology theory adds a new dimension to conceptualization of the caregiving environment by highlighting the link between human interactions and generation of care resources. Social capital is captured from resources embedded in social networks (Lin, 2001), and social capital theory helps to conceptualize the link between older adults' care network structures and resources for care. The context of family and friend care varies depending on the number of caregivers available and relationships and interactions among the individuals involved in care. In the social capital framework, the network is viewed as an important social feature that can help to develop social capital. The network of people surrounding the individuals involved in care is viewed as a source of social capital that may give older adults who need care greater access to resources (Coleman, 1988; Gray, 2009).

There is extensive evidence that ethno-cultural variations in several aspects of family life may cause differences in care networks. Families that place strong emphasis on intergenerational bonds and have high expectations of family care are likely to have high levels of bonding social capital, which is generated among homogeneous group of people toward collective action (Bhandari & Yasunobu, 2009), within their care networks. Families that emphasize autonomy and collateral ties may be more likely to generate bridging social capital, which refers to connections among heterogeneous group of people that provide access to resources outside of the network (Bhandari & Yasunobu, 2009; Keating & Dosman, 2009; Widmer, 2007). Previous research on ethnicity and family illustrated that Southern European, Eastern European, Latin American, and Asian families have strong family orientation and greater involvement with and support for older adults (Braun & Browne, 1998; Chee & Levkoff, 2001; Killian & Ganong, 2002; Kobayashi, 2000; Pinquart & Sorensen, 2005), but they tend to place less importance on extrafamilial relationships (Penning & Chappell, 1987). In a study that examined care networks of older Canadians and their sources of care, Keating and Dosman (2009) argued that, while family members are more likely to be the source of bonding social capital, friends may serve as a source of bridging capital. Different emphasis on family ties is likely to create different types of care networks for older adults (Johnson, 1995), and different ethno-cultural groups draw on family and community resources to varying degrees (Zontini & Reynolds, 2007). Care provided by family and friend care networks may be ethno-culturally relevant (Travis, 1995) to differences in available resources for care of older adults.

Andersen and Newman's Behavioral Model of Health Service Utilization

Andersen and Newman's behavioral model of health service utilization (Andersen, 1995; Andersen, 2008; Andersen & Newman, 1973) was used in this study to organize factors influential to older adults' utilization of health care services and to identify the influence of ethnicity and care networks on that utilization. Andersen and Newman (1973) presented three categories of factors helpful in explaining individual utilization of formal health care services: needs factors, predisposing factors, and enabling factors. The authors suggested that these three sets of factors form individuals' context for their use of health care services and that utilization patterns depend on combinations of these factors.

Needs factors refer to reasons for seeking services, and they are usually measured by factors such as perceived health status, severity of illness, and the number of chronic conditions and functional limitations. Needs factors appear to be the most consistent predictor of health service utilization patterns across studies in this area of research (McEachreon et al., 2000). Predisposing factors affect an individual's underlying tendency to seek and use services. They include sociodemographic characteristics of service users such as age, sex, education, and ethnicity and also include health beliefs (McEachreon et al., 2000). Health beliefs include values and attitudes about health, health promotion, and norms of help-seeking behaviours (Leclere, Jensen, & Biddlecom, 1994). Enabling factors include personal and social resources that facilitate access to services; they include income, health insurance, knowledge about health services, and social support. Because Canada has publicly funded health care system in which medically necessary services are covered, health insurance and income may not be as crucial as they could be in countries where universal health plans do not exist.

In addition, research shows that there are ethnic variations in formal health service utilization among older adults and their caregivers. Health service utilization is influenced by cultural differences in help-seeking behaviours as well as by barriers to service access experienced by ethnic groups in different degrees (Braun & Browne, 1998; Brotman, 2002; Brotman, 2003; Dilworth-Anderson et al., 2002; Valle, Yamada, & Barrio, 2004). Pescosolido (1992) observed that information related to health is contextualized and the need to seek formal care can be determined through a network of people surrounding an individual. Networks have bridging social capital and the level of bridging capital could be a crucial factor in influencing older adults' service utilization (Keating & Dosman, 2009). In this regard, care networks of older

adults can be considered to influence utilization of health services. Some researchers pointed out that the Andersen-Newman model (Andersen & Newman, 1973) fails to consider the influence of the network of people surrounding the service user, and have expanded the model to include it (Deri, 2005; McEachreon et al., 2000). Therefore, in order to examine ethnic differences in the utilization of different types of health services, older adults' care networks were added to the three sets of factors identified by Andersen and Newman's behavioral model of health service utilization (Andersen & Newman, 1973).

CHAPTER3:

Paper1: Ethnic Variations in Care Network Types of Older Adults

Introduction

The focus of this paper is on the relationship between older adults' ethnicity and the structure of their care networks. In previous research, there is strong evidence that highlights the importance of cultural beliefs and values in care of older adults and illustrates ethnic variations in those beliefs and values (see for example, Brotman, 2002; Dilworth-Anderson, Williams, & Gibson, 2002; Killian & Ganong, 2002; Pinquart & Sorensen, 2005). Such research, while illustrating ethnic differences in the felt obligation to provide care and in expected family care roles, lacks consistency in findings about the influence of ethnicity on actual caregiving behaviour (Burr & Mutchler, 1999; Lum, 2005).

Canada is one of the most ethnically diverse countries in the world (Statistics Canada 2003b). Over the years, the main sources of immigrants to Canada has shifted from European to non-European countries, which have resulted in growing ethnic diversity in Canada (Statistics Canada, 2003b; The Vanier Institute of the Family, 2010). Population aging and increasing ethnic diversity in Canada highlight the importance of understanding ethnic variations with respect to varying lives of older adults. The ethno-cultural diversity of the Canadian population, especially the growing ethnic minority population, poses challenges for governments and communities to recognize diverse needs and remove barriers for equitable participation across ethno-cultural groups (National Advisory Council on Aging, 2005; The Vanier Institute of the Family, 2010). Additionally, despite the multicultural composition of the Canadian society, Canadian research on aging and ethnicity as well as the influence of ethnicity on caregiving is scarce (National Advisory Council on Aging, 2005; Keefe et al., 2000).

As the proportion of older adults in our society continues to increase, demands on families to provide care to their older members are also grow. In the family caregiving literature, the caregiver-care receiver dyad has been the focus of the majority of studies (Fast, Keating, Otfinoski, & Derksen, 2004; Keating et al., 2003). However, recent emphasis on community-based care in Canadian health policy highlights the importance of networks of people surrounding older adults as a source of care for them (Keating et al, 2003). The role of the network, particularly in the health sector, is attracting significant attention from policy makers as well as scholars in various fields. Based on the social capital framework, networks of people surrounding older adults are

assumed to be the vital source of support resources (Deri, 2005; Lauder, Reel, Farmer, & Griggs, 2006). Currently, the Canadian government focuses on community-based care for older adults (Chief Public Health Officer's Report, 2010), with the expectation that family members and friends will provide care for older adults when it is needed (Leeder & Dominello, 1999).

Older adults from some ethnic groups, especially ethnic minority families, are often believed to be surrounded by family members and to have supportive care networks due to the strong family values (Brotman, 2002; Dilworth-Anderson, et al., 2002; National Advisory Council on Aging, 2005). Despite reported variations in beliefs and norms about family relationships and care, it has been suggested that ethno-cultural differences in actual caregiving behaviour may not be as significant as once believed (Burr & Mutchler, 1999). There is a lack of understanding about the impact of ethnicity on the way family and friend caregivers organize care. Examination of care networks helps us to understand availability of resources for care of older adults and how such resources might be similar or different across ethno-cultural groups. To address this knowledge gap, ethnic variations in composition and the types of care networks of Canadian older adults were examined. The research question guiding this study was as follow: Are there ethnic differences in the composition of older adults' care networks?

Literature Review

In the caregiving literature care arrangements for older adults have been conceputualized in different ways, such as focusing on primary caregivers, partnership between two or more caregivers, and caregiving networks (Brewer, 2002). The focus of this study is on caregiving networks, which consists of a set of people surrounding older adults who can provide care needed (Keating et al., 2003). Based on the social capital framework, social support provided by social networks are viewed as a tool to promote healthy communities, which may in turn help to mitigate rising health care costs (Deri, 2005; Lauder, Reel, Farmer, & Griggs, 2006). There is extensive evidence about how social connections facilitate access to resources to support individuals, yet only a few studies have applied this mechanism specifically to address caregiving (Keating, et al., 2003). When governments emphasize community-based care for older adults who are in need of care, networks of family and friend caregivers around them perform vital work for society, helping those who are in need of care to remain in the community (McDaniel, 2011; Price, 2011). The few studies that have examined caregiving for older adults with a network approach have underlined the importance of

understanding the role of family and friend networks in caregivivng, indicating its influence on the amount of care they receive and the level of health services they utilize (Fiori, Smith, & Antonucci, 2007; Keating & Dosman, 2009; Li, 2004; Litwin, 2003; Litwin, 2006).

This study will be guided by a social capital framework, particularly the network views of social capital, which considers the social network as an important social feature that facilitates social capital (Colman, 1988; Burt, 2001; Lin, 2001). Social capital is classically defined as relations among individuals that facilitate actions toward certain purposes (Coleman, 1988; 1990). According to the social capital theory, structural differences among networks, including ties and relationships among members, generate different types and levels of social capital, which can be a source for mutual support among family members (Portes, 1998). An analysis of network structures based on the network theory of social capital (Burt, 2001; Lin, 2001) is thus helpful to conceptualize ethnic variations in the potential stock of social capital within care networks of older adults. An examination of structural components of care networks would also help to understand the level and type of social capital for care of older adults generated by the network. The relationship between network structures and potential stock of social capital is further discussed in the following section.

Network Structures and Social Capital

According to the social capital framework, properties of networks, such as size and density (how close network members is) , and diversity in the characteristics of network members, influence the amount and types of social capital generated by the network, including bonding and bridging social capital (Lin, 2001; Milardo, 1988; Franke, 2005; Wellman & Frank, 2001). The larger the network, the more chance there is of finding a member with resources needed for a particular situation (Lin, 2001). As well, in a large network, there is less chance of straining one particular member for support (Putnam, 2000). Tightly structured networks, with close and dense ties among relatively homogeneous members, tend to generate high levels of social capital within the network, which is referred to as bonding social capital (Burst, 1992; Kavanaugh, et al., 2005; Milardo, 1988; Putnam, 2000). These types of networks are likely to endorse the sharing of resources within the network, having high volumes of interactions and shared knowledge. Networks with a high volume of bonding social capital also tend to enhance expectations, sense of obligation, and trust among the network members (Lin, 1999; Widmer, 2006) and they are suited to

providing resources for daily problems and emotional support (Bhandari & Yasunobu, 2009).

On the other hand, loosely structured networks, consisting of weak ties among members with diverse characteristics, are likely to generate bridging social capital by providing access to resources outside of the network (Kavanaugh, et al., 2005; Putnam, 2000). Networks with bridging social capital could be advantageous for individuals to obtain additional resources, being open to outsiders for assistance and providing a flow of new information (Burt, 2001; Lin, 1999). Compared to networks with high bonding social capital, these networks are more likely to access a wide range of resources and to provide linkages to institutions and community resources (Bhandari & Yasunobu, 2009).

From the perspective of the network theory of social capital, structures of care networks can influence the capacity of family and friend caregivers to provide care for older adults. Previous studies of care networks of older adults have illustrated relationships between network characteristics and the levels and types of support received by older adults, using key constructs of network view of social capital (Burton et al, 1995; Keating & Dosman, 2009; Li, 2004; Wenger, 1996; Williams & Dilworth-Anderson, 2002). For example, Burton et al. (1995) reported that the size of networks suggests the range and depth of resources for care. Older adults with small networks are likely to face an issue of being at risk of receiving insufficient care (De Jong, 2009). Empirical evidence supports the influence of size of care networks with respect to the available resources for care: large networks were likely to be more resourceful than smaller networks for reaching out to resources outside the network (Li, 2004; Williams & Dilworth-Anderson, 2002). From a social capital perspective, it can be considered that larger networks may have more bridging social capital than smaller networks. It has also been found that care networks comprising diverse members have greater ability to link older adults to formal care services, as they are able to bring together more information than small networks (Li, 2004; Williams & Dilworth-Anderson, 2002; Williams et al., 2002). On the other hand, older adults whose care networks are small and consist of homogeneous members are less likely to use formal care services than larger and more diverse networks, and they tend to lack information and instrumental support to access such services (Li, 2004; Valle, Yamada, & Barrio, 2004). It appears that these networks may have low levels of social capital to bridge older adults with formal care services. Therefore, examining

structutres of care networks is is important to understand potential disparities in social capital for care of older adults.

Ethnicity, Social Capital, and Care Networks

The concept of social capital has rarely been examined in the context of ethnicity (Edwards, Franklin, & Holland, 2003), although key forms of social capital, such as obligation and expectations among network members, have been the focus of many studies on ethnicity and caregiving. According to a social capital theory, norms internal to networks are fundamental to how the networks operate to mobilize network resources (Coleman, 1990; Franke, 2005; Lin, 2001). In a study discussing the ways in which families generate and distribute social capital, Frustenberg (2005) summarized the link between family relationships and social capital, stating that social capital within families is produced through a system of normative obligations in which individuals are embedded. When an older adult is in need of care, his or her network may put pressure on its members to provide support (Wellman & Frank, 2001), but the amount of pressure to provide support for a member and which members families are likely to be pressured may depend on family relationships and care norms. Several studies have highlighted ethno-cultural differences in family relationships and caregiving, especially with respect to the norms of intergenerational support and filial responsibility (Dilworth-Anderson, William, & Gibson, 2002; Killian & Ganong, 2002; Lee, Peek, & Coward, 1998; Stein et al., 1998).

Family members are generally the primary members who provide care for older adults across ethno-cultural groups, but ethno-cultural variations exist in family ties, normative obligation to provide care, and ties between generations (Burr & Mutchler, 1999; Lowenstein, 2007). For example, mother-daughter ties are often seen as the most prominent ties between older adults and their adult children by mainstream North Americans, and thus, daughters are more likely to provide support for older parents (Connidis, 2010; Martine-Matthews, 2001; Silverstein, Gans, & Yang, 2006). However, in some cultures, particularly in most of Asia, which has become the main source region of immigrants to Canada, sons have the closest relationships with the mother, and their wives often take the role of caregiver (De Jong Gierveld, 2009; Martine-Matthews, 2001). As well, in Western cultures, older adults usually favor receiving non-instrumental and emotional support from their children rather than instrumental and financial support, and their relationships are often described as 'intimate at a distance' (Connidis, 2010; De Jong Gierveld, 2009). They tend to emphasize the freedom of individuals to make

their own decisions, to have responsibility for their own lives, and live independently as long as possible (Lowenstein, 2007; Mitchell, 2003). In other ethno-cultural groups, such as Southern European, Latin American, and Asian, families often are conceptualized to take a collectivistic approach to care (Killian & Ganong, 2002; Pinquart & Sorensen, 2005) and instrumental supportive relationships between older adults and adult children are prioritized (De Jong Gierveld, 2009).

These differences in family relationships and expectations and norms about caregiving across ethnic groups may or may not result in differences in how care of older adults is arranged and provided. However, the constructs of social capital help to conceptualize ethic differences in structures of care networks based on these differences, which in turn may influence types and levels of social capital for care. It can be speculated that care networks of older adults from Western cultures are likely to be less family focused and include more diverse members than the latter group. On the other hand, care networks of older adults from the latter group are likely to be more heavily family focused than the former group. Based on social capital theory, heavily family-focused networks are more likely to have high bonding social capital and low bridging social capital compared to diverse care networks.

The Influence of Ethnicity on Structures of Care Networks

There is some evidence that ethnicity may influence various aspects of care networks, including their size and composition. In comparing three groups, Black-Americans, White-Americans, and Hispanic Americans, Lum (2005) found that Hispanics had the largest average size of care networks. The author speculated that the differences may be due to stronger familial values among Hispanic cultures because other potentially influential factors such as family size, number of children, and health status of older adults, were controlled for. Li and Fries (2005) also found differences in the structure of care networks, specifically in size of care networks, living arrangements, and source of care, between African Americans and European Americans even after controlling for demographic characteristics, including age, gender, health status, and marital status of the care receiver as well as their socioeconomic status. African-Americans were more likely than European Americans to have a sole caregiver, to live with their caregivers, and to have extended kin included in their care networks.

Thornton, White-Means, and Choi (1993) examined differences in the size and composition of care networks across English, German, Irish and

African Americans. While their study found ethnic variations in the composition of care networks, no ethnic variations in the size of care networks were found. However, their focus was not only to determine whether there are ethnic variations in the organization of care, but also to investigate way in which sociodemographic characteristics interact with ethnicity. They found that the influence of sociodemographic factors on care network size varied across ethnic groups. For example, for English Americans, older adults' levels of limitations in activities of daily living and geographic region of their homes had important influences on network size, whereas for African Americans, marital status was a significant predictor of network size. As a result, their study emphasized the importance of considering the role of other sociodemographic factors when examining ethnic differences.

Similarly, while some scholars view cultural differences as a main source of ethnic differences in caregiving, others argue that ethnic variations in caregiving are the result of other structural factors, especially social and economic inequality (Guberman & Mahew, 2003; Rosenthal, 1986; Keefe, 2000). Ethnic groups can function as one of the primary social organizations that shapes individuals' aging processes by influencing older adults' locations in the social structure and acting as a determinant of social and economic inequalities among them (Feld et al., 2004; Rosenthal, 1986). Similarly, some of the basic studies that examined ethnicity and care have highlighted the need to distinguish structural discrepancies among ethnic groups, which are based on differences in socioeconomic status and demographic backgrounds, from their cultural differences (Johnson, 1995; Keefe et al, 2000; Rosenthal, 1986). For example, household composition is one characteristic that has been based on cultural as well as structural characteristic (Keefe et al., 2000). Previous studies have reported that patterns of co-residence differ across ethno-cultural groups (Antonucci et al., 2007; Keefe et al., 2000). While some view differences in patterns of co-residency to be a result of cultural differences, others believe that it is due to the discrepancies in economic resources (Keefe, et al., 2000). Older adults with economic restrictions may not be able to live independently, and they may not have other options than to live with their adult children. Bonding together and sharing resources have been viewed as a strategy for overcoming difficulties and struggles due to economic and social disadvantage of certain ethnic groups, which in turn made family solidarity stronger (Burr & Mutchler, 1999; Lee et al., 1998). In a study examining ethnic and racial variations in the size and organization of care networks, Lum (2005) found that

living arrangements and the number of non-resident children were both strong predictors of who is included in the care network.

Socioeconomic status (SES) is another factor that needs to be considered when trying to separate structural influence from that of culture. Research suggests that there is a tendency to misinterpret the influence of SES as cultural influence and that as a result, cultural influence is sometimes overemphasized (Rosenthal, 1986; Valle, 1997). For example, people with higher education and income have also been found to have higher proportions of non-kin members in their networks (Wenger, 1996). A qualitative study that examined family and friend caregivers' experiences with formal care revealed that some family caregivers purchased formal care services out of pocket in order to deal with care demands that were higher than what they could manage independently (Wiles, 2003). While those with higher economic resources are able to purchase formal care if they need or wish to, it is not an option for those faced with economic limitations. Similarly, those who have fewer economic resources were found to rely more on family and friend care than on formal care (Feld et al., 2004). Studies from the United States have reported lower levels of economic resources possessed by minority older adults than white older adults as a possible explanation for variations in care arrangement (Lum, 2005; Peek, Coward, & Peek, 2000). However, the relationship among ethnicity, economic resources and structures of older adults' care networks in Canada are relatively unknown.

In order to examine ethnic differences in care arrangements for older adults, it is imperative to consider social locations of older adults, including demographic characteristics and socioeconomic status when trying to determine whether there are ethnic differences in care network composition and type. Therefore, this study explored the relationship between ethnicity and older adults' care network structures, considering also the influence of other background factors. A research question and two sub questions to be addressed in this study were:

Research question: Are there ethnic differences in the composition of older adults' care networks?

Sub questions:

1. Does ethnicity influence types of older adults' care networks?
2. If so, what is the relative importance of cultural and other background factors in explaining the influence of ethnicity on types of older adults' care networks?

Methods

Data Source and Sample Description

The data for this study came from two surveys conducted by Statistics Canada. First, the 2001 Canadian Community Health Survey (CCHS) Cycle 1.1. is a general population health survey intended to provide timely and reliable data on health determinants, health status and health system utilization across Canada. The target population for the CCHS was Canadians over the age of 12 years who were living in private households in the ten provinces and the three territories. Persons living on Indian Reserves or Crown lands, residents of institutions, full-time members of the Canadian Armed Forces and residents of certain remote regions were excluded from this survey. The CCHS covers approximately 98% of the Canadian population aged 12 or older. Data for the CCHS Cycle 1.1 were collected for one year starting from September 2000. The CCHS included a nationally representative sample of 130,827 individuals aged 12 and older.

Second, the 2002 General Social Survey (GSS) Cycle 16 was designed to observe social trends in terms of living conditions or well being of citizens and to provide information related to specific social policy issues. The core content of Cycle 16 was social support and aging, focusing on support for older Canadians. Data for the GSS Cycle16 were collected from February to December 2002 using telephone interviews. The target population for the Cycle16 was Canadians over the age of 45 years who live in private households with telephone lines. The sampling frame for this survey was the CCHS Cycle 1.1, which was conducted in 2001. More specifically, the sample for the GSS Cycle16 was randomly selected from a list of individuals aged 45 and over who had responded to the CCHS Cycle 1.1. The GSS Cycle16 included a nationally representative sample of 24,870 people aged 45 and older.

The main data set for this study is the GSS Cycle 16 master data file, and the main section of the GSS that was used in this study is "*Care receiving by respondent*". Other sections such as *health status of respondent*, *education and main activity of respondent*, *housing characteristics of respondent*, and *other characteristics* were also used in the analysis. These sections of the GSS were linked with selected modules of the CCHS Cycle1.1 master data file, including the modules on ethnic background and health care service utilization. Data were accessed at Research Data Centre at the University of Alberta.

The sample for this study included 2,551 respondents age 65 and over who were receiving assistance from family members and friends due to their long-term health problem with at least one of the following tasks:

housekeeping, meal preparation, outdoor maintenance, transportation, baking, bill paying, and personal care.

Study Variables

For variables with pre-determined categories, the largest numbers of categories were retained whenever possible in order to avoid loss of information. However, when expected frequencies were too small, it was necessary to collapse categories to meet Statistics Canada's minimum cell count requirements[1]. Decisions on measurements were made on a variable by variable basis and are discussed in detail below. Among all the variables used in the current analyses, ethnicity was the only variable that came from the CCHS 1.1., and all other variables came from GSS 16 data file.

Dependent variables: Type of network

Respondents were asked to list names of those who assist (due to their long term health or physical limitations) with at least one of the following tasks: housekeeping, meal preparation, outdoor maintenance, transportation, baking, bill paying, and personal care. Respondents were then asked for detailed information about each caregiver such as relationship, sex, age, and geographic proximity. Relationship between the care receiver and each caregiver was measured in 31 categories including family members, friends, and neighbors. Age was measured in 9 categories with 10 year intervals starting from under 15 years and ending with 85 years and older. Proximity was measured in 6 categories: (1) same household, (2) same building, (3) same neighborhood or community, (4) in the surrounding community, (5) less than a half day's journey, (6) more than a half day's journey.

Care network types were identified through application of cluster analysis using five characteristics (number of caregivers, age and gender of all members of the network, as well as relationships and proximity between care receiver and network members) that have been identified as key determinants of older adults' networks in the literature (Fast et al., 2004). In the cluster analysis, relationships were collapsed into four categories: spouse, children, extended kin, and friends. Age groups were collapsed into three categories: under 45 years, 45 to 64 years, and 65 years and older. Proximity was collapsed into three categories: same building, same community, and distant.

As shown in Table 3.1, K-mean cluster analysis identified three care network types: Spouse focused, Children focused, and Diverse network types.

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[1] Statistics Canada requires a minimum of 15 cases per cell in any multivariate and bivariate analysis for CCHS data

The Spouse focused type mainly consists of a single spousal caregiver who co-resides with the older adult. They are mostly aged 65 and older, and approximately 55% of these caregivers are women. The Children focused network consists of middle aged children who are more likely to be male. Close to half of caregivers in this type of network live in the same building as the care receiver while the other half live in the same community. The Diverse type consists of a mix of close and distant kin and friends, who are most likely to be female, age 25-64, and live nearby.

Table 3.1: Characteristics of care networks

% in the compositions of care network		**Spouse focused Network**	**Children Focused Network**	**Diverse Network**
Age	-44	.04	.09	.52
	45-64	.04	.82	.31
	65+	.92	.09	.17
Sex	Men	.45	.76	.25
	Women	.55	.24	.75
Proximity	Same building	.94	.43	.08
	Same community	.05	.59	.87
	Distant	.01	.07	.04
Relation	Spouse	.81	.08	.02
	Children	.06	.73	.49
	Extended kin	.07	.06	.20
	Friends	.06	.12	.28
Network Size		1.2	1.6	1.6

Independent Variables

Explanatory variables considered in this study included ethnicity, age, gender, health status, education, income, and length of residency in Canada, all of which have been identified as influential factors with respect to care of older adults (Litwin, 2004). Ethnicity was operationalized on the basis of two

questions: one about respondents' racial/cultural identities and another about their ethnic origins. The actual questions are as follows:

1) 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 Peoples of North America, other)?

2) To which ethnic or cultural group(s) did your ancestors belong? (Canadian, French, English, German, Scottish, Irish, Italian, Ukrainian, Dutch, Chinese, Jewish, Polish, Portuguese, South Asian, Black, North American Indian, Métis, Inuit, Eskimos, Other).

Although the first question asks respondents' racial and cultural background instead of asking directly about their ethnic identity, categories for the answer include racial (White, Blacks) and ethnic groups. Therefore, for those who chose one of the ethnic categories, this question was used to determine their self-perceived ethnicity. For those who chose the racial category 'White' as their identity, the second question about ethnic origin was used to determine their ethnicity. There were not enough respondents[2] who chose 'Black' as their identity in the first question, so this group of respondents was not included in the analyses. Respondents were able to choose more than one ethnic origin, and those who selected more than one origin were categorized as 'other-white'. Using these two questions, eight self-identified ethnic groups were identified: Canadian, British, French, West European (includes German, Dutch), East European (includes Ukrainian, Polish), South European (includes Italian, Portuguese), Asian (includes Chinese, South Asian, Filipino, Southeast Asian, West Asian, Japanese, Korean)**,** and other-whites (includes 'Other-White' as well as those who selected more than one origin).

Age and health status were measured as continuous variables. The 'Health Utility Index' (HUI) composite indicator, which is based on the Comprehensive Health Status Measurement System (CHSMS) (Feeny, Torrance, & Furlong, 1996), was used to measure older adults' health status. HUI ranges from 0 to 1, and 1 being the most healthy. Gender was coded as a nominal variable (male or female).

Due to the small number of respondents who had immigrated to Canada, length of residence in Canada was coded into four groups (born in Canada, living in Canada over 40 years, living in Canada 20 to 40 years, living

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[2] Statistics Canada requires a minimum of 15 cases per cell in any multivariate and bivariate analysis for CCHS data

in Canada less than 20 years). Due to the small number of respondents with more than high school education, education was coded to reflect two schooling levels (less than high school or high school graduate).

Income was coded to reflect 3 levels of annual personal income (less than $20,000, $20,000 to $30,000, $30,000+). These categories were chosen due to small numbers of respondents with high income levels and relatively large numbers with low income levels, and to avoid extremely unbalanced sample sizes.

Statistical Analysis

Statistical analysis proceeded in three steps. First, main network characteristics that are determinants of network type were described and cross-tabulated by ethno-cultural groups. To test for variations among ethno-cultural groups, Chi-square and ANOVA were used. Second, bivariate tests of association between independent and dependent variables were conducted. Chi-square and T-test were executed to test for significant differences among older adults based on their network types. Finally, multinomial logistic regression was performed to test the relationships between ethnicity and care network types of older adults while controlling for other background variables. Multinomial logistic regression was an appropriate analytic method because the dependent variable, network type, is not a continuous variable but has more than two categories.

Before fitting the models, in order to assess multicollinearity, correlation matrices of all the independent variables were produced and Variance Inflation Factors (VIFS) were checked. High correlations between independent variables suggest multicollinearity. When bivariate correlations are approximately 0.7 or higher and VIFs are 10 or higher (O'Brien, 2007; Tabachnick, & Fidell, 2007), there may be reasons for concern about multicollinearity. However, in this research, there were no high correlations among the independent variables and no concern for VIFs was detected.

A series of models was fitted to test the influence of two types of background factors (socioeconomic status and other demographic variables) on ethnic variations in care network type. The first model tested ethnic variations without controlling for other factors, and only included older adults' ethnicity. Socioeconomic status variables were added in the second model, and other demographic factors were added in the third model to examine whether the influence of ethnicity on the care network structure changes with the addition of the two types of background factors. Entering these three sets of background

factors in a hierarchical order permits examination of the contribution of each set of factors, which can help to understand which background factors might explain ethnic variations in care network types. If the influence of ethnicity disappears with addition of a set of other background factors, the observed ethnic differences can be explained by the set of background factors.

Statistical Weights

In order to ensure that the sample was representative of the Canadian population, the appropriate statistical weights were applied in all analyses. In addition, Fay's method, a variance estimation technique, was used to adjust for the complex, multi-stage stratified sampling and to estimate sampling error. Statistics Canada generally recommends Fay's method to be used as the method of variance estimation for data with mean bootstrap weights such as GSS (see Owen, 2004 for details). Fay's method produces lower standard errors and provides a more conservative test of significance compared to bootstrapping, making it more difficult to reach statistical significance (Chowhan, & Buckley, 2005; Owen 2004).

Results

Table 3.2 presents results of ANOVA with main network characteristics that were used to determine network types, across ethno-cultural groups. There were no significant differences across ethno-cultural groups in the average size of the networks and gender compositions of the network members. However, group variations were observed in the relationship and proximity compositions. Three groups, East and South European and Asian, stood out from others. While for East and South European and Asian groups, less than 20% of network members comprised extended kin and friends, this proportion was close to or over 30% for other groups. These three groups also had the highest proportions of co-resident older adults and network members, but Asian and South European groups had significantly higher proportions of co-resident members (78% and 56% respectively, compared to 30% to 40% in other groups).

Table 3.2: Network characteristics by ethno-cultural groups (ANOVA)

Network characteristics	CA[1]	BR	FR	WE	EE	SE	AS	OW	Sig.
Size	1.5	1.57	1.50	1.43	1.45	1.51	1.58	1.47	NS
% female	.48	.46	.52	.43	.50	.51	.63	.49	NS
Relationships									
-% Spouse	.21	.21	.16	.24	.29	.39	.19	.21	F=2.90**
-% Children	.49	.46	.50	.46	.52	.47	.65	.44	F=2.05*
-% Extended kin	.15	.13	.11	.16	.05	.04	.08	.14	F=2.49**
-% Friends	.16	.21	.22	.13	.14	.10	.07	.21	F=3.25**
Proximity									
-% Same building	.41	.34	.31	.33	.46	.56	.78	.38	F=8.80***
-% Same community	.53	.60	.65	.58	.47	.43	.19	.59	F=7.76***
-% Distant	.06	.05	.03	.08	.06	0	.03	.04	F=2.11*

1. CA= Canadian, BR=British, FR=French, WE=Western European, EE= Eastern European, SE=Southern European, AS=Asian, OW=Other-Whites

* p < .05 ** p < .01 *** p < .001

Bivariate relationships between the network types and the independent variables are presented in Table 3.3. As shown in Chi-square statistics and ANOVA results in Table 3.3, all the independent variables were significantly associated with the dependent variable. Older adults who had the children focused networks were slightly older than those with other network types. Gender of respondents was almost evenly split for those who had the spouse focused type of network, but there were many more women than men in the children focused type and slightly more women than men in the diverse type. A higher proportion of older adults who had the diverse networks had graduated from high school compared to the other two care networks.

As for ethnicity, network types were distributed more or less evenly for most groups. For example, the biggest group, other-white, represents approximately 40% of respondents with all three network types. Considerably small proportions of older adults from East and South Europe had the children focused network type (3.4% and 3.6% respectively). Also, small proportions of older adults in the South European and Asian groups had the diverse network type. Among older adults who had diverse networks, only 1.3% was Asian and 2.5% was South European. Older adults who were born in Canada were more likely to have diverse networks than immigrants.

Table 3.3: Sample characteristics (Cross-tabulation and ANOVA)

Characteristics	Spouse focused (N=883)	Children focused (N=877)	Diverse (N=791)	Significance
Age (mean)	77.6	80.33	77.50	F=42.75***
Female (%)	56.3	78.7	66.6	X^2 =91.2***
Health status (HUI mean)	.47	.52	.61	F=30.73***
Ethnicity (%)				X^2 =67.1***
- Canadian	11.3	12.5	11.8	
- British	19.9	21.1	24.6	
- French	6.0	8.9	6.7	
- Western European	6.3	5.7	8.6	
- Eastern European	6.1	3.4	5.6	
- Southern European	6.5	3.6	2.5	
- Asian	5.8	5.7	1.3	
- Other Whites	38.2	39.1	38.9	
Education (%) - High school grad	42.1	40.9	47.2	X^2 =8.06*
Personal Income (%)				X^2 =37.6***
- Less than 20,000	25.0	19.2	14.1	
- 20,000-30,000	40.7	52.9	52.0	
- 30,000+	34.3	27.9	33.9	
Immigration (%)				X^2 =40.58***
- Canada born	73.5	77.6	79.4	
- 40 years+	16.9	13.5	17.4	
- 20 to 40	4.7	5.2	NA[3]	
- Less than 20 years	4.9	3.8	NA	

* p < .05 ** p < .01 *** p < .001

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[3] Not available due to small cell sizes; Statistics Canada does not permit taking out any cell sizes smaller than 15 out of Research Data Center

Table 3.4 shows the results of multinomial logistic regressions, and the relative risk ratios from the three models are presented. The dependent variable in each model is older adults' care network type. The reference group for the dependent variable is the diverse network type. Each model includes different blocks of independent variables as shown in the Table 3.4. In the first model, only the ethnicity variables were entered. Socioeconomic variables were added to the second model. Other background variables were then entered into the third model. As shown in Table 3.4, there were differences in the predictors for the spouse focused and the children focused care networks, relative to the reference group of the diverse care network.

The results from Model 1 indicate that ethnicity is significantly associated with care network types. Compared to the reference group of Other-white older adults, South European older adults were 2.7 times and Asian older adults were 4.6 time more likely to have the spouse focused care network than the diverse network. Asian older adults were also 4.4 times more likely to have children focused networks than diverse networks when compared to Other-white older adults.

Model 2 includes the two additional independent variables representing socioeconomic status: education and income. When socioeconomic status was controlling for, differences between Asian older adults and White-other older adults remained significant. However, the influence of South European older adults disappeared. Income was a significant predictor for the spouse focused network: those who reported an annual personal income between $20,000 and $30,000 were 53% less likely to have a spouse focused network than the diverse network compared to those who reported an annual personal income under $20,000.

Model 3 includes demographic variables as additional independent variables. The significant differences between Asian older adults and Other-White older adults disappeared when demographic variables were controlled for. Relative to Other-White older adults, East European older adults were 60% less likely to have children focused networks than diverse networks. The addition of demographic factors did not change the influence of income. In addition, the results from Model 3 indicated that age, sex, and health status were associated with types of older adults' care networks. As age increases, the chance of having a spouse focused network rather than a diverse network was slightly lower, but the chance of having the children focused type over the diverse type was higher. Better health status was associated with a higher chance of having a diverse network than the other two types. Finally,

the data suggested that women had a higher chance of having the children focused network over the diverse network compared to men.

Table 3.4: Hierarchical regression analysis of predictors of care network types

	Model 1	Model 2	Model 3
Spouse Focused	Odds ratio	Odds ratio	Odds ratio
Canadian	0.99	1.07	1.39
British	0.83	0.78	0.80
French	0.91	0.86	0.80
West Europe	0.76	0.85	0.75
East Europe	1.13	0.92	0.63
South Europe	2.69*	2.04	0.99
Asian	4.58***	3.32 *	1.61
High school graduate		0.84	0.79
Income $20,000 - $30,000		0.47***	0.53**
Income $30,000+		0.66	0.76
Age			0.96***
Female			0.78
Health Utility Index			0.26***
Canada born			1.16
Immigrant 40 + years			2.01
Immigrant 20 to 40 years			1.05
Children Focused			
Canadian	1.06	1.13	1.31
British	0.87	0.86	0.88
French	1.34	1.24	1.82
West Europe	0.66	0.67	0.77
East Europe	0.61	0.61	0.40*
South Europe	1.46	1.28	1.21
Asian	4.40 **	3.32 *	2.13
High school graduate		0.91	1.03
Income $20,000 - $30,000		0.84	0.86
Income $30,000+		0.71	0.80

Age			1.04***
Female			1.67**
Health Utility Index			0.35***
Canada born			0.99
Immigrant 40 + years			2.17
Immigrant 20 to 40 years			0.90
Log likelihood	-2695.41	-2283.93	-1637.49

* p < .05 ** p < .01 *** p < .001

Reference groups: Other-white, less than high school education, Income less than $20,000, immigrants less than 20 years

Discussion

The first research question sought to clarify whether there are ethnic differences in the composition of older adults' care networks. Simple correlation results identified significant ethnic variations in proximity and relationship compositions of care networks. With regard to the size of care networks, the current analysis found that, regardless of ethnicity, older adults' care networks are small, averaging approximately 1.5 members. There was no significant difference in average network size among ethnic groups. Across ethnic groups, care tasks are provided by a small number of care network members, usually between one and two members. This finding provides evidence to debunk beliefs about older adults from ethnic minority families having large and supportive care networks based on their strong family ties. However, this finding raises concern about adequacy of care received from very small networks as well as the degree of responsibilities placed on small numbers of caregivers.

The majority of older adults with spouse focused networks had only one caregiver. Having one caregiver means that all the care responsibility falls on the lone caregiver, and there is no other caregiver with whom bonding social capital may be generated. Depending on availability of other family members and friends who can step in to provide support to older adults and/or to their caregivers, levels of bridging social capital in the spouse focused networks would be limited. Previous studies reported that spousal caregivers are the least likely to access formal care services compared to other caregivers (Cranswick & Thomas, 2005; Li, 2004), which may be due to lack of bridging social capital. It could also be due to the fact that spousal caregivers usually live with the care recipient, which enables them to provide care around the clock when care is needed. The findings about sizes of care networks, especially the smallest average size for spouse focused care networks, are important because they highlight a potential lack of both bonding and bridging social capital in the spouse focused network, which may put them at risk of having insufficient care resources. An important question arising from these findings is what would happen when the spouse caregivers themselves are in need of care. In order to further understand availability of social capital surrounding older adults who are in need of care, longitudinal data are needed to analyze how network structures may change over time.

With regard to network compositions, Canadian, British, French, West-European, Other-white groups had fairly similar relationship and proximity compositions, however, East-European, South-European, and Asian

groups were notably different from the rest of the groups. Care networks of older adults who are in these three groups were less likly to include extended kin and friends in their care networks. Also, they were much more likely to have caregivers living with them when compared to other groups. What the findings of this research suggest is that care networks of East-European, South-European, and Asian older adults were more immediate family focused, and they were more likely to have at least one caregiver living with them compared to other ethnic groups. Using a social capital lens, these findings point to higher levels of bonding social capital for the three groups compared to the other groups, which were included in the current study. However, according to the network veiw of social capital (Burt, 2000; Lin, 2001), having high proportions of immediate family members and low proportions of friends and neighbours in the care network could also mean lack of bridging capital which links older adults with resources in the community. Therefore, future research on the relationships among ethnicity, network structures, and the interface between family and friend care networks and formal care is needed to further understand variations among ethnic groups on social capital for care.

The first question examined whether ethnicity influences types of older adults' care networks. Descriptive analysis showed ethnic variations in network composition, but findings from multivariate regressions overall suggested that ethnicity has limited influence on the care network type; only East European older adults were significantly different from the reference group of Other-white older adults. There has been no research that examined care network structures by ethnic groups in Canada, so direct comparison cannot be made with previous studies. It is possible that there are ethno-cultural specific factors that lower the chance of East European older adults to have child focused networks. For example, previous research comparing five ethnic groups (British, French, German, Ukranian/Russian, and Jewish) in Canada, Penning and Chapell (1987) found Ukranian/Russian older adults to have the lowest proportion of co-residency with their children. Therefore, it might be that East European families put higher empahsis on independence comared to other groups. In-depth interviews could help to clarify why the group appeared to be different from other groups.

The limited influence of ethnicity on care network type found in the current analyses offers little support to the general assumption that ethnic minority older adults have strong and active care networks due to their strong family ties. Observed differences among ethnic groups in care network types were due to other factors, mostly dempgraphic characteristics such as age and

health status. Therefore, what appeared to be ethnic differences in care network structure are actually accounted for differences in demographic characteristics. However, understanding care network structure does not reveal how care networks operate to provide care. In order to make firm conclusions about ethnicity and caregiving, future studies examining care provided by care networks is needed.

The second question sought to clarify whether ethnic differences in types of older adults' care networks might be explained by other factors, including socioeconomic status and demographic characteristics. The results from the multivariate anlysis indicate that various sociodemographic factors are associated with network types and that structual factors were able to explain most of the ethnic variation in care network types. When other factors were not controlled for, South European and Asian older adults had much lower chances of having diverse care networks. The significant differences between South European older adults and Other-white older adults were explained by socioeconomic factors and differences between Asian older adults and Other-white older adults in care network types were partially explained by differences in socioeconomic factors and demographic factors. These findings show that what appeared to be the influence of ethnicity on older adults' care network type is actually based on their demographic and socioeconomic characteristics.

With regard to socioeconomic status, previous studies have found that those with higher education and income tend to have diverse networks (Wenger, 1996; Litwin, 2003). Education was not a significant determinant of care network types in the current study, and income also did not have a clear pattern of influence. However the direction of the influence found in the current study were consistent with the past research. Compared to the lowest income group, older adults in the middle income group were more likely to have the diverse network type than the spouse focused network type. It is possible that those with lower socioeconomic status might rely more on family support as they lack financial resources to invest in relationships outside the family. As a result, their network might become more family focused and less diverse than those with more resources. However, because no significant differences between the highest and the lowest income groups were found, further exploration is needed to confirm the relationship between socioeconomic status and care network types.

With regard to demographic factors, past research reported that increased age and decreased health status were also associated with low

probabilities of having diverse networks (Litwin,2003; Wenger, 1996). Findings from the current study are consistent with the conclusions presented in past research, and it might be because a decline in health satus is likely to negatively influence older adults' ability to maintain friendships. In later years, individuals have been found to choose close ties and let go of casual ties (Carstensen, Isaacowitz, Charles; 1999). These findings about influence of demographic characteristics are important not only because they reveal predictors of care network types but also because they indicate that demographic factors accounted for initial ethnic differences in care network types. Furthermore, in order to clarify how these relationships might be different across ethnic groups, it would be of value to separate ethnic groups when running models to predict structures of care networks in future research. Separate models would help to determine whether predictors of care network type are different across ethnic groups. In addition, age and health status variables were predictors for all care network types. These findings illustrate the importance of age and health status as determinants of care network types regardless of ethnicity. Similar to arguments made by Guberman and Mahew (2003), the current research reflected the importance of demographic factors rather than ethnicity as determinates of care network types. Overall, the findings from the current study show that with respect to the structure of care networks, assumptions about certain ethnic groups to have larger and more supportive care network is not true among Canadian older adults.

The current research includes a few methodological limitations. First, care network members included in the data set were identified by older adults who are recipients of care. Care network members captured in the data set used in the current analyses included only family members and friends who provide older adults with at least one of the seven tasks used in the survey to identify respondents who were in need of long-term care. It is possible that some caregivers were not identified because they provided different tasks, such as care management and assistance with medication. It is also possible that there are some caregivers who provide assistance with certain tasks without the receiver's knowledge; for example, managing care tasks and arranging formal care from distance. Therefore, sizes of care networks in this study might have been underestimated. Inclusion of these additional tasks would have made it possible to capture more accurate care network size and structure.

Second, there were only three care network types identified in this study due to small sample sizes in some ethnic groups. It is possible that the

limited numbers of care network types in this study affected network compositions across different types of care networks. The problem with only three types is that for example, in the children focused care network, it was unable to distinguish whether it was son or daughter focused networks. It is possible that there might have been ethnic differences in whether to receive care from son or daughter. Future research including more care network types would help to better understand predictors of care network types and the relationship between ethnicity and structure of care networks.

Finally, to better understand the influence of ethnicity on care of older adults, it may be important to have measures of ethno-cultural beliefs about care of older adults. The current research would have benefited from inclusion of such beliefs to assess whether the influence of ethnicity that was unexplained by other background factors could be explained by ethno-cultural differences.

CHAPTER4:

**Paper 2: Influence of Ethnicity on the Interface between Older Adults'
Family and Friend Care Networks and Formal Care**

Introduction

This work investigates the influence of ethnicity on older adults'
source of care, and it examines the interface between family and friend care
and formal care. As the proportion of older adults continues to increase in our
society, care of older adults at home has become an important policy issue.
Family and friend caregivers are the primary source of care, and they are usually
the first resources from which older adults receive the care they need
(Blasinsky, 1998; Tennstedt, Chang, & Delgado, 1998). Roles of family
members and friends in care of older adults, and the relationship between care
provided by family and friend caregivers and care provided by formal
caregivers have been the focus of many studies. Findings from those studies
suggest that there is a complex association between family and friend care and
older adults' use of formal care services, and more than few models have been
developed to describe such relationships (Lyons, Zarit & Townsend, 2000;
Motel-Klingbiel, Tesch-Romemer, & Kondratowitz, 2005; Nordberg, Strauss,
Kareholt, Johansson, & Wilmo, 2005; Penning, 2002). Due to the emphasis on
community-based long-term care in Canadian government policy and in other
countries with aging populations, a network of people surrounding older adults
who can support them and provide the care they need to remain in the
community has been attracting attention in both policy and research fields.

Recent studies point out the importance of coordination between
family and friend care and formal care, stating that supplementing family and
friend care with formal care could help to reduce costs to caregivers and
contribute to the long-term sustainability of the family and friend care system
(Carpentier, Pomey, Contreras, & Orazabal, 2008; Lowenstein, 2007;
Ward-Griffin & Marshall, 2003; Williams & Dilworth-Anderson, 2002), which
in turn may link to sustainability of the formal care sector. In addition to being
the primary source of care, older adults' care networks have also been shown to
be one of the key factors that influence the way older adults access formal care
(Valle, Yamada, & Barrio, 2004). Care networks can work as a bridge that links
older adults to formal care services, or, through negative attitudes and beliefs
toward the formal care sector, they can obstruct access, (Li, 2004; Litwin,
2004; Williams, & Dilworth-Anderson, 2002).

The informal-formal interface varies by a number of factors ranging from individual conditions to policy and custom at the societal level (Lyons et al., 2000; Ward-Griffin & Marshall, 2003). When considering the multiculturalism and ethnic diversity in Canada, the importance of understanding the influence of ethnicity on the interface between family and friend care and formal care becomes apparent. Older ethnic minorities and their caregivers are less likely than older adults who are part of the mainstream group to rely on formal care services, and often face obstacles such as language and cultural barriers to accessing the formal sector (Giunta, Chow, Scharlach, & Santo, 2004; Lai, 2007). There is a general assumption that older adults from ethnic minority families tend to have strong family ties and supportive care networks and that they are more likely than mainstream North Americans to be cared for by their family members and friends (Brotman, 2002; Dilworth-Anderson, Williams, & Gibson, 2002; National Advisory Council on Aging, 2005). Brotman (2002) cautioned that the perception of greater family involvement in caregiving among ethnic minorities may jeopardize access to formal care services for older adults from some ethnic groups, which may in turn put them at risk of receiving insufficient care. Similarly, recent studies reported that differences between ethnic groups, especially between minorities and majorities, on actual support and care older adults receive from family members are not as large as once believed (Schans & Komter, 2010; Tennstedt et al., 1998).

Therefore, it is important to capture whether ethnic variations exist in the actual care older adults receive. As well, there is a lack of research that focuses on older adults' receipt of care from both the formal and the family and friend sectors (Nordberg et al., 2005). This study investigates the influence of ethnicity on care received by older adults and examines ethnic variations in the interface between family and friend care and formal care. Research question to be addressed in this study is: Are there ethnic differences in the source of care older adults receive (family and friend care only or mixed family and friend care and formal care)?

Literature Review

Past studies on the relationship between formal care and family and friend care assumed that family and friend care and formal care services are substitutes for each other. From this perspective, increasing public services for care of older adults would promote the decline of family and friend involvement and diminish the roles of family and friends. This view traditionally has been

widely accepted in general and has influenced leading policy makers to fear that expanding formal care programs would decrease family contributions to caregiving (Penning, 2002). However, the substitution model has been challenged, and more than a few studies have provided evidence against it (Duner & Nordstrom, 2007; Keating & Dosman, 2009; Lyons, Zarit, & Townsend, 2000; Penning, 2002). More recent studies found that, instead of being substitutes, formal care and family and friend care complement each other: when older adults receive formal care services, the amount of family and friend care they receive is found to be higher (Keating & Dosman, 2009; Motel-Klingebiel, Tesch-Roemer, & Kondratowitz, 2005). The current research even suggests a "reverse substitution" model, claiming that family and friend caregivers are forced to substitute for the decreasing supply of formal care support (Duner & Nordstrom, 2007). The reverse substitution model raises a question about whether care for older adults is threatened by recent policy directions that reduce access to formal support (Motel-Klingebiel, Tesch-Roemer, & Kondratowitz, 2005).

Networks and Social Capital

This study is guided by a social capital framework. The social capital framework, especially the network theory of social capital (Lin, 2001), helps to conceptualize ethnic variations in social capital generated and mobilized by care networks of older adults. According to the social capital framework, social networks are important social features that facilitate social capital, which is defined as relations among individuals that facilitate actions toward certain purposes (Coleman, 1988; Petnum, 1993). With this perspective, care networks of older adults could be seen as the foundation for generating and mobilizing social capital needed to provide care for older adults. The concept of social capital has rarely been examined in the context of ethnicity, yet it is important to understand ethnic variations in the way social capital is generated and used in a multicultural society (Edwards, Franklin, & Holland, 2003).

Previous studies have identified two types of structural characteristics of networks that can be linked to two distinct types of social capital (Franke, 2005; Kavanaugh, et al., 2005; Putnam, 2000). First, networks with close ties among relatively homogeneous members tend to generate bonding relations that generally provide resources for daily problems. These types of networks are likely to be closed, consisting of members who are intimate and share similar backgrounds (Putnam, 2000; Widmer, 2006). These networks are believed to have high levels of bonding social capital within the network due to an

enhanced sense of obligation and trust among network members (Coleman, 1988; Milardo, 1988).

Second, networks that consist of weak ties among heterogeneous members are believed to generate bridging social capital. These networks are likely to provide access to external resources that help individuals to get ahead, having a flow of new information and providing linkage to community resources (Bhandari & Yasunobu, 2009; Burt, 2001; Lin, 1999). Therefore, differences in older adults' care networks with respect to the levels of these two types of social capital may influence the interface between the family and friend care and formal care older adults receive. Using the social capital framework, the following sections discuss how care network and ethnicity might be associated with the interface between family and friend care and formal care.

Networks, Social Capital, and Family and Friend and Formal Care Interface

Care networks are central to the way care is arranged, and different care networks have been found to be associated with different patterns of caregiving, by influencing availability of care and ability to link older adults with formal care services (Li, 2004; Wenger, 1997; Williams & Dilworth-Anderson, 2002). Research on networks of older adults and caregiving shows that the proportion of family members in their networks increases with age and declining health status (Aartsen, van Tilburg, Smits, & Kinipscheer, 2004; Wenger & Keating, 2008). Families have been considered a source of bonding social capital, as family members are alike on key characteristics and family ties are regarded as having strong trust and expectations to provide support (Widmer, 2007). On the other hand, families may lack bridging social capital as their homogeneous memberships and tight bonds may exclude outsiders (Keating & Dosman, 2009; Zacharakis & Flora, 2005). Some argue that networks with particularly highly levels of bonding social capital could be disadvantageous to individuals as those networks lack "structural holes" which are needed for information to flow from outside of the networks and to develop bridging capital (Burt, 2001; Widmer, 2007). In care of older adults, family members will be suited to providing emotional support and daily care, but care networks that include diverse members, such as distant kin, friends, and neighbors, may have more bridging capital and be more resourceful in connecting older adults with formal health care and social services (Keating & Dosman, 2009). Keating and Dosman (2009) examined hours of care older adults received from family and friend care networks and

the formal sector across their care network types, and found that older adults with networks comprising only close family members received more care from family and friend care networks than those with diverse networks and that they are least likely to receive formal care compared to networks that include diverse members. In line with the social capital framework, their study revealed that family-focused networks tend to generate high bonding social capital for caregiving, whereas networks including friends are more likely to seek out formal care than family-focused networks, utilizing bridging social capital.

Ethnicity, Networks, and Family and Friend and Formal Care Interface

The literature on ethnicity and care indicates ethno-cultural variations in norms and beliefs about family care as well as help-seeking behaviours (Burr & Mutchler, 1999; Coogle, 2002; Lowenstein, 2007). For example, relationships between older parents and their adult children are often described as "intimate at a distance" in Western countries in which individual independence is highly valued (Connidis, 2010; De Jong, 2009; Lowenstein, 2007; Mitchell, 2003), while in other ethno-cultural groups, such as Southern European, Latin American, and Asian families, a collectivistic approach is taken to care (Killian & Ganong, 2002; Pinquart & Sorensen, 2005). Some groups, especially Asian families, have found to manage care of older family members internally and be unwilling to seek help from outsiders (Braun & Browne, 1998; Chee & Levkoff, 2001).

Differences in caregiving expectations with respect to management of caregiving responsibilities within or outside of families are believed to result in the observed ethnic variations in care arrangements (Dilworth-Anderson, Williams, & Gibson, 2002; Lum, 2005; Pinquart & Sorensen, 2005). However, it is not clear whether varying norms and expectations regarding caregiving results in differences in the way ethnic groups generate and draw on bonding and bridging social capital. This may in turn influence sources of care for older adults.

Data comparing the function of older adults' care networks across ethnic groups are limited, and findings about ethnic variations in patterns of care of older adults are inconclusive (Burton et al., 1995; Feld, et al., 2004; Keefe et al., 2000; Li & Fries, 2005; Thoronton et al., 1993; Tennstedt, Chang, & Delgado, 1998). While some studies found no significant differences across ethno-cultural groups in the amount of care, sources of care, and the interface between family and friend care and formal care older adults receive (Litwin,

2004; Lum, 2005; Tennstedt, Chang, & Delgado, 1998), other studies found significant group differences in these patterns of care. For example, Stommel, Given, and Given (1998) found that African American caregivers were less likely than European Americans to be the solo caregiver, and suggested that caregiving is a communal affair among African Americans. However, Li and Fries (2005) found that older blacks were more likely than older whites to have a sole caregiver. In a comparison among Latino, African, and non-Hispanic white Americans, Weiss, Gonzalez, Kabeto, and Langa (2005) found that Latino older adults receive significantly more hours of family and friend care per week than the other two groups, even after controlling for other possibly confounding variables. Chow, Auh, Scharlach, Lehning, and Goldstein (2010) reported that Asian and Pacific Islander caregivers are most likely to receive help from informal sources only, white caregivers are most likely to receive help from formal sources only, and African American caregivers are most likely to receive help from both formal and informal sources. These findings suggest the presence of high bonding and/or low bridging social capital among Asian and Pacific Islander caregivers, high bridging and/or low bonding social capital among white caregivers, and high bonding and/or low bridging social capital among African American caregivers.

Differences in samples and control variables among these studies make comparisons of findings across studies difficult (Dilworth-Anderson, et al., 2002; Li & Fries, 2005). As well, the majority of these studies were conducted in the U.S. where the concepts of ethnicity and race are often confounded. Although they may overlap in practice, race and ethnicity are distinct characteristics (Blakemore & Boneham, 1994). While race is based on biological traits, ethnicity categorizes individuals based on culturally transmitted characteristics (Antonucci, Jackson, & Biggs, 2007). Therefore, comparisons and generalizations across studies are limited, and it is difficult to apply these findings to the Canadian population.

There are only a few Canadian studies that have explored ethnic variations in family and friend care of older adults. Keefe et al. (2000) analyzed the relationship between ethnicity and the provision of assistance to older adults and compared eight ethnic groups: British, French, North/Western European, Eastern European, Southern European, Asian, East Indian, and Caribbean. They found that Asians, East Indians, and South Europeans provided significantly more hours of care than other groups. These groups might be viewed as having high bonding social capital.

Recent studies point out that the ethno-cultural differences in caregiving behaviour may not be as significant as earlier studies suggested, as ethnic variations in family care can be attributed to factors other than cultural differences among ethnic groups (Burr & Mutchler, 1999; Guberman & Mahew, 2004; Keefe et al., 2000; Rosenthal, 1986; Sokolovsky, 1997). Ethnic variations in caregiving can also be influenced by social and economic status (Guberman & Mahew, 2003; Keefe, 2000; Rosenthal, 1986), and ethnicity can influence an older adult's location in the social structure (Feld et al., 2004; Rosenthal, 1986). For example, lack of available financial resources to purchase formal care means that family and friend caregivers need to manage caregiving tasks without support from formal care sources. Financial resources have been found to be associated with a higher chance of receiving formal care services (Feld, et al., 2004; Peek, Coward, & Peek, 2000).

Health status and care needs of older adults also influence the amount and types of care they receive. Older adults who have severe functional limitations and require frequent care need caregivers at close proximity. Several studies reported that ethnic differences in the function of networks are due to care receivers' health status and their level of disability (Dilworth-Anderson et al., 2002; Li & Fries, 2005). One study concluded that differences in the actual amount of care provided to white and black Americans disappeared when differences in older adults' care needs were controlled for (Li & Fries, 2005). A Canadian study that examined the intergenerational support system in Japanese Canadian families found that older parents' health and socioeconomic status influenced the amount and type of support provided by their children (Kobayashi, 2000). These findings indicate that social capital for caregiving is utilized according to care needs and that there may be no association between ethnicity and types of social capital generated.

There is limited evidence of ethnic variations in sources of care older adults receive, and findings about influence of ethnicity on sources of care are inconclusive. Additional studies are needed to understand whether there are ethnic variations in the source of care for older adults and to clarify the influence of other factors such as socioeconomic status, demographic characteristics, and care networks, on care of older ethnic adults. This study used national survey data to examine ethnic variations in older adults' receipt of care from both formal and family and friend sectors. A research question and a sub question addressed in this study were:

Research question: Are there ethnic differences in the source of care older adults receive (family and friend care only or mixed family and friend care and formal care)?

Sub question: What is the relative importance of socioeconomic status and demographic characteristics in explaining ethnic differences in the source of care older adults receive?

Methods

Data Source and Sample Description

The data for this study came from two surveys conducted by Statistics Canada. First, the 2001 Canadian Community Health Survey (CCHS) Cycle 1.1 is a general population health survey intended to provide timely and reliable data on health determinants, health status and health system utilization across Canada. The target population for the CCHS was Canadians over the age of 12 years, who were living in private households in the ten provinces and three territories. Persons living on Indian Reserves or Crown lands, residents of institutions, full-time members of the Canadian Armed Forces and residents of certain remote regions were excluded from this survey. The CCHS covers approximately 98% of the Canadian population aged 12 or older. Data for the CCHS Cycle 1.1 were collected over the course of a year, starting from September 2000. The CCHS included a nationally representative sample of 130,827 people aged 12 and older.

Second, the 2002 General Social Survey (GSS) Cycle 16 was designed to observe social trends in living conditions or well-being of citizens and to provide information related to specific social policy issues. The core content of Cycle 16 was social support and aging, focusing on support for older Canadians. Data for the GSS Cycle16 were collected from February to December 2002 inclusive, using telephone interviews. The target population for the Cycle16 was Canadians over the age of 45 years, who were living in private households with telephone lines. The sampling frame for this survey was the CCHS Cycle 1.1, which was conducted in 2001. The sample for the GSS Cycle16 was randomly selected from a list of individuals aged 45 and over, who had responded to the CCHS Cycle 1.1. The GSS Cycle16 included a nationally representative sample of 24,870 people aged 45 and older.

The main data set for this study is the GSS Cycle 16, and the main section of the GSS that was used in this study is *Care receiving by respondent*. Other sections such as *Health status of respondent*, *Education and main activity of respondent*, *Housing characteristics of respondent*, *Other characteristics*

were also used in the analysis. These sections of the GSS were linked with selected modules of the CCHS Cycle1.1, including the modules on ethnic background and health care service utilization.

The sample for this study included 2,551 respondents age 65 and over, who were receiving assistance from family members and friends due to their long-term health problem. Because this study examined the influence of family/friend care networks on the source of care, those who received only formal care were not included. The respondents received assistance with at least one of the following tasks: housekeeping, meal preparation, outdoor maintenance, transportation, baking, bill paying, and personal care.

Study Variables

For variables with pre-determined categories, the largest numbers of categories were retained whenever possible in order to avoid loss of information. When expected frequencies were too small, however, it was necessary to collapse categories to meet Statistics Canada's minimum cell count requirements[4]. Decisions regarding measurements were made on a variable by variable basis and are discussed in detail below. Among the variables used in the current analyses, only the ethnicity variable came from the CCHS 1.1., and all other variables came from GSS 16.

Dependent variable: Source of care was coded to reflect two types (only family and friend care; or a mix of family and friend and formal care).

Independent Variables

Explanatory variables considered in this study included ethnicity, age, gender, health status, education, income, and length of residency in Canada, and care network type, all of which have been identified as influential factors with respect to older adults' receipt of care (Litwin, 2004). Ethnicity was operationalized on the basis of two questions: one about respondents' racial/cultural identities and another about their ethnic origins. The actual questions are as follows:

1) 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 Peoples of North America, other)?

2) To which ethnic or cultural group(s) did your ancestors belong?

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[4] Statistics Canada requires a minimum of 15 cases per cell in any multivariate and bivariate analysis for CCHS data.

(Canadian, French, English, German, Scottish, Irish, Italian, Ukrainian, Dutch, Chinese, Jewish, Polish, Portuguese, South Asian, Black, North American Indian, Métis, Inuit, Eskimos, Other).

Although the first question asks respondents' racial and cultural background instead of asking directly about one's ethnic identity, categories for the answer include racial (White, Blacks) and ethnic groups. Therefore, for those who chose one of the ethnic categories, this question was used to determine their self-perceived ethnicity. For those who chose the racial category, 'White' as their identity, the second question about ethnic origin was used to determine their ethnicity. There were not enough respondents[5] who chose 'Black' as their identity in the first question, so this group of respondents was not included in the analyses. Respondents were able to choose more than one ethnic origin, and those who selected more than one origin were categorized as 'other-white'. Using these two questions, eight self-identified ethnic groups were identified: Canadian, British, French, West European (includes German, Dutch), East European (includes Ukrainian, Polish), South European (includes Italian, Portuguese), Asian (includes Chinese, South Asian, Filipino, Southeast Asian, West Asian, Japanese, Korean), and other-whites (includes 'Other-White' as well as those who selected more than one origin).

Age and health status were measured as continuous variables. The Health Utility Index (HUI) composite indicator, which is based on the Comprehensive Health Status Measurement System (CHSMS) (Feeny, Torrance, & Furlong, 1996), was used to measure older adults' health statuses. HUI ranges from 0 to 1, with 1 being the healthiest. Gender was coded as a nominal variable (male or female).

Due to the small number of respondents who had immigrated to Canada, length of residence in Canada was coded into four levels (born in Canada, living in Canada over 40 years, living in Canada 20 to 40 years, living in Canada less than 20 years). Due to the small number of respondents with more than high school education, education was coded to reflect two schooling levels (less than high school or high school graduate).

Income was coded to reflect three levels of annual personal income (less than $20,000, $20,000 to $30,000, $30,000+). These categories were chosen due to small numbers of respondents with high income levels and relatively

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[5] Statistics Canada requires a minimum of 15 cases in any multivariate and bivariate analysis for CCHS data

large numbers with low income levels, and to avoid extremely unbalanced sample sizes.

Care network types were identified through application of cluster analysis, using five characteristics (number of caregivers, age and gender of all members of the network, as well as relationships and proximity between care receiver and network members) that have been identified as key determinants of older adults' networks in the literature (Wenger, 1991; Keating et al., 2003). Those who did not receive care from family and friend caregivers were identified as having no care networks.

GSS 16 included a separate module for questions regarding respondents' care networks. Respondents were asked to list names of those who assist with at least one of the following tasks: housekeeping, meal preparation, outdoor maintenance, transportation, baking, bill paying, and personal care. Respondents were then asked for detailed information about each caregiver such as, relationship, sex, age, and proximity. Relationship between the care receiver and each caregiver was measured in 31 categories including family members, friends, and neighbors. Age was measured in nine categories with ten-year intervals starting from under 15 years and ending with 85 years and older. Proximity was measured in 6 categories: (1) same household, (2) same building, (3) same neighborhood or community, (4) in the surrounding community, (5) less than a half day's journey, (6) more than a half day's journey.

In the cluster analysis, relationships were divided into four categories: spouse, children, extended kin, and friends. Age groups were divided into three categories: under 45 years, 45 to 64 years, and 65 years and older. Proximity was collapsed into three categories: same building, same community, and distant.

Statistical Analysis

The statistical analysis in this study includes descriptive and regression analysis. First, older adults' sources of care were described and cross-tabulated by ethno-cultural groups. To test for variations among ethno-cultural groups, Chi-square tests and Analysis of Variance (ANOVA) were used. Second, bivariate tests of association between independent and dependent variables were conducted. Chi-square and T-tests were executed to test for significant differences between older adults who received care only from family and friend care networks and those who received care from mixed sources (family and friend care networks and the formal sector). Given that the "source of care" as the dependent variable is a dichotomous variable (see Table

4.3 for the complete list of independent variables) a logistic regression was conducted.

Before fitting the models, in order to assess multicollinearity, correlation matrices of all the independent variables were produced and Variance Inflation Factors (VIFS) were checked. High correlations between independent variables suggest multicollinearity. When bivariate correlations are approximately 0.7 or higher and VIFs are 10 or higher (O'Brien, 2007; Tabachnick, & Fidell, 2007) there may be reasons for concern about multicollinearity. However, in this research, there were no high correlations among the independent variables and no concern for VIFs was detected.

A series of models was fitted to test the influence of three types of factors (socioeconomic status, other demographic variables, and care network types) on older adults' source of care. The first model tested ethnic variations without controlling for other factors, and only included older adults' ethnicity. Socioeconomic status variables were included in the second model, other demographic factors were added in the third model, and care network types were included in the final model to examine whether the influence of ethnicity on the source of care changes with the addition of other factors. Entering these four sets of other factors in a hierarchical order is beneficial as it enables the examination of the contribution of each set of factors, which can be helpful to understand which factors might explain ethnic variations in sources of older adults' care. If the influence of ethnicity disappears with addition of a set of other factors, the observed ethnic differences can be explained by the set of factors.

Statistical Weights

In order to ensure that the sample was representative of the Canadian population, the appropriate statistical weights were applied in all analyses. In addition, Fay's method, a variance estimation technique, was used to adjust for the complex, multistage stratified sampling and to estimate sampling error. Statistics Canada generally recommends Fay's method to be used as the method of variance estimation for data with mean bootstrap weights such as GSS (see Owen, 2004 for details). Fay's method produces lower standard errors and provides a more conservative test of significance compared to bootstrapping, making it more difficult to reach statistical significance (Chowhan, & Buckley, 2005; Owen 2004).

Results

Table 4.1 describes results of cross-tabulation analysis on the sources from which older adults received care across ethno-cultural groups. British (particularly), French, West European, and Other-White older adults were more likely to have received care from mixed sources than to rely solely on family and friend care networks. Asian older adults were least likely to receive care from mixed sources.

Table4.1: Cross-tabulation on source of care by ethno-cultural groups

Source of care	CA[1]	BR	FR	WE	EE	SE	AS	OW	Sig.
% Family and friend care only	53.8	39.7	49.3	44.7	50.3	60.0	82.3	46.4	$X^2 = 86.3***$
% Mixed Source	46.2	60.3	50.7	55.3	49.7	40.0	17.7	53.6	

1. CA= Canadian, BR=British, FR=French, WE=Western European, EE= Eastern European, SE=Southern European, AS=Asian, OW=Other-Whites

*** $p < .001$

Bivariate relationships between older adults' source of care and eight independent variables are presented in Table 4.2. As shown in Chi-square statistics and ANOVA in Table 4.2, all the independent variables were significantly associated with older adults' sources of care. Older adults who received care from mixed sources were slightly older and had somewhat poorer health status than those who received care only from family and friend care networks. Higher proportions of women than men and high school graduates received care from mixed sources compared to women who received care from family and friend care networks only.

British older adults had the highest proportion of those receiving care from mixed sources, while Asian older adults had the lowest proportion. A significantly small proportion of those who had lived in Canada less than 40 years received care from mixed sources. There was a significantly higher proportion of older adults with spouse focused networks among those who received care from only family and friend care networks, compared to those who received care from mixed sources.

Table4.2: Sample characteristics by care network type

Characteristics	Family and friend care only (n=1327)	Mixed Source (n=1224)	Significance
Age (mean)	77.5	79.8	F=73.7***
Female (%)	64.4	71.8	X^2=19.37***
Health status (mean)	.576	.546	F=5.1*
Ethnicity (%)			X^2=86.3***
- Canadian	12.6	9.9	
- British	19.1	26.6	
- French	7.2	6.8	
- West Europe	6.1	6.9	
- East Europe	5.3	4.8	
- South Europe	4.5	2.8	
- Asian	6.4	1.3	
- Other whites	38.8	41.0	
Education (%)			
- High school grad	39.5	51.8	X^2=44.6 ***
Personal Income (%)			X^2=38.5***
- Less than 20,000	21.6	14.4	
- 20,000 to 30,000	49.3	46.6	
- 30,000+	29.2	39.1	
Immigration (%)			X^2=35.8***
- Canada born	76.2	79.8	
- 40 years+	14.6	16.2	
- 20 to 40	5.1	2.6	
- Less than 20 years	4.2	1.4	
Network types (%)			X^2=20.2***
- Spouse focused	37.8	29.6	
- Children focused	31.7	38.2	
- Diverse	30.5	32.2	

*** p<. 001, * p<. 05

Table 4.3 shows the results of logistic regressions; the odds ratios from four models are presented. The dependent variable in each model is older adults' sources of care, and the reference group for the dependent variable is receipt of care from family and friend care networks only. The results for model 1 indicate that ethnicity is significantly associated with older adults' source of care. British older adults are 32% more likely and Asian older adults are 82% less likely to receive care from both family and friend and formal caregivers, compared to Other-White care recipients.

Model 2 includes demographic variables as additional independent variables. The results indicate that ethnicity remained statistically significant even after this set of factors (demographic characteristics shown in Table 4.3) were controlled for. However, the significant differences between the Asian group and the reference group (Other-White) disappeared and the Canadian group became significantly different from the reference group. Older adults who identified themselves as Canadian were 47% less likely to receive care from mixed sources compared to the reference category of Other-White care recipients. In addition, age, sex, and health status were associated with older adults' source of care. Those who were older, female, and had poorer health status were more likely to receive care from mixed sources than from family and friend care networks only. Each additional year of age increased the probability of receiving care from mixed sources by 5%, and women were 51% more likely than men to receive care from mixed sources.

Model 3 includes two additional independent variables representing socioeconomic status: education and income. Differences between the Canadian group and the reference group (Other-White) remained significant. As well, the predicting effects of age, sex, and health status remained similar to those of model 2. Education and income are both positively and significantly associated with older adults' source of care. Those who graduated from high school were 58% more likely to receive care from both family and friend and formal caregivers than those who had not graduated from high school. Those with annual income over $30,000 were 52% more likely than those with income less than $20,000 to receive care from both family and friend and formal caregivers.

In model 4, older adults' care network types were added. While the influence of age, sex, health status, and education remained after controlling for care network type, the influence of income disappeared. Interestingly, the association between ethnicity and sources of care changed again after adding care network type to the model. Canadian older adults were 38% less likely

and Asian older adults were 79% less likely to receive care from mixed sources than Other-White older adults.

Table 4.3: Hierarchical regression analysis of predictors of older adults' sources of care

0=family/friend care only 1=Mixed source	Step 1 Odds Ratio	Step2 Odds Ratio	Step3 Odds Ratio	Step4 Odds Ratio
Canadian	0.74	0.53**	0.62*	0.62*
British	1.32*	1.25	1.30	1.23
French	0.89	0.78	1.02	1.23
West Europe	1.07	0.86	0.89	0.90
East Europe	0.85	0.88	0.95	0.81
South Europe	0.58	0.45	0.49	0.47
Asian	0.18***	0.29	0.33	0.21**
Age		1.05***	1.05***	1.05***
Female		1.51***	1.65***	1.67***
Health Utility Index		0.72*	0.65*	0.34***
Canada born		1.15	1.14	1.43
Immigrant 40 + years		1.01	0.92	1.12
Immigrant 20 to 40 years		0.73	1.76	2.31
High school graduate			1.58***	1.37*
Income $20,000 - $30,000			1.28	1.22
Income $30,000 +			1.52*	1.10
Children focused networks				1.20
Diverse networks				1.38
Log likelihood	-1746.81	-1601.15	-1356.92	-1028.04
LR chi2	55.7	104.55	137.10	135.89
Prob> chi2	0.000	0.000	0.000	0.000
Pseudo R2	0.0157	0.0316	0.0481	0.062

$* p < .05 ** p < .01 ***p<.001$

Reference groups: Other-white, immigrants less than 20 years, less than high school education, Income less than $20,000, Spouse focused network

Discussion

This study aimed to reveal whether sources of older adults' care and the interface between family and friend and formal care vary by ethnicity and the extent to which ethnic differences in the results can be explained by other factors. Results revealed that there are ethnic differences in the interface between family and friend care and formal care which cannot be explained by three sets of other background factors included in the current analyses (socioeconomic status, other demographic variables, and care network types). The first research question aimed to clarify whether there were ethnic differences in the source(s) from which older adults receive care. While the majority of older adults in some groups, especially the British group, received care from both family and friend and formal caregivers, other groups, especially Asian older adults, were more likely to receive care only from family and friend caregivers. Furthermore, results of multivariate regressions revealed that Asian and Canadian older adults were more likely to receive care from family and friend care networks only and less likely to receive care from mixed sources compared to the reference category of Other-White older adults, even after controlling for other relevant factors. Findings from this study, which showed low formal care use by Asian older adults, are consistent with previous research (Chow et al., 2010). An American study examining ethnic variations in sources of support for caregivers to older adults found lower access to formal care services among Asians and Pacific Islanders compared to white and African-American caregivers (Chow et al., 2010). Although the sample and sources of support for caregivers in Chow et al. (2010) are not directly comparable with the current study, the findings similarly indicate lower use of formal care services in the Asian group.

As often discussed in past research, it is possible that the observed differences between Asian and Other-White older adults may be due to ethno-cultural factors such as family care values and preference for family care (Braun and Brown, 1998; Giunta, et al., 2004; Li & Fires, 2005). Family caregiving is provided in a cultural context in which values, beliefs, and attitudes about family care impact care arrangements, including who provides care and what services are used (Dilworth-Anderson, Williams, & Gibson, 2002; Giunta et al., 2004; Lai, 2007; Tennstedt et al., 1998). For example, Asian families value "filial piety," which represents the sacrifice of individuals for parents and ancestors (Fung, 1998; Kamo, 1988). In an American study that examined intergenerational assistance to older adults after divorce and

remarriage, Asian Americans were found to endorse norms about filial obligation to provide care more often than European Americans (Coleman, Ganong, & Rothrauff, 2006). Asian families have also been reported to be unwilling to seek help from outsiders (Braun & Browne, 1998; Chee & Levkoff, 2001). Another study from the United States found that Asian American family caregivers used less formal support than white caregivers (Pinquart & Sorensen, 2005). Therefore, findings in the current study that Asian older adults have a low likelihood of receiving care from multiple sources may be due to language and cultural barriers to formal care, as often discussed in the literature (Chow et al., 2010; Lai, 2007; Scharlach et al., 2006). It was not possible to investigate the influence of cultural values and barriers on the interface between family and friend and formal care since the CCHS 1.2 and the GSS Cycle 16 do not include measures of ethno-cultural values. Further research on ethno-cultural values and beliefs and the interface between family and friend and formal care is needed to clarify the relationship.

As well, findings from the current study also indicate that Canadian older adults were more likely to receive care from family and friend care networks only compared to Other-White older adults. The number of respondents who report Canadian as their ethnic origin has increased substantially since the 1996 Census due to a change in Census format (see Pendakur & Mata, 2000, for details). Since "Canadian" became a newly recognized ethnic group, there has been no study examining basic characteristics among "Canadian" and other ethno-cultural groups in Canada or whether there might be group differences in care of older adults. However, the current study showed that there are differences between those who identify themselves as "Canadian" and the Other-White group, which was the biggest group in this study. There might be ethno-cultural factors that differentiate Canadian group from Other-White group; similar to the Asian group, the Canadian group might be more family focused in care of older adults than Other-White group. The proportion of Canada's population who identify their ethnicity as "Canadian" is likely to increase, thus, understanding basic characteristics of "Canadians" and their ethno-cultural values in caregiving are a fertile field for future study.

The second research question aimed to shed light on whether ethnic differences in the sources from which older adults receive care can be explained by other background factors. Past studies on ethnicity and caregiving suggest that ethnic differences in caregiving may not be the result of cultural differences in beliefs and attitudes about family care, but rather

may be due to differences in other factors such as demographic characteristics and socioeconomic status (Feld, et al., 2004; Guberman & Mahew, 2003; Keefe et al., 2000). In keeping with findings from past research, current analyses found that several factors had a significant influence on the source of care. Age, health status, sex, and socioeconomic status were associated with whether older adults' receive care from family and friend caregivers only or from both family and friend and formal caregivers. The probability of receiving care from both family and friend and formal care increased as age increased and as health declined. These findings are consistent with previous studies in which formal care increased as the recipient's age increased and as the recipient's health status decreased (Litwin, 2004; Tennstedt, Chang, & Delgado, 1998). Also, in the present study, women were more likely than men to receive care from the formal sector in addition to the family and friend sector, consistent with previous studies (Litwin, 2004; Lum, 2005). Several reasons for such gender differences are proposed in the literature. First, the average life expectancy for women is longer than for men, so women tend to outlive their spouses (Connidis, 2010). Once divorced or widowed, men are more likely than women to remarry (Connidis, 2010). These two demographic characteristics mean that older men are more likely than women to have a spouse at home who can provide care around the clock when needed. The magnitude of influence ethnicity had on older adults' source of care decreased with the addition of these demographic factors in the model. Therefore, these findings showed that observed ethnic variations in sources from which older adults receive care are partially explained by differences in their demographic characteristics rather than the ethnic groups to which they belong.

Socioeconomic status is often considered to be an important influence on an older adult's receipt of care as well as on the interface between family and friend and formal care (Keefe et al., 2000; Lai, 2007; Lum, 2005; Lyons, Zarit, & Townsend, 2000). The analyses here indicated that high school graduates are more likely than individuals who did not complete high school to receive care from family and friend and formal sectors. It is suggested in the literature that those with more education may have more knowledge and information about the formal care system, thus improving their access to it (Stoddart, Whitley, Harvey, & Sharp, 2002; White-Means, 1997). However, when care network types were added as covariates in the model, the influence of socioeconomic status became smaller. As shown in Table 4.3, the influence of income disappeared in the final model and the influence of education decreased. What these findings indicate is that the influence of socioeconomic

status is overestimated when care network type is not controlled for. What appeared to be the influence of socioeconomic status on sources of care older adults receive is actually based on the type of care network they have. There is weak association between socioeconomic status and care network types found in chapter 4; those who have not graduated from high school and those who are in the low income group were less likely to have diverse networks than their counterparts (Table 3.3, p30). Therefore, the influence of socioeconomic status on sources of care became small when care networks were controlled for. Thus, the current study highlights the importance of considering care network type when examining the influence of socioeconomic status on the interface between family and friend care and formal care.

These findings provide evidence for the influence of demographic factors on older adults' source of care. However, results of multivariate regressions in this study revealed that there are ethnic differences in older adults' source of care that cannot be explained by other factors included in the analyses. The significant influence of ethnicity remained even after various key factors were controlled for. The remaining unexplained variance in predicting older adults' source of care might be accounted for by considering other factors not included in the current study, such as barriers to access to formal care services.

It has been argued that the older adult's care network type may influence the way caregiving is arranged, determining what persons and what resources are available to provide care (Guberman & Maheu, 2003; Keating & Dosman, 2009; Lowenstein, 2007). The care network type might also influence an older adult's access to formal care. Based on differences in the levels of bonding and bridging social capital generated by care networks, the type of care network can be viewed as influencing the interface between family and friend care and formal care for older adults. It was speculated that older adults with diverse networks may have higher chances of receiving care from both family and friend care and formal care. Surprisingly, multivariate analysis in this study found no significant relationship between network type and sources of care received by older adults. That is, whether older adults receive family and friend care only or both family and friend care and formal care was not influenced by their care network type. This could mean that there are no differences in bonding and bridging social capital across the care networks identified in this study because the average network size was fairly small for all three network types. Alternatively, findings from this study indicate that those who need high levels of care appear to receive care from

mixed sources regardless of their care network types. Multivariate analyses showed that those who are older and have lower health status are more likely to receive care from mixed sources compared to their counterparts. It might be that all types of care networks provide care on their own as much as they can, and reach out to formal care when the care demand exceeds their capacity to provide care. In fact, past research using the same data set as this study showed older adults receive more hours of care from their care networks when they also are receiving formal care compared those who are receiving only family/friend care (Keating & Dosman, 2009). These findings together offer evidence to support supplementary nature of the relationship between family/friend care and formal care.

Findings in the current analyses showed that, compared to Other-White older adults, Asian and Canadian older adults were significantly more likely to receive care from family and friend care networks only than to receive care from mixed sources, even after older adults' care network type was controlled for. These findings suggest there might be ethnic-specific social capital that is independent of the care network type. Care networks of Asian and Canadian older adults may have higher bonding social capital with which to manage care responsibilities among family and friend care networks or lower bridging capital to link the older adult with formal in-home care compared to the Other-White group. Based on a network theory of social capital, network type was used in the current analyses as a proxy for bonding and bridging social capital available for care of older adults (Burt, 2001; Lin, 1999; Lin, 2001). However, norms and rules internal to the network are also important factors for the generation and utilization of social capital in addition to types and structures of the network (Coleman, 1990; Frank, 2005). It has been argued that social capital within families is produced through a system of normative obligations in which individuals are embedded (Frustenberg, 2005). It is possible that ethnic differences observed in the current analyses, which remained after the care network type was controlled for, reflect ethnic differences in the qualitative aspect of care networks such as norms and rules about care of older adults. As there were no data in the current study regarding such qualitative aspects of care networks, including expectation, beliefs, and rules about caregiving internal to care networks, further research is required to clarify relationships among ethnicity, care network, and social capital.

The current study includes three methodological limitations. First, care network members included in the data set were identified by older adults who are recipients of care. Care network members included only family

members and friends who provide older adults with at least one of the seven tasks used in the survey to identify respondents who were in need of long-term care. It is possible that some caregivers were not identified because they provided different tasks, such as care management and assistance with medication. It is also possible that there are some caregivers who provide assistance with care tasks without the receiver's knowledge; for example, making arrangement for formal care services from distance. Therefore, sizes of care networks in this study might have been underestimated. Inclusion of these additional tasks would have made it possible to capture more accurately care network size and structure.

Second, there were only three care network types identified in this study due to small sample sizes in some ethnic groups. It is possible that the limited numbers of care network types in this study affected network compositions across different types of care networks. The problem with only three types is that for example, in the diverse network type, it was unable to distinguish whether it was extended family member or friend focused networks. It is possible that there might have been differences in types of social capital generated between extended family member and friend focused care networks, which in turn might have influence on the source of care older adults receive. Future research including more care network types would help to clarify the relationship between ethnicity and the interface between family and friend care and formal care.

Finally, to better understand the influence of ethnicity on the interface between family and friend and formal care, it may be important to have measures of ethno-cultural beliefs about caregiving and barriers to the access of formal care. The current investigation would have benefited from inclusion of these factors to clarify whether the influence of ethnicity that was unexplained by other factors included in the current study could be explained by ethno-cultural differences or by barriers older adults face in accessing formal care.

CHAPTER5:

Paper 3: Ethnic Variations in Health Services Utilizations by Older Adults Who Receive Care because of Chronic Health Conditions

Introduction

This study examined the influence of ethnicity on the utilization of health services by older adults who are recipients of care due to their chronic health conditions. With the increase in the proportion of older adults in the population, the prevalence of chronic conditions is growing (Nie, Wang, Tracy, Moineddin, & Upshur, 2008). Along with population aging, ethnic diversity among older Canadian adults has increased, and approximately 30% of the population of Canadians aged 65 and older now is comprised of immigrants from diverse ethnic backgrounds (Statistics Canada, 2003a). Additionally, as the main source of immigrants to Canada has shifted from Europe to Asia, Africa, and the Middle East (National Advisory Council on Aging, 2005), the proportion of the population comprising visible minorities has also grown significantly over the past 20 years, from 5% in 1981 to 13% in 2001 (Statistics Canada, 2003b). The multicultural characteristics of Canadian society mean that the members of society hold a variety of values and beliefs rooted in numerous cultural backgrounds. In the midst of increasing proportions of ethnic minorities and the prevalence of chronic conditions, it is increasingly important to understand whether ethnicity influences the use of health services by older adults who receive care due to their chronic health conditions.

Canada's Chief Public Health Officer's Report (2010) declared that one of the priority areas for action toward healthy aging is to tackle issues of care and services, and stated that having access to health care services is essential to aging well. It has often been reported, however, that there are ethnic disparities in the use of health services and in the outcomes of these services (Kobayashi, Prus, & Lin, 2008; Nazroo 2006; Quan, et al., 2006). Members of ethnic minorities in Canada and elsewhere are often reported to have lower rates of health services utilization and face a number of barriers to accessing health services (Dilworth-Anderson, Williams, & Gibson, 2002; Lai & Chau, 2007; Min, 2005; National Advisory Council on Aging, 2005; Quan et a., 2006; Wallace, Levy-Storms, Kingston & Andersen, 1998). Lower rates of utilization do not necessarily reflect lower levels of need as there might be those who underutilize the services due to barriers, such as language and cultural barriers

they experience (Lai, 2008). Under-utilization of health services could be an obstacle for early intervention and prevention of health conditions (Brown & Gonzalez, 2008). Appropriate treatment of chronic diseases could help to reduce unnecessary hospitalizations and emergency room visits (Nie, et al., 2008). As understanding the determinants of health service utilization is essential in promoting efficient use of services (Deri, 2004), examination of ethnic variations may provide valuable information.

Extensive research has been conducted in an effort understand the factors that might influence older adults' utilization of health services. There are few studies, however, that have examined the influence of ethnicity on the patterns of older adults' utilization of health services, using Canadian national samples (Quan et al., 2006). Guided by Andersen and Newman's behavioral model of health service utilization (Andersen & Newman, 1973), this paper examined the influence of ethnicity on use of health services by older adults who are recipients of care due to their chronic health conditions. A research question guiding this study was as follow: Are there differences among ethnic groups in the use of health services by older adults who are recipients of care due to chronic health conditions?

Literature Review

Most studies aimed at understanding utilization patterns in Canada and the United States used Andersen and Newman's behavioral model of health service utilization (Andersen & Newman, 1973). According to this model, formal service use is a function of three sets of factors: needs, predisposing, and enabling factors. Need factors refer to reasons for seeking services, and they are usually measured by factors such as perceived health status, severity of illness, and the number of chronic conditions and functional limitations. Among the variety of factors reported to be the determinants of health service utilization, needs factors appear to be the most consistent predictor of utilization patterns across studies in this area of research (McEachreon et al., 2000).

While some studies have highlighted cultural differences as the foundation of ethnic variations in the utilization of health and formal care services, others found that utilization depends on other factors such as health status of older adults and older adults' socioeconomic characteristics (Lai & Chau, 2007; Litwin, 2004; Pang et al., 2003; Valle, Yamada, & Barrio, 2004). In addition to differences in health status, types of health and functional limitations may also be important for older adults' access to health and formal

care services because the domains of care older adults require depend on their types of functional limitations (Stommel, Given, & Given, 1998). Different care needs make different demands on caregivers, which may influence the selection of caregivers (Feld et al., 2004). Min (2005) examined older Korean Americans' preferences for long-term care arrangements in two disability scenarios: hip fracture and stroke. Min's study found that, while the majority of respondents in the study preferred to receive care from a family member or friend in the hip fracture scenario, respondents in the stroke scenario preferred formal care. What these findings indicate is that types of limitations and care needs influence older adults' preferences for the source of care. Findings from this study point to the need to examine service utilization patterns according to types of care services.

Predisposing factors refer to factors that affect an individual's underlying tendencies to seek out and use services. They usually include sociodemographic characteristics of service users such as age, sex, education, and ethnicity and also include health beliefs (McEachreon et al., 2000). Health beliefs include values and attitudes about health, health promotion, and norms of help-seeking behaviours (Leclere, Jensen, & Biddlecom, 1994). When examining ethnic variations in health services utilization, differences in these beliefs and help-seeking behaviors are particularly important. Researchers have highlighted differences in health beliefs as one of the crucial factors for ethnic variations in health service utilization patterns (Braun & Browne, 1998; Pang, Jordan-Marsh, Silverstein, & Cody, 2003). Traditional cultural values and beliefs are reported to influence perceptions of disease, and these factors are found to influence ethnic disparities in formal and health care utilization (Braun & Browne, 1998; Pang et al., 2003). For example, research has shown that Asian Americans have a tendency to under-report dementia and to not receive a diagnosis of Alzheimer's disease until the disease progresses to its later stages. The stigma attached to the disease was found to work as a barrier to access to health professionals (Jones, Chow, & Gatz, 2006). Length of residence in the country also has been reported as an important factor in service utilization. New immigrants reportedly use fewer health care services than people who were born in the country, due to language barriers, lack of information and knowledge about the service system, and/or differences in cultural norms (Deri, 2005; Leclere et al., 1994).

Enabling factors include personal and social resources that facilitate access to services. Specifically, they include such factors as income, health insurance, knowledge about health services, and social support. Because

Canada has publicly funded health care system in which medically necessary services are covered, income may not be as crucial as it could be in other countries where universal health plans do not exist. Income is still an important factor, however, when it comes to purchasing health services not covered by government plans. Research shows that having additional financial resources generally increases the likelihood of using formal services (Feld, Dunkle, & Schroepfer, 2004). In addition, previous studies have indicated that older adults from ethnic minority groups face various types of barriers to access to services, including language problems, lack of knowledge about available services, and issues of cultural sensitivity (Braun & Browne, 1998; Jones, Chow, & Gatz, 2006; Lai & Chau, 2007; National Advisory Council on Aging, 2005).

Additionally, previous studies focusing on health service utilization patterns suggest that support from family and friends is an important enabling factor, as people around older adults are likely to influence the way they access health services (Deri, 2005; McEachreon et al., 2000; Leclere, Jensen, & Biddlecom, 1994; Valle et al., 2004). Some researchers further asserted that the Andersen-Newman model (Andersen & Newman, 1973) fails to consider the influence of the network of people surrounding the service user, and have expanded the model to include it (Deri, 2005; McEachreon et al., 2000). Previous research on the utilization of health services among older adults also identified the importance of considering how older adults' networks may influence their use of health services (Litwin, 2004). In addition, Guberman and Maheu (2003) underlined older adults' networks as influential to ethnic variations in health service utilization patterns. They pointed out that the limits of the care networks, especially unavailability of family members, push older adults to seek out other sources of care. Therefore, when examining health service use by older adults who are recipients of care due to their chronic health conditions, it is important to consider the way their care networks may influence their utilization patterns.

Family and Friend Care Networks and Health Services Utilization

Several studies have examined the relationships among older adults' care networks (networks of family members and friends who provide care to older adults), the care they receive, and their utilization of health services (Feld, et al., 2004; Keating & Dosman, 2009; Li, 2004; Li & Fries, 2005; Litwin, 2004; Lum, 2005). When an older adult is in need of care, his or her care network serves as not only the primary source of care, but also as a social bridge for access to formal health services (Leclere at al., 1994; Li, 2004; Valle, Yamada & Barrio, 2004; Williams & Dilworth-Anderson, 2002).

Specifically, there are three functions of care networks that emerged from a review of the literature. The first, most obvious, function of care networks is as an essential source of care for older adults. Care provided by care networks can help to prevent or delay hospitalizations and work as substitutes for formal health services for older adults with chronic health conditions (Duner & Nordstrom, 2007). An empirical study that examined the relationship between older adults' care networks and utilization of formal in-home care found that the absence of family and friend care was associated with higher levels of service use (Litwin, 2004).

The second function of the care network is to play the role of facilitator, to provide information about these services and linkages to health services. Network size and type are both found to influence the way older adults utilize health services (Li, 2004; Litwin, 2004). With respect to network size, larger networks were found to have greater ability to link to formal services (Williams & Dilworth-Anderson, 2002). As for the type of networks, while those with diverse members were found to promote service use, older adults who are cared for by only their spouses, were found to be least likely to use formal services, compared to those who are cared by other caregivers (Li, 2004). Relationships between different types of older adults' care networks and their ability to link older adults with health services can be explained with the concepts of bonding and bridging social capital (Putnam, 2000; Kavanaugh, et al., 2005). Family-focused care networks with close ties among relatively homogeneous members tend to generate high levels of bonding social capital, which is suited to providing daily care (Keating & Dosman, 2009; Widmer, 2006). On the other hand, diverse care networks with weak ties among heterogeneous members are believed to generate high levels of bridging social capital, which helps to provide linkages to community resources (Bhandari & Yasunobu, 2009; Burt, 2001; Lin, 1999).

The third function of the care network is to influence help-seeking behaviours through norms and rules internal to the networks (Coleman, 1990; Frank, 2005). For example, openness to outsiders can impact the way older adults' care networks access outside resources, including health services. In various studies that examined ethnic variations in health services utilization, differences in help-seeking behaviours along with barriers have been reported to hinder some ethnic groups, especially ethnic minority groups, from openly accessing health care services (Braun & Browne, 1998; Bowen & Gonzalez, 2008; Valle et al., 20004).

In summary, care networks of older adults are important factors which may influence their use of health services. Differences in older adults' care network types may influence their use of health services through generating different levels of bonding and bridging social capital. In addition, differences across ethnic groups in norms and rules regarding acceptability of receiving extra-familial support in care of older adults may also influence their use of health services. Considering older adults' care networks as an important part of enabling factors, therefore, this study explores ethnic variations in the use of health services by older adults who are recipients of care due to chronic health conditions. A research question and two sub questions to be addressed in this study were:

Research question: Are there differences among ethnic groups in the use of health services by older adults who are recipients of care due to chronic health conditions?

Sub questions:

1. What is the relative importance of predisposing, enabling, and needs factors in explaining health services use by older adults who are recipients of care due to chronic health conditions?

2. What is the relative importance of care networks in explaining use of health services by older adults with long-term care needs?

Methods

Data Source and Sample Description

The data for this study came from two surveys conducted by Statistics Canada. First, the 2001 Canadian Community Health Survey (CCHS) Cycle 1.1 is a general population health survey intended to provide timely and reliable data on health determinants, health status and health system utilization across Canada. The target population for the CCHS was Canadians over the age of 12 years, who were living in private households in the ten provinces and three territories. Persons living on Indian Reserves or Crown lands, residents of institutions, full-time members of the Canadian Armed Forces and residents of certain remote regions were excluded from this survey. The CCHS covers approximately 98% of the Canadian population aged 12 or older. Data for the CCHS Cycle 1.1 were collected over the course of a year, starting from September 2000. The CCHS included a nationally representative sample of 130,827 people aged 12 and older.

Second, the 2002 General Social Survey (GSS) Cycle 16 was designed to observe social trends in living conditions or well-being of citizens and to

provide information related to specific social policy issues. The core content of Cycle 16 was social support and aging, focusing on support for older Canadians. Data for the GSS Cycle16 were collected from February to December 2002 inclusive, using telephone interviews. The target population for the Cycle16 was Canadians over the age of 45 years, who were living in private households with telephone lines. The sampling frame for this survey was the CCHS Cycle 1.1, which was conducted in 2001. The sample for the GSS Cycle16 was randomly selected from a list of individuals aged 45 and over, who had responded to the CCHS Cycle 1.1. The GSS Cycle16 included a nationally representative sample of 24,870 people aged 45 and older.

The main data set for this study is the GSS Cycle 16, and the main section of the GSS that was used in this study is *Care receiving by respondent*. Other sections such as *Health status of respondent*, *Education and main activity of respondent*, *Housing characteristics of respondent*, *Other characteristics* were also used in the analysis. These sections of the GSS were linked with selected modules of the CCHS Cycle1.1, including the modules on ethnic background and health care service utilization.

The sample for this study included 3,677 respondents age 65 and over, who were receiving assistance from family members and friends or from the formal sector due to their long-term health problem. The respondents received assistance with at least one of the following tasks: housekeeping, meal preparation, outdoor maintenance, transportation, baking, bill paying, and personal care.

Study Variables

For variables with pre-determined categories, the largest numbers of categories were retained whenever possible in order to avoid loss of information. When expected frequencies were too small, however, it was necessary to collapse categories to meet Statistics Canada's minimum cell count requirements[6]. Decisions regarding measurements were made on a variable by variable basis and are discussed in detail below. Among the variables used in the current analyses, only the ethnicity variable came from the CCHS 1.1., and all other variables came from GSS 16.

Dependent Variables

Use of health care services. Use of three types of health care services were measured as continuous variables:

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[6] Statistics Canada requires a minimum of 15 cases in any multivariate and bivariate analysis for CCHS data.

1. Numbers of contact with general practitioners was measured based on the following question: "In the past 12 months, how many times have you seen or talked on the telephone about your physical, emotional, or mental health with a family doctor or general practitioner?"

2. Numbers of contact with specialist physicians was measured based on the following question: "In the past 12 months, how many times have you seen or talked on the telephone about your physical, emotional, or mental health with any other medical doctor such as surgeon, allergist, orthopedist, gynecologist, psychiatrist?"

3. Numbers of hospital admissions were measured based on the following question: "In the past 12 months, have you been a patient overnight in a hospital, nursing home or convalescent home? How many nights?"

Use of formal in-home care services. Use of four types of formal in-home care services (Inside home, Outside home, Transportation, and Personal care) were coded into two categories depending on the receipt of care from formal care providers (no formal care use, use of formal care).

Total number of health services used. The total number of services used was measured as a continuous variable based on the numbers of use of the four types of services listed above.

Independent Variables

Explanatory variables considered in this study included predisposing (ethnicity, age, gender, length of residency in Canada), enabling (education, income), and needs (health status and the number of chronic condition) factors as well as care network types, all of which have been identified as influential factors with respect to older adults' receipt of care (Litwin, 2004).

Predisposing Factors. Ethnicity was operationalized on the basis of two questions: one about respondents' racial/cultural identities and another about their ethnic origins. The actual questions are as follows:

1) 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 Peoples of North America, other)?

2) To which ethnic or cultural group(s) did your ancestors belong? (Canadian, French, English, German, Scottish, Irish, Italian, Ukrainian, Dutch, Chinese, Jewish, Polish, Portuguese, South Asian, Black, North American Indian, Métis, Inuit, Eskimos, Other).

Although the first question asks respondents' racial and cultural background instead of asking directly about one's ethnic identity, categories for

the answer include racial (White, Blacks) and ethnic groups. Therefore, for those who chose one of the ethnic categories, this question was used to determine their self-perceived ethnicity. For those who chose the racial category, 'White' as their identity, the second question about ethnic origin was used to determine their ethnicity. There were not enough respondents[7] who chose 'Black' as their identity in the first question, so this group of respondents was not included in the analyses. Respondents were able to choose more than one ethnic origin, and those who selected more than one origin were categorized as 'other-white'. Using these two questions, eight self-identified ethnic groups were identified: Canadian, British, French, West European (includes German, Dutch), East European (includes Ukrainian, Polish), South European (includes Italian, Portuguese), Asian (includes Chinese, South Asian, Filipino, Southeast Asian, West Asian, Japanese, Korean), and other-whites (includes 'Other-White' as well as those who selected more than one origin).

Age measured as continuous variables. Gender was a coded as a nominal variable (male or female). Due to the small number of respondents who had immigrated to Canada, length of residence in Canada was coded into four levels (born in Canada, living in Canada over 40 years, living in Canada 20 to 40 years, living in Canada less than 20 years).

Enabling Factors. Income was coded to reflect three levels of annual personal income (less than $20,000, $20,000 to $30,000, $30,000+). These categories were chosen due to small numbers of respondents with high income levels and relatively large numbers with low income levels, and to avoid extremely unbalanced sample sizes. Due to the small number of respondents with more than high school education, education was coded to reflect two schooling levels (less than high school or high school graduate).

Needs Factors. The number of chronic conditions and health status and were measured as continuous variables. The Health Utility Index (HUI) composite indicator, which is based on the Comprehensive Health Status Measurement System (CHSMS) (Feeny, Torrance, & Furlong, 1996), was used to measure older adults' health statuses. HUI ranges from 0 to 1, with 1 being the healthiest.

Care network types. Care network types were identified through application of cluster analysis, using five characteristics (number of caregivers,

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[7] Statistics Canada requires a minimum of 15 cases per cell in any multivariate and bivariate analysis for CCHS data

age and gender of all members of the network, as well as relationships and proximity between care receiver and network members) that have been identified as key determinants of older adults' networks in the literature (Wenger, 1991; Keating et al., 2003). Those who did not receive care from family and friend caregivers were identified as having no care networks.

GSS 16 included a separate module for questions regarding respondents' care networks. Respondents were asked to list names of those who assist with at least one of the following tasks: housekeeping, meal preparation, outdoor maintenance, transportation, baking, bill paying, and personal care. Respondents were then asked for detailed information about each caregiver such as, relationship, sex, age, and proximity. Relationship between the care receiver and each caregiver was measured in 31 categories including family members, friends, and neighbors. Age was measured in nine categories with ten-year intervals starting from under 15 years and ending with 85 years and older. Proximity was measured in 6 categories: (1) same household, (2) same building, (3) same neighborhood or community, (4) in the surrounding community, (5) less than a half day's journey, (6) more than a half day's journey.

In the cluster analysis, relationships were divided into four categories: spouse, children, extended kin, and friends. Age groups were divided into three categories: under 45 years, 45 to 64 years, and 65 years and older. Proximity was collapsed into three categories: same building, same community, and distant.

Statistical Analysis

Statistical analysis in this study includes descriptive and regression analysis. First, older adults' utilization of four types of health services and the number of the four types of services used were cross-tabulated by ethno-cultural groups. To test for variations among ethno-cultural groups, Chi-square tests and Analysis of Variance (ANOVA) were used. Second, descriptive statistics including frequencies and means were used to examine the background characteristics of the respondents. Tobit models on use of three types of health care service were then estimated (see Table 5.3 to Table 5.5 for the complete list of independent variables). Tobit regression was an appropriate analytic method for three types of health care services utilization as the dependent variables were continuous, but censored (observable only within a certain range) at both the low and high ends (Long & Freese, 2006). Logistic regression on the use of formal in-home care was also performed. Logistic

regression was an appropriate analytic method because the dependent variable was dichotomous (see Table 5.6 for the completed list of independent variables). Finally, a Tobit model on the number of health services used was estimated (see Table 5.7 for the completed list of independent variables). Tobit was an appropriate analytic method for the number of health services as the dependent variable was censored at the low end.

Before fitting the models, in order to assess multicollinearity, correlation matrices of all the independent variables were produced and Variance Inflation Factors (VIFS) were checked. High correlations between independent variables suggest multicollinearity. When bivariate correlations are approximately 0.7 or higher and VIFs are 10 or higher (O'Brien, 2007; Tabachnick, & Fidell, 2007) there may be reasons for concern about multicollinearity. However, in this research, there were no high correlations among the independent variables and no concern for VIFs was detected.

Guided by Andersen and Newman's behavioral model of health service utilization (Andersen & Newman, 1973), a series of models were fitted to test the influence of three sets of factors: predisposing, enabling, and needs factors. The first model tested ethnic variations without controlling for other factors, and only included older adults' ethnicity. Predisposing factors were added in the second model, enabling factors were added in the third model, and needs factors were added in the third model, to examine which set of factors predict formal health service utilization. In the final model, the type of care network was added, to examine the influence of family and friend care context on the use of health services. Entering these four sets of factors in a hierarchical order is beneficial as it enables the examination of the contribution of each set of factors to the proportion of variances.

Statistical Weights

In order to ensure that the sample was representative of the Canadian population, the appropriate statistical weights were applied in all analyses. In addition, Fay's method, a variance estimation technique, was used to adjust for the complex, multistage stratified sampling and to estimate sampling error. Statistics Canada generally recommends Fay's method to be used as the method of variance estimation for data with mean bootstrap weights such as GSS (see Owen, 2004 for details). Fay's method produces lower standard errors and provides a more conservative test of significance compared to bootstrapping, making it more difficult to reach statistical significance (Chowhan, & Buckley, 2005; Owen 2004).

Results

Table 5.1 presents utilizations of four types of health services and the number of services used across ethnic groups. There were significant variations across ethnic groups in service utilization, with the exception of overnight stays in hospitals. Southern European older adults had the highest number of visits to both family doctors and specialists among the eight groups. British older adults had the highest proportion of utilization of formal in-home care services (58.1%), while this proportion was considerably smaller for the Southern Europe and Asian groups (33.3% and 36.4% respectively). The number of services used was similar across ethnic groups, ranging from 1.88 to 2.19.

Table 5.1: Utilization of health services by ethnic groups

Health services	CA[1]	BR	FR	WE	EE	SE	AS	OW	Sig
# family doctor	5.35	5.78	5.35	6.19	6.22	8.04	6.01	5.44	***
# specialists	1.2	1.83	2.42	1.80	2.60	2.87	1.04	1.37	*
# overnight stay in hospital	3.33	3.94	4.07	4.09	4.68	3.98	4.19	3.52	NS
% used home care	41.6	58.1	48.3	50.2	42.1	33.3	36.4	49.6	***
# service used	1.98	2.19	2.05	2.12	2.03	2.03	1.88	2.07	**

1. CA= Canadian, BR=British, FR=French, WE=Western European, EE= Eastern European, SE=Southern European, AS=Asian, OW=Other-Whites

* $p < .05$ ** $p < .01$ *** $p < .001$

Table 5.2 presents sample characteristics for this study, including frequencies and means. The mean age of older adults in this study was 78.5, 66.3% of whom were female. The mean HUI was 0.58, and older adults had an average of 3.3 chronic conditions. Only 47.9% of the sample had completed high school and the majority of them (64.5%) had annual incomes of less than $20,000. The vast majority of them, (77.2%) were born in Canada, and there were considerably smaller proportions who were recent immigrants, as only 2.5% had lived in Canada for less than 20 years. Interestingly, one third of

older adults (30.6%) who required assistance due to their long-term conditions did not have a care network, which means that they had no family and friend caregivers. As for ethnicity, the largest group was Other-White group, while the smallest was the Southern European group.

Table 5.2: Sample characteristics

Characteristics	Total
Age (Mean)	78.46
Hui (Mean)	0.58
# chronic condition (Mean)	3.28
Female	66.3%
Ethnicity	
- Canadian	10.5%
- British	23.0%
- French	6.8%
- Western European	6.5%
- Eastern European	4.8%
- Southern European	3.3%
- Asian	4.3%
- Other-Whites	40.9%
Education	
- High school grad	47.9%
Personal Income	
- Less than 20,000	18.0%
- 20,000 to 30,000	46.6%
- 30,000+	35.4%
Immigration	
- Canada born	77.2%
- 40 years+	15.8%
- 20 to 40 years	4.3%
- Less than 20 years	2.8%
Network types	
- No network	30.6%
- Spouse focused	24.0%
- Children focused	23.9%
- Diverse	21.5%

Table 5.3 presents the results of Tobit models on older adults' number of contacts with general practitioners. The results from Model 1 indicate small magnitude of but significant association between ethnicity and the number of older adults' contacts with general practitioners. British older adults had somewhat more numbers and Canadian older adults had slightly less numbers of contacts with general practitioners compared to the reference group of Other-White older adults. In Model 2, when predisposing factors were added, the significant differences between British older adults and Other-White older adults remained. None of the predisposing factors were significant predictors for the number of contacts with general practitioners. In Model 3, when enabling factors were added, ethnicity remained statistically significant. The significant differences between the British group and the reference group disappeared, however, and the Southern European group became significantly different from the reference group. South European older adults had close to two additional contacts with general practitioners compared to the reference group. Again, none of the enabling factors were significant predictors of the number of contacts with general practitioners. In the final model, when needs factors were added, the significant differences between British older adults and Other-White older adults remained. In addition, both needs factors (HUI and # of chronic health conditions) were significant predictors for the number of contacts with general practitioners. Older adults with lower health statuses and higher numbers of chronic conditions had higher numbers of contacts with general practitioners.

Table 5.3: Model 1- Hierarchical regression analysis of predictors of older adults' numbers of contacts with general practitioners

	Step 1 Coef.[1]	Step2 Coef.	Step3 Coef.	Step4 Coef.
Canadian	-0.11	-0.09	-0.28	0.25
British	0.10*	0.11*	0.24	0.41
French	-0.04	-0.03	-0.20	0.19
Western Europe	0.04	0.01	0.53	0.55
Eastern Europe	-0.05	-0.01	0.42	0.03
Southern Europe	-0.05	-0.09	1.71*	2.29*
Asian	-0.21	0.00	0.33	0.91
Age		0.00	-0.02	-0.01
Female		-0.08	-0.10	-0.35
Canada born		0.11	0.30	0.29
Immigrant 40 + years		-0.11	0.29	0.91
Immigrant 20 to 40 years		-0.37	-0.60	1.02
High school graduate			0.13	0.15
Income $20,000 - $30,000			-0.20	-0.27
Income $30,000 +			-0.47	-0.46
Spouse focused networks			-0.11	-0.16
Children focused networks			0.40	0.11
Diverse networks			-0.34	-0.27
HUI				-0.84**
# chronic condition				0.55***
F	2.45	1.78	1.92	11.6
Prob > F	0.020	0.0543	0.0163	0.000
Pseudo R2	0.0013	0.0018	0.0028	0.0027
Prob > chi2	0.0057	0.0055	0.0078	0.000

* $p < .05$ ** $p < .01$ *** $p < .001$

Reference groups: Other-white, immigrants less than 20 years, less than high school education, Income less than $20,000, No care networks

1. Normalized beta coefficient

Table 5.4 presents the results of Tobit models on older adults' number of contacts with specialist physicians. The results from Model 1 indicate a significant association between ethnicity and the number of older adults' contacts with specialist physicians. When compared to the reference group of Other-White older adults, Southern European older adults had approximately one additional contact and Canadian older adults had close to one less contact with specialists. In Model 2, when predisposing factors were added, the significant influence of ethnicity disappeared. Age, sex, and immigrant status were significant in predicting number of contacts with specialist physicians. Specifically, those who are older had greater numbers of contacts than those who are younger, and women had fewer numbers of contacts with specialists than men. Those who were born in Canada had one additional contact with specialists compared to those who have lived in Canada less than 20 years. In Model 3, when enabling factors were added, the significant influences of age, sex, and immigrant status on predicting the number of contacts with specialist physicians remained. In addition, education was significant. Those who have graduated from high school had close to one additional contact with specialist physicians, compared to those who have not graduated from high school. In the final model, when needs factors were added, the significant influences of age, sex, immigrant status, and education on predicting the number of contacts with specialist physicians remained. In addition, the number of chronic conditions was also significant; those with greater numbers of chronic conditions had higher numbers of contacts with specialists.

Table 5.4: Model 2- Hierarchical regression analysis of predictors of older Adults' numbers of visits to specialist

	Step 1	Step2	Step3	Step4
	Coef.[1]	Coef.	Coef.	Coef.
Canadian	-0.75*	-0.54	-0.23	-0.05
British	0.12	0.13	0.24	0.39
French	-0.36	-0.27	-0.17	-0.02
Western Europe	0.18	-0.18	0.02	-0.11
Eastern Europe	-0.06	-0.11	-0.12	-1.07
Southern Europe	1.46*	0.85	1.33	0.75
Asian	-0.56	0.15	0.58	0.82
Age		-0.09***	-0.09***	-0.11***
Female		-0.96***	-0.67**	-1.13***
Canada born		0.97**	0.96**	1.16***
Immigrant 40 + years		-0.25	-0.64	-0.66
Immigrant 20 to 40 years		-1.53	-1.96	-1.86
High school graduate			0.96***	0.93***
Income $20,000 - $30,000			-0.50	-0.39
Income $30,000 +			0.15	0.33
Spouse focused networks			0.25	0.22
Children focused networks			0.08	0.05
Diverse networks			-0.19	-0.12
HUI				0.02
# chronic condition				0.49***
F	1.81	6.27	5.9	8.97
Prob > F	0.0868	0.000	0.000	0.000
Pseudo R2	0.0009	0.0157	0.025	0.049
Prob > chi2	0.3	0.000	0.000	0.000

* $p < .05$ ** $p < .01$ *** $p < .001$ 1. Normalized beta coefficient

Reference groups: Other-white, immigrants less than 20 years, less than high school education, Income less than $20,000, No care networks

Table 5.5 presents the results of Tobit models on older adults'
numbers of overnight stays in institutions. The results from Model 1 indicate
that ethnicity does not have a significant influence on predicting the number of
overnight stays in institutions. In Model 2, when predisposing factors were
added, ethnicity became significant; French older adults had higher numbers
of overnight stays in institutions compared to the reference group of
Other-White, when predisposing factors were held constant. In Model 3, when
enabling factors were added, the significant influence of ethnicity remained.
None of the enabling factors were significant predictors for the number of
overnight stays in institutions. In the final model, when needs factors were
added, the influence of ethnicity changed again. The significant differences
between the French group and the reference group disappeared and the Eastern
European group became significantly different from the reference group:
Eastern European older adults had lower numbers of overnight stays in
institutions compared to the reference group. In addition, immigrant status,
HUI and the number of chronic conditions were significant factors. Those who
had lived in Canada over 40 years had fewer overnight stays in institutions
compared to those who have lived in Canada less than 20 years. Those with
better health statuses also had fewer numbers of overnight stays in institutions
compared to those with poorer health statuses.

Table 5.5: Model 3- Hierarchical regression analysis of predictors of older adults' numbers of overnight hospital stays

	Step 1 Coef.[1]	Step2 Coef.	Step3 Coef.	Step4 Coef.
Canadian	0.77	0.83	0.83	1.17
British	0.27	0.34	0.34	0.11
French	1.15	1.24*	1.24*	1.09
Western Europe	0.41	0.36	0.36	0.18
Eastern Europe	0.74	0.84	0.84	-1.77*
Southern Europe	-0.10	-0.15	-0.15	0.40
Asian	-0.79	1.29	1.29	2.05
Age		0.01	0.01	0.01
Female		-0.32	-0.32	-0.64
Canada born		0.46	0.46	0.63
Immigrant 40 + years		-1.93	-1.93	-3.65*
Immigrant 20 to 40 years		-2.92	-2.92	-1.11
High school graduate				-0.26
Income $20,000 - $30,000				-0.75
Income $30,000 +				-0.59
Spouse focused networks				-0.46
Children focused networks				0.08
Diverse networks				-0.34
HUI				-1.62**
# chronic condition				0.47***
F	0.99	1.46	1.26	2.49
Prob > F	0.44	0.143	0.21	0.0008
Pseudo R2	0.0009	0.003	0.004	0.022
Prob > chi2	0.57	0.084	0.2059	0.000

* p < .05 ** p < .01 *** p < .001   1. Normalized beta coefficient

Reference groups: Other-white, immigrants less than 20 years, less than high school education, Income less than $20,000, No care networks

Table 5.6 presents the results of logistic regressions on older adults' uses of formal in-home care services. The results from Model 1 show a significant association between ethnicity and older adults' use of formal in-home care services. While British older adults were 35% more likely to use the formal services than the reference group of Other-White older adults, Canadian older adults were 31% less likely and Southern European older adults were 52% less likely to use formal in-home care services than Other-White older adults. In Model 2, when predisposing factors were added, the significant differences between Southern European older adults and the reference group disappeared. The British and Canadian groups remained significantly different from the reference group. In addition, age and sex were significant. The probability of use of formal in-home care increased by 2% with each additional year of age. Women were 22% more likely to use formal care services than men. In Model 3, when enabling factors were added, the significant differences between the Canadian group and the reference group disappeared. The British group remained significantly different from the reference group. In addition, the Asian group became significantly different from the reference group: Asian older adults were 55% less likely to use formal services. The significant influence of age and sex remained significant. Care network type was not significant, but the existence of a care network was significant. Regardless of care network types, those who had a care network were close to 95% less likely to use formal services, compared to those without care networks. In the final model, when needs factors were added, the significant differences between the Asian group and the reference group disappeared. The significant difference between the British group and the reference group and the significant influence of age, sex, care network remained. In addition, HUI and the number of chronic conditions were significant. Better health status was associated with lower probabilities of formal in-home care use.

Table 5.6: Model 4- Hierarchical regression analysis of predictors of older adults' formal care use

	Step 1 Odds Ratio	Step2 Odds Ratio	Step3 Odds Ratio	Step4 Odds Ratio
Canadian	0.69*	0.68*	0.77	0.68
British	1.35**	1.37**	1.50**	1.41*
French	0.92	0.90	1.11	1.26
Western Europe	0.97	0.99	1.17	0.95
Eastern Europe	0.71	0.82	0.88	1.04
Southern Europe	0.48*	0.52	0.65	0.58
Asian	0.54	0.63	0.45*	0.44
Age		1.02**	1.04***	1.05***
Female		1.22*	1.53***	1.63***
Canada born		0.96	0.86	1.02
Immigrant 40 + years		1.11	1.07	1.44
Immigrant 20 to 40 years		0.66	1.01	0.99
High school graduate			1.19	1.19
Income $20,000 - $30,000			1.06	1.27
Income $30,000 +			1.20	1.23
Spouse focused networks			0.05***	0.03***
Children focused networks			0.04***	0.03***
Diverse networks			0.06***	0.04***
HUI				0.50**
# chronic condition				1.09*
F	4.05	3.93	24.5	19.69
Prob > F	0.0004	0.000	0.000	0.000
Pseudo R2	0.0053	0.013	0.218	0.2671
Prob > chi2	0.002	0.000	0.000	0.000

* $p < .05$ ** $p < .01$ *** $p < .001$

Reference groups: Other-white, immigrants less than 20 years, less than high school education, Income less than $20,000, No care networks

Table 5.7 presents the results of Tobit models on older adults' numbers of health services use. The results from Model 1 show a significant association between ethnicity and the number of health services older adults used. British older adults used higher numbers of services compared to the reference group of Other-White. In Model 2, when predisposing factors were added, British older remained significantly different from the reference group. None of the predisposing factors were significant predictors for the number of health services used. In Model 3, when enabling factors were added, significant differences between British older adults and Other-White older adults disappeared. Education and care network were significant. Those who have graduated from high school used more services than those who have not graduated from high school. Regardless of care network type, those who have care networks used lower number of services compared to those without care networks. In the final model, when needs factors were added, education and care network remained significant. Again, HUI and the number of chronic conditions were both significant. Better health status was associated with lower numbers of service use. Interestingly, in the final model, Eastern European older adults were found to use somewhat lower numbers of services compared to the Other-White group, and those who were born in Canada were found to use slightly more services than immigrants.

Table 5.7: Model 5- Hierarchical regression analysis of predictors of older adults' numbers of service use

	Step 1	Step2	Step3	Step4
	Coef.[1]	Coef.	Coef.	Coef.
Canadian	-0.11	-0.09	-0.02	0.02
British	0.10*	0.11*	0.12	0.09
French	-0.04	-0.03	0.00	0.09
Western Europe	0.04	0.01	0.04	-0.01
Eastern Europe	-0.05	-0.01	-0.03	-0.24**
Southern Europe	-0.05	-0.09	0.07	0.06
Asian	-0.21	0.00	0.08	0.11
Age		0.00	0.00	0.00
Female		-0.08	-0.01	-0.08
Canada born		0.11	0.12	0.20**
Immigrant 40 + years		-0.11	-0.21	-0.14
Immigrant 20 to 40 years		-0.37	-0.33	-0.11
High school graduate			0.15**	0.14**
Income $20,000 - $30,000			-0.09	-0.06
Income $30,000 +			0.03	0.04
Spouse focused networks			-0.49***	-0.57***
Children focused networks			-0.53***	-0.61***
Diverse networks			-0.57***	-0.59***
HUI				-0.21**
# chronic condition				0.10***
F		2.53	13.84	21.32
Prob > F	0.06	0.0041	0.000	0.000
Pseudo R^2	0.007	0.0143	0.091	0.1745
Prob > Chi^2	0.0003	0.0028	0.09	0.168

* $p < .05$ ** $p < .01$ *** $p < .001$ 1. Normalized beta coefficient

Reference groups: Other-white, immigrants less than 20 years, less than high school education, Income less than $20,000, No care networks

Discussion

Guided by Andersen and Newman's behavioral model of health service utilization (Andersen & Newman, 1973), this study sought to clarify the relationships between ethnicity and the use of health services by older adults with long-term care needs. The current study aimed to understand variations in the use of health services by ethnic groups. Results of the current study revealed that the use of health services varies by ethnicity, but the variations depend on the types of services. Similarly, a previous study on ethnic variations in health services use among Canadians 12 years and older found that ethnic variations in health service utilization depends on the types of services (Quan et al., 2008). Although the sample criteria for the current study were much more restricted than the study conducted by Quan et al. in terms of age, these findings point to the fact that, when examining ethnic variations in the use of health services, it is important to look at utilization by types of services. Potential barriers and/or discrimination may have been suspected if one group was found to have low levels of utilization across different services. The current analysis, however, found no clear pattern to indicate lower utilization across the board for a particular group. These findings suggest that there is no general ethnic disparity in Canada in utilization of health services included in the current analyses. However, further analyses including more comprehensive services are needed before firm conclusions can be made about disparity among ethnic groups in Canadian health services.

Additionally, there were no ethnic variations found when it came to contact with specialist physicians. Unlike contact with family physicians, contact with specialists usually requires a referral from the family physician. If there were biases based on ethnicity, the rate of utilization for certain ethnic groups would have been considerably smaller than the reference group (Quan et al., 2008). The fact that use of specialists did not vary by ethnic groups, however, provides evidence for absence of bias based on ethnicity in Canada, with regard to access to specialists. This means that, regardless of ethnicity, older adults are able to utilize specialist services based on their needs.

The first sub-question examined predictors of health services utilization by older adults who are recipients of care due to chronic health conditions. Consistent with past research (Anderson& Newman, 1973; Lima & Kopec, 2005), findings from the current study confirmed the importance of needs factors as significant predictors for health service utilization. Needs

factors in the current analysis (HUI and the number of chronic conditions) were consistent predictors for use of all types of health services: HUI was a significant predictor for four out of five types of service utilization, while the number of chronic conditions was a significant predictor for all five types of service utilization. Past research generally indicates that those with poor health and higher levels of health needs are more likely to use health services than those who are in good health (Al-Windi, Dag, & Kurt, 2002; Kersting, 2001; Lai, 2004; Walter-Ginzburg et al., 2001). Similarly, in the current study, poorer health status and the higher number of chronic diseases were associated with a higher level of utilization for all types of health services. In addition, the majority of explained variance in the current analysis was accounted for by the needs factors in all types of services. Therefore, older adults with low health status and high needs for services in Canada are more likely to use health services regardless of ethnicity and other demographic characteristics, compared to those with high health status in Canada. Similarly, a study from Israel, which has a system of free and equal access to health services, also found needs factors to be the major predictor of older adults' health utilization (Walter-Ginzburg et al., 2001).

Predisposing factors, including age, sex, and immigrant status, also influence the use of health services, and the influence of these variables was again different according to the type of service. For example, with respect to age, while those who are older had fewer contacts with specialists than those who are younger, those who are older had a higher probability of using formal in-home care, both of which were consistent with previous studies. For example, an Ontario study that examined older adults' health services utilization by age groups also found that visits to specialist physicians dramatically dropped after 80 years of age (Nie et al., 2008). Data from Israel comparing older adults' use of formal in-home care by age groups also found that the probability of using in-home formal care increases with age (Litwin, 2004). This may be because with increase in age, there is higher chance of outliving one's spouse, resulting in living alone. Without having a spouse at home who can provide around-the-clock care when needed, the need for in-home formal care would increase.

The influence of sex on health services use was also observed. While women had fewer contacts with specialists than men, women had a higher probability of using formal in-home care than men. Previous studies also found higher probabilities of formal care service use among women than men (Litwin, 2004; Lum, 2005). This may be because women tend to outlive their

spouses due to their longer average life expectancies than men (Connidis, 2010).

With regard to immigration status, the current study found that those who were born in Canada had more contacts with specialists and used more services in total than those who have lived in Canada less than 20 years. A Canadian study that examined use of mental health services among those with psychological distress also found that immigrants had lower rates of mental health services utilization than those who were born in Canada, and argued that the observed differences were likely to reflect cultural and language barriers (Kirmayer et al., 2007). Contact with specialists usually requires referral from the family physician in Canada. It is possible that potential barriers for recent immigrants, such as language and cultural barriers, prevent them from accessing specialists, even when they were referred to specialists. As there were no data regarding barriers to accessing health services, the data from the current study were insufficient to clarify relationships among immigrant status, use of health services, and existence of barriers for accessing health services. Further research is required to clarify these relationships.

With regard to enabling factors, education, and care networks were found to influence the use of health services. Those who had graduated from high school had more contacts with specialists and used more services than those who had not graduated from high school. Previous studies also reported the association between higher levels of education and higher levels of health service use (Stoddart, Whitley, Harvey, & Sharp, 2002; White-Means, 1997). As is often suggested in the literature, it is possible that those with more education may have more knowledge and information about health services, thus improving their access to them.

Findings from the current study about the non-significant influence of income on utilization of any type of health services were not surprising, because Canada's health care system is publicly financed. Among the four types of service included in the current analyses, however, availability of publicly funded formal in-home care services have been decreasing in recent years, which increases pressure for family and friend caregivers to provide care (Lobsinger, 2011). One might expect that decreasing public funding for home care would influence private expenditure on caregiving and that those with high incomes may have more private expenditures than those with low incomes. A study from Ontario that examined predictors for private expenditures on care found that income had no influence on the amount of

private expenditure on formal care (Guerriere, et al, 2006). The study also found health status to be the key predicting factor for private expenditures.

The second sub-question sought to understand the influence of older adults' care networks on use of health services by older adults with long-term care needs. Older adults' care networks influenced the use of formal in-home care services and the number of total health services used. It was not the type of care network, however, but the existence of a care network, which influenced the use of health services. Existence of care networks predicted the lower use of formal in-home care better than needs factors, and it accounted for the vast majority of explained variance. This finding was not surprising, because in the absence of a family and friend care network, any care received has to come from the formal care sector.

A somewhat surprising finding was the lower total number of services used by those who have care networks in comparison to those without care networks. Based on the network view of social capital (Burt, 2001; Lin, 1999; Lin, 2001), it was speculated that older adults with diverse networks may have higher levels of health services utilization due to high level of social capital diverse networks are likely to have. Findings from the current study, however, provided no evidence to support the speculation. Several factors may explain the relationship between existence of care networks and the lower total number of services used. Although the network type was included in the current analysis as a proxy for levels of bonding and bridging social capital that are available for care of older adults, it is possible that the limited number of care network types used in the current study failed to capture variations in types of available social capital. The problem with only three types is that, for example, it was not possible to distinguish whether the diverse network type comprised extended family members and/or friends. There might have been differences in types of social capital generated among extended family members and friends, which in turn might influence older adults' access to health services.

Alternatively, it is also possible that there is ethnic-specific social capital, which is independent of the care network type, that might influence health service utilization of older adults. Using a social capital lens, findings from the current analysis indicate that, compared to Other-White older adults, care networks of British older adults may have stronger bridging capital to link with the formal in-home care or weaker bonding social capital to manage care responsibilities within family and friend care networks. On the other hand, compared to Other-white older adults, care networks of Eastern European

older adults may have stronger bonding social capital to meet the long-term health needs of older adults and/or weaker bridging capital to link them with health services. The social capital perspective views norms and rules internal to the network as important factors for the generation and utilization of social capital in addition to types and structures of the network (Coleman, 1990; Frank, 2005). It is possible that differences in beliefs about health services across ethnic groups may have influenced the way older adults' care networks utilized social capital. Unfortunately, it was not possible to further investigate this relationship since beliefs about health services were not included in the data used in the current study.

   The current study includes a few methodological limitations. First, care network members included in the data set were identified by older adults who are recipients of care. Care network members captured in the data set used in the current analyses included only family members and friends who provide older adults with at least one of the seven tasks used in the survey to identify respondents who were in need of long-term care. It is possible that some caregivers were not identified because they provided different tasks, such as care management and assistance with medication. It is also possible that there are some caregivers who provide assistance with certain tasks without the receiver's knowledge; for example, arranging formal care services from distance. Therefore, sizes of care networks in this study might have been underestimated. Inclusion of these additional tasks would have made it possible to capture more accurate care network size and structure.

   Second, use of health services was based on self-reports, so there might have been recall bias in the results of the current study. Third, there were only three care network types identified in this study due to small sample sizes in some ethnic groups. It is possible that the limited numbers of care network types in this study affected network compositions across different types of care networks. Future research including more care network type would be beneficial to further clarify the relationships among ethnicity, social capital generated in care networks, use of health services.
Finally, to better understand the influence of ethnicity on health services utilization, it may be important to have measures of ethno-cultural beliefs about health services. The current investigation would have benefited from inclusion of such beliefs to clarify whether the influence of ethnicity that was unexplained by other factors included in the current study could be explained by ethno-cultural differences.

CHAPTER 6:

CONCLUSION

The main objective of the current research was to examine ethnic variations in the family and friend care context for older adults and in access to formal care and health services by older adults who are recipients of care. Guided by Human Ecology theory, this research first examined whether ethnicity influences the family and friend care context, by focusing on the care networks of older adults. This research then investigated the influence of ethnicity on the interaction between older adults' care networks and on their use of health services, which included formal in-home care. Findings from this research contributed to the understanding of ethnic variations in care of older adults in Canada.

Overall, findings demonstrate that, regardless of ethnicity, family and friend caregivers manage care responsibilities among a small number of care network members. Older adults' use of health services is mainly based on care and health needs. Specifically, the current research found health status of older adults to be a significant predictor of formal care use. The current research agrees with previous studies; individuals with higher care needs receive more formal care services and family and friend care (Motel-Klingebiel, Tesch-Roemer, & Kondratowitz, 2005; Keating & Dosman, 2009). Together these findings suggest that family and friend care networks provided care as much possible on their own, and older adults received services only when care needs exceeded family and friend capacity. Thus, providing formal support to family and friend caregivers is essential, and increasing public support for family and friend caregivers would be beneficial to the sustainability of older adults' care networks.

With regard to the influence of ethnicity, this research found that ethnicity is not a strong predictor of care network types, but it influenced the interface between family and friend and formal care, and the use of health services. Descriptive analyses showed some variations in the structures of care networks among ethnic groups, which indicated ethnic variations in the potential stock of bonding and bridging social capital. The care networks of Asian, Southern European, and Eastern European older adults demonstrated high bonding social capital and low bridging social capital compared to other groups. However, findings from the current study found that the variations among ethnic groups in the structure of care networks are due to factors other

than ethnicity as older adults' socieconomic and demographic characteristics explained ethnic variations in care network types. Despite ethno-cultural differences in intergenerational relationships and filial obiligation reported in the literature (Arnett, 1995; Coleman, Ganong, & Rothrauff, 2006; Dilworth-Anderson, William, & Gibson, 2002; Lowenstein, 2007), the findngs from the current research indicate that ethno-cultural differences in norms about family care may not determine social capital for care of older adults in Canada. The ethnic differences in the arrengements of caregiving may be affected instead by socieconomic and demographic factors.

In the current study, factors including care network types were unable to fully explain ethnic variations, and ethnicity was observed to influence older adults' sources of care as well as the use of formal in-home care. The findings suggest that there are ethnic variations in the way care networks cash in social capital, which might be due to ethnic-specific behaviors with respect to use of formal and health services. Beyond differences in demographic characteristics and socioeconomic status, Asian and Canadian older adults tended to receive care from only their family and friend care network. Also, Eastern European older adults reported few overnight stays in institutions. Low likelihood of services use among these three groups suggest high levels of bonding social capital and/or low levels of bridging social capital. Asian and Eastern European older adults' low use of formal in-home care and overnight hospital stays is likely due to their having at least one caregiver living with them and/or high proportions of immediate family members in their care networks, which signify high bonding capital. In general, findings showed that there may be ethnic specific social capital influencing older adults' use of health services that cannot be explained solely by the care network structure, .

Alternatively, low likelihood of services use among the three groups (Asian, Canadian, and Eastern European) could be due to low bridging capital, which is a result of having few close family members in their networks. High bonding has its costs in terms of time spent on intense caregiving (Keating & Dosman, 2009). Immediate family members may hesitate to seek outside help as they may feel that care duties are expected to be managed on their own

(Rosenthal, Martin-Matthews, & Keefe, 2007). In addition, previous research showed ethno-cultural norms in Asian and Eastern European to be more family oriented and to be less open to using outside help as compared to other ethnic groups (Braun & Browne, 1998; Chow et al., 2010; Penning & Chappell, 1987). On the other hand, British older adults had a higher tendency to access formal care compared to other groups. This could be due to the fact that British older adults had the highest proportions of non-immidiate family members in their care networks, suggesting low bonding capital and/or high bridging capital in their care networks.

Finally, relationships between ethnicity and use of health services by older adults with long-term care needs varied according to the type of services. There was no clear pattern found in the current research regarding ethnic variations in the use of health services. What these findings indicate is that, unlike disparities among ethnic groups that have been reported in other countries such as the UK and the U.S. (Nazroo 2006), there was no noticeable ethnic disparity found in the current study in the use of health service.

In conclusion, the social capital framework was valuable in investigating the influence of ethnicity on care of older adults, by highlighting ethnic variations in the stock of bonding and bridging social capital as well as actualization of social capital. Findings from this research confirmed that observed ethno-cultural variations in the context of family and friend care are based on factors other than ethnicity, but ethnicity does influence usage of health services. The reasons behind the differences in health service utilization need to be investigated in more detail with further research before firm conclusions can be made. As this research has demonstrated, contemporary data provide valuable insight to an area which is important to many Canadians, either those who are looking after an older adult, or an individual who requires care from another person. The findings of this research highlight the imortance of providing support for family and friend caregivers. As the Canadian population continues to age, public programs to help sustain their care networks are crucial, particularly as many older adults have only few people who provide care to them.

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