THE INFLUENCE OF LOW SOCIAL SUPPORT AND LIVING ALONE ON PREMATURE MORTALITY AND HOSPITAL UTILIZATION AMONG AGING CANADIANS

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ABSTRACT

The number of older adults living alone is greater today than previous generations, due in part to decreased fertility rates, higher divorce rates, and families living further apart, factors that also contribute to decreasing social support in this age group. International evidence, including meta-analyses and reviews of social support literature, point to low levels of social support posing a risk to health that is comparable to determinants of health such as obesity, high blood pressure, physical inactivity, and smoking (Holt-Lunstad et al. 2015, Holt-Lunstad, Smith, and Layton 2010, House, Landis, and Umberson 1988, Valtorta et al. 2016). This thesis assessed the influence of multiple constructs of social support and living alone on the mortality and hospital burden of older Canadians.

The first phase of the research involved analyses of a linked database of a large sample of Canadians surveyed in 2001 as part of the Canadian Community Health Survey (CCHS) 1.1 and followed up with recorded death events to December 31, 2011 and hospitalizations to March 31, 2004. Analyses were stratified by two age groups, 55 – 64 (n=6,822) and 65 and older (n=8,966), owing to differing patterns of mortality and health care utilization for these age divisions. Social support measures operationalized several support constructs of interest, including tangible support, affection, emotional and informational support, positive social interactions, living alone, and sense of belonging. Key covariates included sex, age, income, smoking, and a frailty index.

There were 3,904 death events (27.58% of the sample) between 2003 and 2011 (two years following the start of the observation period to limit a poor health bias and a healthy respondent bias) among 15,788 CCHS 1.1 respondents who were 55 years and older at the time of the survey. Among the different social support constructs examined, unadjusted rates of death were highest for those reporting low levels of affection (34.2% (31.8, 36.7)), low positive social interactions (36.6% (34.1, 39.1)), and low emotional/ informational support (33.4% (31, 35.8)). In adjusted analyses, compared to adults with the highest levels of support, adults 55 – 64 with low levels of affection had elevated mortality risk (Hazard Ratio (HR) of 1.37 (1.07, 1.75 95% CI)). Effect estimates were similar for low positive social interactions (HR of 1.36 (1.06, 1.75 95% CI)), and low emotional/informational support (HR of 1.36 (1.06, 1.74 95% CI)). Adults 65 and older also had increased mortality risk with low levels of affection (HR of 1.17 (104, 1.31 95% CI)), low positive social interactions (HR of 1.20 (1.07, 1.34 95% CI)), and low emotional/ informational support (HR of 1.19 (1.06, 1.33 95% CI)). Tangible support and living alone were not consistently associated with mortality risk in adjusted analyses which is in keeping with past studies suggesting that tangible support might increase in response to very poor health, and living alone may not inherently put older individuals at risk for mortality.

More than one third of respondents 55 – 64 (36.86%) were admitted to hospital over the morbidity follow-up period, and more than half of respondents 65 and older had admissions (54.52%). Hospitalization is not infrequent in older Canadians, especially those over 65. There was a modest signal for elevated odds of hospital admission for adults 65 and older with a weak sense of belonging (Odds Ratio of 1.14 (1.02, 1.28 95% CI)), but otherwise social support variables were not generally associated with an increased risk of admission.

Low positive social interactions and living alone were associated with the number of hospital admissions in the younger age group (Incidence Rate Ratio (IRR) of 1.46 (1.08, 1.97 95% CI) and IRR of 1.22 (1.01, 1.48 95% CI) respectively). Respondents reporting low positive social interactions had a predicted number of admissions nearly one and a half times that of respondents reporting the highest positive social interactions. Those living alone had a predicted number of admissions nearly one and a quarter times those living with others. Tangible support, affection, and emotional/informational support were not generally associated with an increased number of admissions in either age group.

Low positive social interactions (IRR of 1.73 (1.21, 2.51 95% CI)), low emotional/ informational support (IRR of 1.45 (1.01, 2,05 95% CI)) and living alone (IRR of 1.32 (1.06, 1.65 95% CI)) were all associated with length of stay in hospital in fully adjusted models among the younger cohort. Low levels of affection (IRR of 1.31 (1.08, 1.58 95% CI)), low positive social interactions (IRR of 1.31 (1.07, 1.57 95% CI)), low emotional/informational support (IRR of 1.34 (1.09, 1.61 95% CI)), and a weak sense of belonging (IRR of 1.13 (1,01, 1.27 95% CI)) were all associated with length of stay among the older cohort. Indeed it was length of stay that was the hospitalization measure that was particularly sensitive to multiple social support constructs, suggesting that low social support is implicated in discharge decisions and readmissions.

In the second phase of the research, an online survey (n=1,019) of health care and social workers across North America was conducted to understand health workforce perceptions of the problem of low social support amongst patients in institutions, how this has changed over time, and how the absence of social support may influence discharge decisions. The survey also elicited from respondents strategies that might be implemented to promote healthful aging and reduce the health care burden associated with low social support.

About 50 per cent of respondents did not perceive a difference when asked how the number of patients with very infrequent visitors had changed over time, but among those who had noticed a difference, many (33.84%) suggested that very infrequent visitors are more common now. Respondents (39.87%) estimated that about a quarter of older adults in their institution could have been cared for in the community had there been available social support. The vast majority of respondents (84.33%) claimed that older patients without social support are re-hospitalized more often following a discharge than older adults with support.

Analyses of open-ended survey responses suggested that the lack of home or community care negatively affects discharge planning, and that older adults without this type of support are more likely to have a delayed discharge by days or weeks, or they are discharged to a long term care facility. Additionally, respondents perceived that older adults who lack social support are more likely to have an unsuccessful discharge, including medical and pharmacology errors, and suggested that they are more likely to be readmitted to hospital, often through the emergency department. Survey respondents suggested that home care (including improving the conditions under which it is provided) and creating affordable options for care outside of institutional settings, are the best ways to avoid hospitalizations for those with low social support. Additionally, respondents offered that community outreach in the form of senior day programs, as well as support for caregivers and better discharge planning could serve to improve health outcomes and provide better options for older adults to live independently in the community.

This thesis finds that low social support is a risk factor for both mortality and hospital burden in older Canadians. In particular, low positive social interactions and a weak sense of belonging seem to be an aspect of social support that is consistently associated with poor outcomes for older Canadians. Additionally, health care workers perceive low social support among their patients as affecting discharge decisions and hospital readmission, and view increasing support for home and community care as the best solution to excess health care burden associated with older populations without social support. Although living alone was not found to be a key determinant of poor outcomes among Canadians 65 and older, those who are living alone and experience low social support may benefit from alternative living arrangements. From a policy perspective, thinking of other options for housing for older adults may provide increased support for healthy aging and reduced health care burden. These findings may serve to inform thinking on the types of living arrangements in the community that best support the health of older Canadians.

SOMMAIRE

De nos jours, les personnes âgées vivant seules sont plus nombreuses que celles des générations précédentes en raison notamment d'une diminution du taux de fécondité, d'une augmentation du taux de divorce ainsi que de la dispersion géographique de plus en plus grande des familles, facteurs qui contribuent également à affaiblir le soutien social au sein de cette population. Des données probantes recueillies à l'échelle internationale au moyen, notamment, de méta-analyses et de revues de la littérature sur le soutien social, semblent indiquer que de faibles niveaux de soutien social sont associés à un risque pour la santé comparable à celui attribuable à divers déterminants de la santé, dont l'obésité, l'hypertension, la sédentarité et le tabagisme (Holt-Lunstad et coll. 2015; Holt-Lunstad, Smith et Layton 2010; House, Landis et Umberson 1988; Valtorta et coll. 2016). Dans le cadre de la présente thèse, nous avons évalué l'influence des divers volets du soutien social et de la vie dans la solitude sur la mortalité et le fardeau hospitalier chez les Canadiens âgés.

La première phase de cette étude portait sur l'analyse de données liées sur un vaste échantillon de Canadiens ayant répondu à un sondage en 2001 dans le cadre de l'*Enquête sur la santé dans les collectivités canadiennes* (ESCC) *1.1*, suivie d'une analyse des décès enregistrés jusqu'au 31 décembre 2011 et des hospitalisations survenues jusqu'au 31 mars 2004. Les analyses ont été stratifiées en fonction de deux groupes d'âge, soit les personnes de 55 à 64 ans (n = 6 822) et celles de 65 ans et plus (n = 8 966), en raison des

différents schémas de mortalité et d'utilisation des services de santé observés dans ces deux groupes d'âge. L'évaluation du soutien social portait sur plusieurs volets d'intérêt, notamment l'aide tangible, l'affection, le soutien affectif et informatif, les interactions sociales positives, la vie dans la solitude et le sentiment d'appartenance. Les covariables clés comprenaient le sexe, l'âge, le revenu, le tabagisme et l'indice de fragilité.

On a recensé 3 904 décès (27,58 % de l'échantillon) entre 2003 et 2011 (deux ans après le début de la période d'observation afin de réduire les risques de biais liés à un mauvais état de santé et à l'effet attribuable au répondant en santé) chez les 15 788 répondants à l'*ESCC 1.1* âgés de 55 ans et plus au moment de la réalisation du sondage. Parmi les divers volets du soutien social examinés, les taux non corrigés de décès les plus élevés ont été observés chez les répondants ayant mentionné recevoir peu de marques d'affection (34,2 % [31,8, 36,7]), avoir peu d'interactions sociales positives (36,6 % [34,1, 39,1]), et recevoir peu de soutien affectif ou informatif (33,4 % [31, 35,8]). Les analyses corrigées ont révélé que les adultes âgés de 55 à 64 ans qui recevaient peu de marques d'affection présentaient un risque de mortalité plus élevé (rapport de risques [RR] de 1,37 [IC à 95 %, de 1,07 à 1,75]) que les adultes qui recevaient le plus de soutien. Les estimations de l'effet étaient semblables chez les répondants qui avaient peu d'interactions sociales positives (RR de 1,36 [IC à 95 %, de 1,06 à 1,75]) et ceux qui recevaient peu de soutien affectif ou informatif (RR de 1,36 [IC à 95 %, de 1,06 à 1,74]). On a également observé un risque accru de mortalité chez les adultes de 65 ans et plus qui recevaient peu de marques d'affection (RR de 1,17 [IC à 95 %, de 1,04 à 1,31]), qui avaient peu d'interactions sociales positives (RR de 1,20 [IC à 95 %, de 1,07 à 1,34]), et qui recevaient peu de soutien affectif ou informatif (RR de 1,19 [IC à 95 %, de 1,06 à 1,33]). L'aide tangible et la vie dans la solitude n'ont pas été systématiquement associées au risque de mortalité dans les analyses corrigées, ce qui va dans le sens d'études antérieures dont les résultats semblaient indiquer que les personnes en très mauvaise santé seraient susceptibles de recevoir davantage d'aide tangible, et que le fait de vivre seul n'augmenterait pas nécessairement le risque de mortalité chez les personnes âgées.

Plus du tiers des répondants âgés de 55 à 64 ans (36,86 %) ont été admis à l'hôpital au cours de la période de suivi de la morbidité, et plus de la moitié des répondants âgés de 65 ans et plus ont été hospitalisés (54,52 %). Les hospitalisations ne sont pas rares chez les Canadiens âgés, particulièrement chez les personnes de plus de 65 ans. On a observé une légère tendance vers une augmentation du risque d'hospitalisation chez les adultes de 65 ans et plus ayant un faible sentiment d'appartenance (rapport de cotes de 1,14 [IC à 95 %, de 1,02 à 1,28]), mais, par ailleurs, les autres variables du soutien social n'ont généralement pas été associées à une augmentation du risque d'hospitalisation.

Chez les répondants âgés de 55 à 64 ans, on a observé un lien entre la fréquence des interactions sociales positives et la vie dans la solitude, d'une part, et le nombre d'hospitalisations, d'autre part (rapport des taux d'incidence [RTI] de 1,46 [IC à 95 %, de 1,08 à 1,97] et de 1,22 [IC à 95 %, de 1,01 à 1,48], respectivement). Chez les répondants qui avaient peu d'interactions sociales positives, le nombre prévu d'hospitalisations était près d'une fois et demie celui des répondants qui avaient le plus d'interactions sociales positives. Le nombre prévu d'hospitalisations chez les répondants vivant seuls était près d'une fois et quart celui des répondants vivant avec d'autres personnes. L'aide tangible, l'affection et le soutien affectif et informatif n'étaient généralement pas associés à une augmentation du nombre d'hospitalisations, quel que soit le groupe d'âge.

Dans la cohorte plus jeune, la faible fréquence des interactions sociales positives (RTI de 1,73 [IC à 95 %, de 1,21 à 2,51]), le faible niveau de soutien affectif et informatif (RTI de 1,45 [IC à 95 %, de 1,01 à 2,05]) et la vie dans la solitude (RTI de 1,32 [IC à 95 %, de 1,06 à 1,65]) ont tous été associés à la durée de l'hospitalisation dans les modèles entièrement corrigés. Dans la cohorte plus âgée, le peu d'affection (RTI de 1,31 [IC à 95 %, de 1,08 à 1,58]), le peu d'interactions sociales positives (RTI de 1,31 [IC à 95 %, de 1,07 à 1,57]), le peu de soutien affectif et informatif (RTI de 1,34 [IC à 95 %, de 1,09 à 1,61]), et un faible sentiment d'appartenance (RTI de 1,13 [IC à 95 %, de 1,01 à 1,27]) ont tous été associés à la durée de l'hospitalisation. La durée du séjour est le paramètre lié à l'hospitalisation qui s'est révélé particulièrement sensible aux multiples volets du soutien social, ce qui porte à croire qu'un faible soutien social influe sur les décisions relatives aux congés accordés aux patients et sur les réadmissions.

Dans la deuxième phase de l'étude, un sondage en ligne (n = 1 019) a été réalisé auprès de travailleurs de la santé et de travailleurs sociaux d'Amérique du Nord afin de comprendre leur point de vue sur le faible soutien social chez les patients hospitalisés, comment la situation a évolué au fil du temps et la façon dont l'absence de soutien social influe sur la décision d'accorder leur congé aux patients. On a également demandé aux répondants de proposer des stratégies susceptibles de favoriser le vieillissement en santé et d'alléger le fardeau des soins de santé associé au manque de soutien social.

Environ 50 pour cent des répondants ont affirmé n'avoir remarqué aucune différence lorsqu'on leur a demandé si le nombre de patients qui ne recevaient que de très rares visiteurs avait changé au fil du temps; toutefois, parmi ceux qui avaient remarqué une différence, plusieurs (33,84 %) ont laissé entendre que le nombre de patients qui ne reçoivent que de très rares visiteurs est plus élevé aujourd'hui. Certains répondants (39,87 %) ont estimé qu'environ le quart des personnes âgées hospitalisées dans leur établissement auraient pu être prises en charge dans la collectivité si elles avaient pu disposer d'un soutien social. La grande majorité des répondants (84,33 %) ont affirmé que les personnes âgées sans soutien social sont réadmises à l'hôpital plus souvent après avoir reçu leur congé que celles qui bénéficient du soutien des membres de leur réseau social.

L’analyse des réponses aux questions ouvertes du sondage semblait indiquer que l’absence de soins prodigués à la maison ou dans la collectivité a de fâcheuses conséquences sur la planification du congé – ce dernier étant plus susceptible d’être retardé de plusieurs jours ou de plusieurs semaines chez les personnes âgées qui ne disposent pas de ce type de soutien –, ou peut résulter en un placement dans un établissement de soins de longue durée. Les répondants estimaient en outre que les personnes âgées qui ne disposent pas d’un bon soutien social sont plus susceptibles de connaître des difficultés au moment de leur sortie de l’hôpital – celles-ci se traduisant notamment par des erreurs médicales ou pharmacologiques –, et risquent davantage d’être hospitalisées de nouveau, souvent après un passage au service des urgences. Les répondants ont également affirmé que les soins à domicile (y compris l’amélioration des conditions dans lesquelles ils sont prodigués) et l’accès à de nouvelles offres de soins abordables à l’extérieur des milieux institutionnels constituent les meilleurs moyens d’éviter les hospitalisations chez les personnes âgées qui ne peuvent compter sur un bon soutien des membres de leur réseau social. Les répondants ont également souligné que l’approche communautaire, sous forme de programmes de jour destinés aux aînés, ainsi que l’appui aux proches aidants et une meilleure planification du congé des personnes hospitalisées permettraient d’améliorer les résultats sur le plan de la santé et constitueraient de meilleures options pour aider les personnes âgées à vivre de façon autonome au sein de leur collectivité.

Les résultats des travaux réalisés dans le cadre de cette thèse ont permis de conclure qu'un faible soutien social constitue un facteur de risque de mortalité et qu'il contribue également à alourdir le fardeau hospitalier chez les Canadiens âgés. Le manque d'interactions sociales positives et un faible sentiment d'appartenance semblent notamment constituer des aspects du soutien social systématiquement associés à de piètres résultats chez cette population. De plus, les travailleurs de la santé estiment que le manque de soutien social chez leurs patients influe sur la décision de leur accorder ou non un congé ainsi que sur leur réadmission à l'hôpital. Ils estiment également que des mesures visant à favoriser les soins à domicile et dans la collectivité constituent le meilleur moyen d'alléger le fardeau des soins de santé associé aux personnes âgées sans soutien social. Même si la vie dans la solitude ne s'est pas révélée un facteur déterminant à l'origine de résultats défavorables chez les Canadiens âgés de 65 ans et plus, ceux qui vivent seuls et ne disposent pas d'un bon soutien social pourraient bénéficier d'un autre cadre de vie. En matière de politiques publiques, la possibilité d'offrir d'autres choix d'hébergement aux personnes âgées pourrait favoriser le vieillissement en santé et alléger le fardeau des soins de santé. Ces résultats pourraient alimenter la réflexion sur les modes de vie dans la communauté les plus susceptibles de permettre aux Canadiens de vieillir en santé.

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PREFACE

This dissertation is submitted for the degree Doctor of Philosophy at McGill University. The research described herein was conducted under the supervision of Dr. Nancy Ross in the Department of Geography between August 2012 and May 2018.

This work is to the best of my knowledge original, except where acknowledgments and references are made to previous work. Neither this, nor substantially similar dissertation has been or is being submitted for any other degree, diploma, or other qualification at any other university.

Kelly Ann Renwick
May 2018

CONTRIBUTION OF AUTHORS

Dr. Ross, Dr. Sanmartin, and Dr. Dasgupta conceived of the following research project and acquired funding from the Canadian Institute for Health Research. Dr. Sanmartin and her team at Statistics Canada provided the data linkage and linked dataset for the research project. Ms. Renwick developed the on-line survey content and carried out the research methods with the support of Dr. Ross and the thesis committee consisting of Dr. Berrang-Ford, Dr. Sanmartin, and Dr. Dasgupta. Ms. Renwick wrote the thesis manuscript with support from Dr. Ross.

1. INTRODUCTION

"The number of older people living alone is rising almost everywhere in the world, making it one of the major demographic trends of the contemporary period" (Klinenberg 2001, 503). Changing social conditions that include decreasing fertility rates, increasing divorce rates, family fragmentation, and changing gender roles, much of which have contributed to the rise of living alone, are changing the way older Canadians age (Klinenberg 2012, Moore and Rosenberg 2001, Ogden and Hall 2004, Van de Kaa 2002). Compared to previous generations, many older adults today are found in a state of 'being alone' – living alone with few social resources (Hawton et al. 2011, Victor et al. 2000). Older Canadians living alone also have fewer economic resources than those who cohabitate, an added burden in an era marked by trends in retirement income instability and an increase in poverty rates among this age group since 1996 (Curtis and McMullin 2016, MacDonald et al. 2011, McDonald and Donahue 2011, Organization for Economic Development 2016b). The risk of age-associated degenerative conditions and loss of functionality may position older adults as the segment of the population that is most reliant on social support and a stable income, two important social determinants of health.

The overarching hypothesis of this thesis is that low social support and living alone among older adults increases mortality risk and are associated with elevated hospital burden in Canada. The objectives of this research are:

1. To understand the influence of low social support and living alone on mortality risk in Canada;
2. To understand the influence of low social support and living alone on hospital utilization (any admission, number of admissions, and length of stay) in Canada; and
3. To understand the degree to which older adults without social support are recognized within hospital settings, how discharge decisions are made for these patients, and what strategies can be implemented to better care for older adults lacking social support.

I expect to find that older adults with low social support and those who live alone will have an increased risk of mortality and have higher hospital utilization. In an effort to not only understand the problem, I also seek to identify strategies that serve to mitigate consequences of low social support and living alone on poor health outcomes. Health care providers on the frontlines of geriatric care are uniquely suited to offer their perspectives on how often low social support affects hospital utilization and discharge, and what they believe can be done to mitigate these issues. I expect to find that among doctors, physician assistants, nurses, nursing assistants, social workers, and home care providers there is a general consensus that home care and community support are the methods of support that will greatly improve health outcomes and that financial support and funding are the biggest obstacles to receiving in-home care. I further expect to find that patients with low social support have delays in discharge and more frequent readmissions.

Low social support and living alone can be detrimental for many older adults, particularly during times of illness or loss of functionality. The looming retirement of the bulk of the baby boomers, an increasingly aging population, and the incredible rise of living alone warrants serious investigation into how these changing social conditions can influence this segment of the population and their burden on the Canadian health care system. In Canada, the rise of living and aging alone and low social support as determinants of health are currently outside of popular and policy discourses. Countries in Europe have begun to incorporate social conditions into their public health policies in efforts to improve overall population health and reduce health care burden – the most visible expression of these sentiments is perhaps the January 2018 announcement by the British Prime Minister of the appointment of a Minister of Loneliness. Writing about the announcement on Twitter on January 17, 2018, British Prime Minister Teresa May wrote "For far too many, loneliness is a sad reality of modern life. I want us all to confront this and take action to address loneliness endured by the elderly, by carers, those who have lost loved ones – those with no one to talk to or share their thoughts and experiences with." It is hoped that this research will contribute to increasing dialogue in Canada about the role of social support in aging.

1.1 Aging and Living Alone amidst Changing Social Conditions

In Chicago in the summer of 1995, climatic conditions coalesced to produce a heat wave that resulted in the deaths of more than 500 people. The vast majority of individuals who died from heat-related causes were low-income adults over the age of 65 and were found to be living alone (Klinenberg 1999). It was subsequently determined that "hundreds of Chicago residents *died alone,* behind locked doors and sealed windows, out of contact with friends, family, and neighbors" (University of Chicago 2002), deaths that could have been prevented if the occupants had not been living alone, had better housing or material resources, or had greater levels of social support (Centers for Disease Control 2009, Klinenberg 1999).

The tragedy which occurred in Chicago illuminated one of the biggest demographic changes we know the least about: the rise of living alone. Surprisingly, little has been discussed within the social sciences about the increase of living alone, particularly for the most vulnerable members of society. Eric Klinenberg, author and professor of Sociology at New York University, brought this issue to the forefront with *Heat Wave* (2002), when he conducted a social autopsy of the 500+ heat related deaths in Chicago in 1995. Through his PhD research, Klinenberg succeeded in understanding the magnitude of the death toll that could not be solely explained by weather or medical etiologies. Through sociological inquiry, Klinenberg was able to uncover a social order that isolates the poor and vulnerable, and a political system which allowed this segment of the population to become invisible. Klinenberg provides a more in-depth understanding of living alone with his seminal work *Going Solo: The Extraordinary Rise and Surprising Appeal of Living Alone* (2012) where he identifies the rapidity with which people are choosing to or finding themselves living alone, and what this means to different segments and age groups in the population.

Globally, more people are living alone today than ever before, particularly those aged 65 and older (hereafter referred to as older adults). The phenomenon of living alone has different implications for different generations: For younger adults it is a chance for independence and self-discovery, but for older adults, living alone can be isolating and lonely (Klinenberg 2012). Many older adults who live alone spend long periods alone and lack a meaningful social support system[1] (Klinenberg 2012). And from the example of the Chicago heat wave, living alone as an older adult, particularly with low social support and low income, can have dire consequences.

In Canada, living alone has followed a similar pattern to living alone in the U.S., with older adults comprising the vast majority of solo dwellers (Figure 1.1). Older Canadians who live alone are also four times as likely to fall below the low income threshold as compared to their counterparts who live with others (Bazel and Mintz 2014). Although Canada has made great strides in reducing

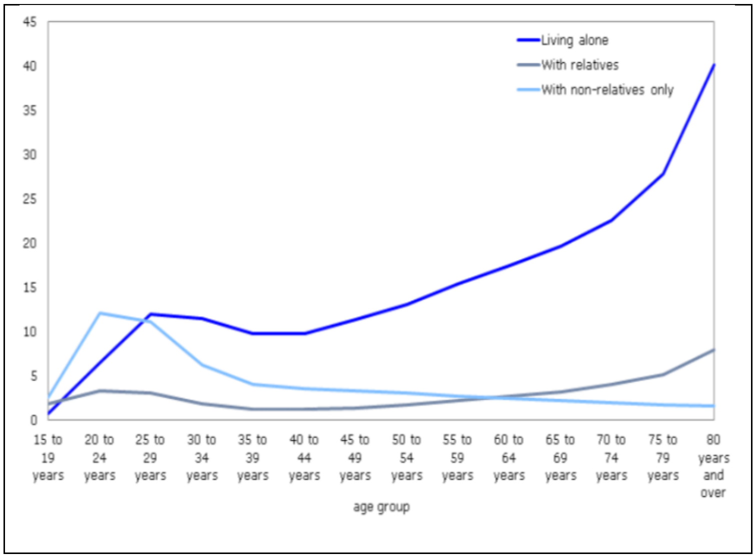

Figure 1.1: Percentage of the population aged 15 and over who live alone, with relatives, or with non-relatives only, by age group, Canada, 2011 (Statistics Canada 2011b)

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[1] Older adults living alone and spending numerous hours without social interaction are considered 'being alone'. This is not synonymous with living alone which measures household type and size (Victor et al. 2000).

poverty among older adults in the latter part of the 20th century, primarily through pension programs, old-age security, and a guaranteed income supplement, older adults today are facing a decline in the financial security previously enjoyed by generations of older Canadians (MacDonald et al. 2011). The proportion of older adults living on less than half the median household income (the poverty rate[2] after taxes and transfers) between 2000 and 2015 has increased from 5.1 to 10.7 per cent (Organization for Economic Development 2016a). The current poverty rate among older Canadians is comparable to other more developed nations, better in fact than some (e.g. Sweden 11.4, the United Kingdom 13.8, Switzerland 19.4, and the United States 20.9), though not as low as others (e.g. France 3.1, Denmark 3.2, the Netherlands 3.7, Norway 4.4, Finland 5.2, and Germany 9.5,) (Organization for Economic Development 2016a). The trends in declining financial security and increasing poverty suggest that current social and demographic changes may not have been considered when addressing the financial security of older Canadians; the increase in living and aging alone may be contributing factors to this issue.

Living alone and financial insecurity are two important determinants of health that are likely affecting older adults differently today than previous generations. Decreasing fertility rates, increasing divorce rates, increasing family fragmentation and

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[2] The poverty rate is the ratio of people below the poverty line as compared to the total population. The 50 per cent poverty line for example, is half the median household income, a common threshold for measuring poverty (Organization for Economic Development 2016b).

geographic dispersion, as well as a decreasing old-age dependency ratio mean that more Canadians are spending many years on their own (Bourne and Rose 2001, Lydon and Ragan 2013). These challenges are likely to intensify owing to Canada's rapidly aging population. In fact, for the first time, the number of Canadians 65 and older has surpassed the number of youth and children 14 and under, this gap is expected to continue to widen over the coming decades (Statistics Canada 2015a). This substantial increase of older adults is expected to have consequences for pensions, social security, and health care systems (Bourne and Rose 2001, Kovner, Mezey, and Harrington 2002, Lin and Brown 2012, Moore and Pacey 2004).

Low social support and low socioeconomic status (SES) have both been found to be predictive of mortality in large longitudinal studies outside of Canada (Holt-Lunstad, Smith, and Layton 2010, Stringhini et al. 2012, Tay et al. 2013), however, there has been no research in Canada utilizing large community health surveys or longitudinal data. Despite the fact that Canada provides universal health care, we can speculate *a priori* that being alone, an increasing absence of social support, and a fragile retirement income system will have collective repercussions for the health of aging Canadians. Among these, we might anticipate an increased risk of poor health, premature mortality, and an increase in the utilization of hospital services. Surprisingly, discourse about social support is absent from the social determinants of health in the

Canadian policy context[3]. It could therefore be inferred that within policy discourse in Canada, social support has not been identified as an important health determinant[4], despite growing international research linking the absence of social support with mortality (Becofsky et al. 2015, Holt-Lunstad, Smith, and Layton 2010, Tay et al. 2013, Weiss-Faratci et al. 2016).

This chapter has highlighted the increasing number of older adults living alone and the decreasing levels of social support as compared to previous generations, particularly stressing the vulnerability of older Canadians who live alone. This thesis presents research addressing the influence of low social support on both mortality risk and hospital utilization in Canada using linked health survey and administrative health data. This thesis aims to provide a better understanding of the influence of low social support in a hospital setting, on hospital discharge decisions, and what strategies can be used to mitigate negative consequences of being alone through an online survey of health care workers. This is a traditional style thesis. This introductory chapter has introduced the idea of the rise of living and being alone as some of the most profound

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[3] Following the identification of the top ten social determinants of health by the World Health Organization, 14 social health determinants have been identified as relevant to Canadian health. These include: Aboriginal status, disability, early life, education, employment and working conditions, food insecurity, health services, gender, housing, income and income distribution, race, social exclusion, social safety net and unemployment and job security (Mikkonen and Raphael 2010).

[4] A cursory search through health and public policy reports in Canada shows that while present in the literature, social support is not a prominent determinant of health. Rather social capital, which shares similarities with social support, has been the focus of a number of reports for Canadian policy makers (Health Canada 2006, Policy Horizons Canada 2003). Social capital has a negative association with mortality (Berkman 2000, Putnam 2001, Subramanian, Lochner, and Kawachi 2003) but as a construct it does not address the varied forms of social support for individuals and does not specifically acknowledge the consequences of living alone. The concept of social capital is not a focus of this thesis.

social changes of our time. Chapter Two provides a detailed literature review, emphasizing the conceptualization of social support. The literature review also takes a systematic look at international literature linking low social support to premature mortality and situates the thesis in health geography. The methods chapter (Chapter Three) describes each stage of the research process, including both mortality and hospital utilization analyses and the online survey. Following the methods chapter are three results chapters corresponding to the mortality analysis (Chapter Four), hospital utilization analysis (Chapter Five), and the online survey (Chapter Six). The concluding chapter (Chapter Seven) outlines the substantive, methodological, and practical/policy contributions of the thesis while also alerting readers to the limitations of the thesis.

2. LITERATURE REVIEW

2.1 Introduction

The lack of social support among older adults (65 and older) has become of greater concern in recent years due to the demographic and social changes introduced in the opening chapter: declining fertility rates, increasing divorce rates, and the geographic dispersion of families. These factors have led to an increasing number of older adults living alone and for longer periods of time owing to longevity increases. In the beginning of the twentieth century, ten per cent of widowed elderly were living alone, while at the end of the twentieth century that number had reached a staggering 62 per cent (Klinenberg 2012). Today, a greater number of widows and widowers are living alone, and living longer, without the support of a spouse. Increasing divorce rates present the same concern, longer life expectancies without spousal support. Declining fertility rates mean older adults may have fewer children, or no children for the provision of support. And even if there are children, there is no assurance they are living in proximity to their aging parents.

Living alone can be very difficult for older adults. Simply aging can be a great hardship, it requires "adjusting to retirement, managing illnesses, enduring frailty, [and] watching friends and family die" (Klinenberg 2012, 17). Compound aging with living alone, particularly among older adults who are frail, socially isolated, and/or financially insecure, the experience can be altogether terrifying. These older adults are not simply living alone, their lives consist of 'being alone' (Victor et al. 2000), they are “age[ing] alone, with endless hours of solitude broken only by rare and brief visits from friends and family” (Klinenberg 2012, 160). Fortunately, this is not always the experience for all older adults living alone. Older adults with good health and high functionality often have active social lives and find living alone and maintaining independence far better than the alternative (Klinenberg 2012). However, living alone and being alone in old-age can have serious consequences during times of illness or loss of functionality. This segment of the population is at greater risk of poorer health, including disabilities and multiple chronic and age associated degenerative diseases, institutionalization, and premature mortality (Fratiglioni et al. 2000, Kandler et al. 2007, Kharicha et al. 2007, McCann, Donnelly, and O'Reilly 2011, Sun et al. 2007).

This chapter serves to situate the dual issues of social support and living alone as determinants of premature mortality and morbidity within the academic home of health geography. Following a literature review of social support, living alone, and health, this chapter takes a detailed look at 15 longitudinal international social support and mortality studies. The detailed look at these studies illuminates the types of social support found to be most influential for the health outcomes of older adults (emotional support, tangible support, and social integration), thus substantiating the use of specific variables in analyses in this research, as well as highlighting the importance of sense of belonging in both social support and health outcomes.

2.2 Social Support, Aging, and Health Geography

Health geography is the evolution of the two veins of traditional medical geography[5] that has been interested in a holistic understanding of both health and health care that has moved beyond a solely biomedical approach (Parr 2002, Verhasselt 1993). The biomedical model does not encompass broader social and cultural conditions that can have a profound influence on human health. Critics of biomedical approaches to understanding human health argue that while place is recognized in these models, the social structures and relationships people have with place are neglected (Luginaah 2009). Smyth (2007) suggests that differences in health are as dependent on the social environment as they are on the physical characteristics of a place. 'Place' in health geography is a concept that not only describes observable activities, but also social and cultural constructs that 'get under the skin', constructs built from the relationships people have with each other, with their communities, and their sense of belonging over the course of their lives (Kearns and Joseph 1993, Kearns and Moon 2002, Luginaah 2009).

Landscape is a traditional geographical concept that encompasses both the physical attributes of a place as well as the social conditions within a place. A somewhat

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[5] The two principle veins within medical geography are the geography of health care, which focuses on the access and provision of health care, and the geography of disease which focuses on the spatial distribution and diffusion of disease, (Kearns and Joseph 1993, Kearns and Moon 2002, Luginaah 2009, Mayer 1992). The primary foci in the geography of health care includes the spatial components of health care delivery and the accessibility and utilization of health care (Kearns and Joseph 1993). The geography of disease identifies patterns, distribution, and diffusion of disease using geographic techniques, such as mapping, modelling, and multivariate analyses (Rosenberg 1998).

new concept within health geography that highlights the social conditions of 'place', and *apropos* for the work conducted in this research, is the 'landscape of care'. This landscape is principally concerned with care relationships and as a "framework for unpacking the complex relationships between people, places and care" (Milligan and Wiles 2010, 736).

From a theoretical standpoint, care and support can have different implications for different people – providing care can be understood to be something one does for a loved one out of a sense of duty, it can be a source of pride or satisfaction, it can be regarded as work or a hardship, and it can reinforce dependency (Milligan and Wiles 2010). Rarely is care a static or unidirectional process provided by the care giver to the care receiver, but rather care usually involves a multi-directional exchange between all participants. Furthermore, the 'landscape of care' usually involves a web of networks that can include both formal and informal resources (Milligan and Wiles 2010).

Within the 'landscape of care' are social spaces that highlight *where* care takes place, in one's own home or with an adult child? Perhaps in a hospital or nursing home? Places associated with good health or good care are often deemed therapeutic landscapes, however, inequality and material deprivation can easily turn a place into a degenerative landscape associated with poor health (Smyth 2007). Understanding how a care receiver is affected by or perceives a 'place' of care can provide an analytical framework of the availability of care, social or cultural care arrangements, government policies and involvement in care, as well as negative outcomes associated with a place, including dependency, loneliness, isolation, and depression (Milligan and Wiles 2010). Care in the home, which is desired by many older adults as an alternative to nursing homes, has been described as a "spatial paradox", where patients feel both a sense of control because they are choosing to age and be cared for in their own home, but also a loss of control as they face dependency on others for many basic life skills (Milligan and Wiles 2010).

The urban-rural comparison also plays a key role in health geography, particularly in regard to access to care. Those living in rural areas have fewer resources, in the U.S. for example, 20 per cent of the population live in rural areas but have access to less than 11 per cent of the nation's doctors (Arcury et al. 2005). Geographic limitations to care also arise when transportation is not available. For those with lower income who do not have a car, or for older adults who are unable to drive, public transportation becomes their connection to their community, however, this form of transportation is often restricted to a small area and may not go the extra distance to access health care facilities in urban centers (Arcury et al. 2005).

Advocates of practical and politically oriented research call for a critical geography that is relevant, interdisciplinary, applicable on a global scale, and committed to progressive social change (Parr 2004). Parr (2004) argues that cultural geography has had a tight grip within human geography that has contributed to a dearth of policy driven research. Within health geography, on the other hand, there is an underlying commitment to support social change and social justice; health geography is policy driven with an eye to the social determinants of health and health inequalities (Kearns and Moon 2002, Smyth 2007). Kearns and Moon (2002) argue that health geographers have demonstrated criticality through a commitment to promoting cutting edge health topics through teaching, and partnerships with government and medical associations that ultimately result in policy shifts. In keeping with the criticality of health geography, the results of this research should initiate practical and policy contributions that consider social support and living alone in healthy aging.

The role of social support and living alone figures prominently within health geography in several ways, particularly among older adults who are increasingly found to have less social support than previous generations and are the largest segment of the population living alone. First, understanding these determinants of health from the social environment allows for a more complete understanding of the factors that influence health outcomes, which contributes to what we already know from a biomedical approach. The social relationships people have with each other and with their communities influence their sense of belonging, all of which ‘get under the skin’ in a manner that effects mortality and morbidity and subsequent utilization of hospitals and health care.

Second, this research highlights concepts addressed in the landscape of care, namely the web of networks that provide formal and informal support, the social spaces where care occurs (in the home or in an institution), and the spatial paradox. Social support is derived from a web of networks, namely family and friends, however these networks can diminish with the changing social conditions discussed previously. As informal support declines, formal support such as home care can be expected to become more important and relied upon by older adults. Where support and care takes place can also influence health outcomes. As will be discussed below, many older adults prefer to remain in their own homes, and can experience depression and anxiety with the loss of independence that stems from living with and becoming dependent on others. Living alone but becoming dependent can create a spatial paradox – having a sense of control by choosing to live alone, but experiencing the loss of control with a dependency on others. Additionally, the lack of social support and living alone can increase the risk of institutionalization (discussed below), which can lead to increased rates of negative outcomes associated with place, including dependency, loneliness, isolation, and depression (Milligan and Wiles 2010).

Lastly, this research highlights the urban and rural regional differences in mortality analyses. As will be discussed in more detail below, the association between social support and mortality is stronger in urban environments and has a weakening effect in rural environments, in other words, urban residents are more likely to be at an increased risk of premature mortality as influenced by social support. However, rural residents, though less influenced by social support, are at an increased risk of poor health outcomes as a result of fewer material resources and less access to health care, including public transportation, which is particularly difficult for older adults who are unable to drive or who do not have vehicles, and lack the necessary social support that could provide transportation.

2.3 Living Alone

Perspectives toward living alone differ by culture and tradition. Western cultures in North America and Europe, which have the greatest number of older adults living alone, have shifted from a focus on the family to the individual (Eshbaugh 2008, Gustavson and Lee 2004, Hall, Ogden, and Hill 1999). Fifty years ago, most young adults remained in the family home until marriage and older adults, upon divorce or widowhood, chose to live with friends, return to the family home, or chose to live with an adult child (Hall, Ogden, and Hill 1999). Today, young adults prefer to venture out on their own before marriage and older adults prefer to live alone following a divorce or the loss of a spouse (Eshbaugh 2008, Klinenberg 2012).

In Asian cultures, on the other hand, the traditional preference to live with an adult child following the loss of a spouse or divorce is largely intact, typically, older adults are only found living alone when there are no family members available (Chou and Chi 2000). This speaks to a deep-rooted focus on family, including a respect for the elderly and an emphasis on social relationships and obligations found in collectivist countries that is less stressed in Western countries (Seeman et al. 2004). It is not surprising then, that older adults living alone in these cultures report a poorer self-rated health as compared to their western counterparts (Chou and Chi 2000). It should be noted however, that a shift from a family focus to an individual focus appears to be gaining momentum as the number of older adults choosing to live alone has been increasing in China, Japan, and South Korea (Agriculture and Agri-Food Canada 2010, National Institute on Aging et al. 2011, Sun et al. 2007).

Today in Canada, 27 per cent of households are single occupancy, second only to two person households at 34 per cent (Statistics Canada 2011a). This represents a drop in the average household size from more than 4 to 2.8 in the second half of the twentieth century (Figure 2.1) (Bourne and Rose 2001). Similar household distributions can be seen in other OECD countries: In the U.S., the proportion of single occupancy households increased from nine per cent in 1950 to 28 per cent in 2011 (Klinenberg 2012), in Australia, Ireland, and New Zealand the proportion of one person households are 20.7, 22.4, and 22.6 per cent respectively, and in Germany and Norway this number has exceeded 37 per cent (Statistics Canada 2009). Sweden provides an extreme example of one person households at 47 per cent, 60 per cent in Stockholm (Klinenberg 2012).

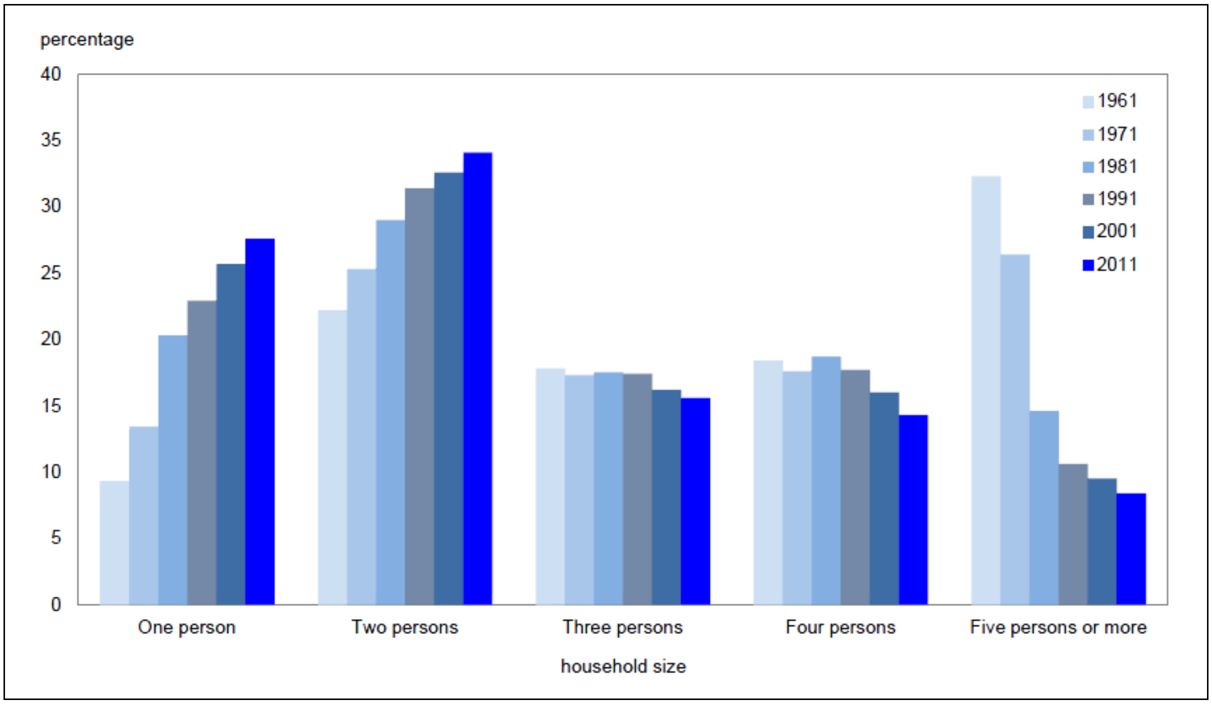

Figure 2.1 Distribution of private households by household size, Canada, 1961 to 2011 (Statistics Canada 2012)

The speed with which more people are living alone is extraordinary, this is particularly true for older adults (Ogden and Hall 2004), the segment of the population that first showed a substantial increase in living alone (Hall and Ogden 2003). Figure 2.2 depicts the increase in living alone between 1850 and today by gender and age in the United States, this is broadly representative of many developed regions world-wide, including Canada (United Nations 2013). As introduced in the previous chapter, the rate of older adults living alone has risen primarily as a result of changing social conditions that include decreased fertility rates, increased divorce rates, geographic dispersion of families and family fragmentation, and longer life expectancies in the wake of widowhood (Kandler et al. 2007, Klinenberg 2012, Moore and Rosenberg 2001, Ogden and Hall 2004). It can be expected that the number of older adults living alone will continue to increase as a result of a rapidly aging population[6] (United Nations 2013).

These changing social conditions may imply that living alone is a lifestyle choice. This is clearly not always the case, rather these demographic shifts leave many older adults with few household options and limited availability for social support (Cai, Salmon, and Rodgers 2009, Hall, Ogden, and Hill 1999, Macunovich et al. 1995, Ogden and Hall 2004). Decreasing fertility rates have resulted in fewer children, or no children, with which a divorced or widowed older adult can rely on for live-in support (Gustavson and Lee 2004). Additionally, the increasing prevalence of family fragmentation means that even when older adults have children this may not be an indication of available support (Gustavson and Lee 2004, Moore and Rosenberg 2001). Older adults who choose to live alone often have the

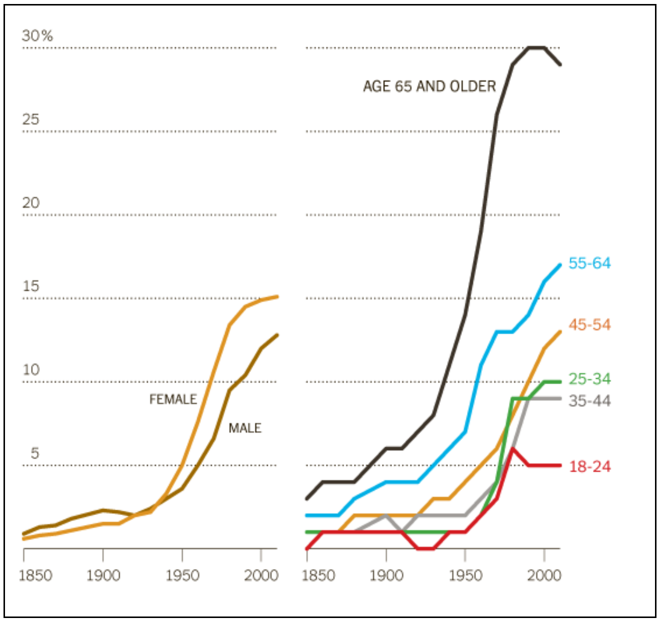

Figure 2.2: Per cent of adults who live alone by gender and age in the U.S., 1850 to 2010 (Klinenberg 2012)

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[6] Older adults are the fastest growing segment of the population world-wide (Gustavson and Lee 2004, United Nations 2013). Globally, the percentage of the population aged 65 and older is approximately 12 per cent but with longer life expectancies and decreasing mortality rates this is expected to increase to 20 per cent by 2050 (Kinsella and He 2009, United Nations 2013). Less developed regions have the greatest number of older adults but more developed regions have the greatest proportion at 23 per cent, this is projected to reach 32 per cent by 2050 (Kinsella and He 2009, United Nations 2013).

financial means to do so and can afford home services as needed (Grundy 1999, Gustavson and Lee 2004, Macunovich et al. 1995). However, older adults whose only option is to live alone are more likely to live in poverty (Chou and Chi 2000, Gustavson and Lee 2004). These older adults lack a partner or children with which to share resources and are more likely to have a lower socioeconomic status (SES), lower educational attainment, and poor housing options (Chou and Chi 2000, Gustavson and Lee 2004, Nihtilä and Martikainen 2008). Older adults living alone with fewer economic resources are at a greater risk for poorer health, an increased risk of institutionalization and mortality, and are more likely to require home care than older adults living with others (Kharicha et al. 2007, Lydon and Ragan 2013, McCann, Donnelly, and O'Reilly 2011).

Health Outcomes among Older Adults Living Alone

Older adults living alone have long been considered a vulnerable population (Chou and Chi 2000, Iliffe et al. 1992, Kharicha et al. 2007), to the extent that the percentage of elderly living alone has been used as a measure within a deprivation index[7] (Iliffe et al. 1992, Kharicha et al. 2007). However, older adults living alone may not be as vulnerable as once believed. Improved health and standard of living, as well as greater access to community services, has reduced the health risk many older adults

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[7] The Jarman score, which measures the workload of general practitioners in the UK, was also used as a proxy for deprivation. It includes % of elderly living alone, % of children under 5, % of unskilled workers, % of overcrowded households, % that changed their address in the last year, % of residents living in a household where the head was born in the New Commonwealth or Pakistan, % that are unemployed, and % of households containing lone parents (Department of Health 2011, Kharicha et al. 2007).

face when living alone (Iliffe et al. 1992). This is not to say that there are no differences between older adults living alone and those living with others. Older adults living with others are generally found to have better health, but with varying degrees of support, many older adults can successfully live alone in their own homes (Gustavson and Lee 2004).

Multiple studies have found that older adults living alone suffer from poorer self-rated health, a greater number of chronic conditions, have a greater risk of disabilities, and a higher mortality rate as compared with older adults living with others (Kandler et al. 2007, Kharicha et al. 2007, McCann, Donnelly, and O'Reilly 2011, Sun et al. 2007). The Northern Ireland Longitudinal Study (n = 51,619) found that older adults living alone were more likely to have a limiting long-term illness (LLTI) than those living with a partner (McCann, Donnelly, and O'Reilly 2011). More specifically, older adults living alone following a divorce had a greater risk of a LLTI than those living alone following the death of a spouse (McCann, Donnelly, and O'Reilly 2011).

The Kungsholmen project, a longitudinal study in Sweden (n = 1,203), found that older adults who lived alone were at a greater risk of dementia, the most common mental disorder among older adults (Fratiglioni et al. 2000). Even after adjusting for socio-demographic variables, including age, those living alone faced twice the risk of dementia as those living with others; the absence of a satisfying social network further increased their risk of the disease (Table 2.1) (Fratiglioni et al. 2000).

Table 2.1: The risk of dementia in the Kungsholmen project in Sweden, 1990 (n = 1,203)

Level of social contact*	**Risk of Dementia** (per 1000 person years)
High - Three measures	19
Moderate – Two measures	49.5
Limited – One measure	69.4
Poor – No measures	156.9

*Measures of social contacts: living with a partner; children with frequent contact; relatives/friends with frequent contact (Fratiglioni et al. 2000)

Older adults living alone have been found to have a greater risk of difficulties with instrumental activities of daily living (IADLs), more injuries from falls, increased social isolation, and an absence of tangible support (Kharicha et al. 2007, Yeh and Lo 2004). These older adults, particularly the oldest-old (85 and older), are more likely to require formal and informal health and home care (Eshbaugh 2008, Lydon and Ragan 2013, McCann, Donnelly, and O'Reilly 2011), yet they are also more likely to forego physician visits (Kharicha et al. 2007). Additionally, it was found that older adults living alone were less likely to comply with preventive care measures[8] than those living with a partner (Lau and Kirby 2009). It is theorized that these older adults are less likely to utilize health care because poor functionality and mobility may limit access to services and because they may lack the social support necessary to engage in healthy behaviors (Kharicha et al. 2007, Mahoney et al. 2000, Nihtilä and Martikainen 2008).

The rate of institutionalization, either short term or long term nursing home or rehabilitation center, is considerably higher for older adults living alone, particularly among the frail elderly (Gaugler et al. 2007, Grundy 1999, Gustavson and Lee 2004, Martikainen et al. 2009, McCann, Donnelly, and O'Reilly 2011). This was found to be

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[8] Preventive care measures for older adults include screening tests for many forms of cancers and cardiovascular system diseases, counseling, and preventive medications (Lau and Kirby 2009).

significant even after controlling for baseline health and socio-demographic factors. (Nihtilä and Martikainen 2008). In a longitudinal study sponsored by the National Institute on Aging (n = 5,980), it was found that older adults who live alone are 41 per cent more likely to be admitted to a long term nursing home, and over a shorter period of time, than older adults living with others (Cai, Salmon, and Rodgers 2009). Particularly within the first month following a hospital discharge (Mahoney et al. 2000). Older adults living alone with a recent hospital discharge were found to be more functional pre- and post-hospital discharge but had a lower rate of improvement in activities of daily living (ADLs) in the month post-hospitalization (Mahoney et al. 2000). The older adults that were living alone but had increased external social support were more likely to show improved function, but were also more likely to be institutionalized (Mahoney et al. 2000). It is suggested that either the need to be institutionalized was recognized by those providing support or those patients who required institutionalized care were more likely to be receiving external support at home (Mahoney et al. 2000).

Many studies have found that older adults who live alone are significantly more likely to experience social isolation, loneliness, or both[9] (Lim and Kua 2011, Sun et al. 2007, Victor et al. 2000), to the extent that living alone has been used as a proxy for both

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[9] Social isolation and loneliness refer to two different phenomena: Social isolation is a lack of the quality and/or quantity of social contacts while loneliness is the emotional response to an absence of desired social networks, relationships, and community interactions (Cloutier-Fisher, Kobayashi, and Smith 2011, Tomaka, Thompson, and Palacios 2006, Victor 2006). Social isolation and loneliness are frequently examined and discussed jointly but the two can be mutually exclusive. (Cloutier-Fisher, Kobayashi, and Smith 2011, de Jong Gierveld, Van Tilburg, and Dykstra 2006, Victor et al. 2000).

social isolation and loneliness (Kandler et al. 2007, Lim and Kua 2011). However, the opposite has been found to be true as well, older adults living alone are not by default socially isolated nor are they necessarily lonely (Holt-Lunstad, Smith, and Layton 2010, Lim and Kua 2011, Stone, Evandrou, and Falkingham 2013). In fact, some researchers argue that living alone may actually have a therapeutic effect for many older adults (Eshbaugh 2008, Yeh and Lo 2004).

Differences that may account for the discrepancies between studies are the level of social support received, including filial relationships, health status, and the subjectivity of social isolation and loneliness. Older adults living alone are less likely to feel socially isolated or lonely when they receive social support or feel their children are living up to their filial responsibilities, regardless of the frequency of visits (Lim and Kua 2011, Yeh and Lo 2004). Additionally, older adults with a stronger health status have the functional capacity to participate within a social network and are thus better socially integrated (Holt-Lunstad, Smith, and Layton 2010, Yeh and Lo 2004). Lastly, social isolation and loneliness are both subjective states of being, neither of which have a standardized definition (Victor et al. 2000). Subsequently, it is possible to live alone with no feelings of isolation or loneliness, just as it is possible to live in a large household and feel completely isolated and lonely (Holt-Lunstad, Smith, and Layton 2010, Iliffe et al. 1992, Victor et al. 2000).

Loneliness, which may or may not be a consequence of social isolation, has been found to have significant impacts on health (Luanaigh and Lawlor 2008, Yeh and Lo 2004). Loneliness in older adults has been associated with depression, high blood pressure, insomnia, stress, and cognitive decline (Luanaigh and Lawlor 2008). Unfortunately, self-reported measures of loneliness may be underrepresented because of the stigma associated with being lonely (Victor et al. 2000). Consequently, loneliness and appropriate intervention strategies[10] may be overlooked when treating older adults with ill-health. A further limitation is the failure to look at loneliness from a life course perspective. Distinguishing between people who have always been lonely, as opposed to those who became lonely later in life, would provide an important perspective on older adults living alone (Victor et al. 2000).

The 1995 Chicago heat wave exemplifies the degree to which some older adults who live alone lack social support by the surprising number of people who died alone, many bodies were not found or claimed for weeks, and in some cases, never claimed or identified (Klinenberg 2001). However, these cases are not unusual, every year, approximately 3.2 per cent of older adults are found helpless or dead alone in their homes (Eshbaugh 2008). The majority of these older adults are unmarried women who

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[10] Intervention strategies for loneliness in the past have included increasing social support and psychotherapy approaches that target social loneliness (Luanaigh and Lawlor 2008). Luanaigh and Lawlor (2008) argue that more research should be directed at emotional loneliness as well as social loneliness and suggest testing the effectiveness of novel interventions that include the use of visual communication and media devices.

live alone and die suddenly (Seale 1995). Common reasons for being “found down” include falls, stroke, heart disease, dehydration, hypothermia, failure to thrive, and suicide (Adams and Johnson 2008, Gurley et al. 1996, Yeh and Lo 2004); it is generally uncommon for older adults to die alone who have been suffering from a long-term illness such as cancer (Seale 1995).

Most people who die alone are found within a day or two, though finding someone after a week occurs relatively frequently (Adams and Johnson 2008, Gurley et al. 1996). Extreme examples of people dying alone and not found for many years are surprisingly not uncommon. Two such examples occurred in Britain when one older man had been found dead after three years in 1994 and another after six in 2004 (Adams and Johnson 2008). It is usually these types of deaths that make media headlines and spark investigations into social conditions (Adams and Johnson 2008, Klinenberg 2001).

In a twelve week period in San Francisco in 1993, 387 calls were made to emergency services for a person living alone that was found down in their home (Gurley et al. 1996, Klinenberg 2001). Approximately 70 per cent of these calls were older adults, the majority of whom were women; 25 per cent of them were found dead (Gurley et al. 1996, Klinenberg 2001). Similar stories abound from multiple studies dating back to the 1960s. In York, 203 people were found dead in their homes between 1960 and 1977, again 70 per cent were older adults and the majority were women, and

94 per cent of them lived alone (Adams and Johnson 2008). In London, 647 older adults were found dead between 1995 and 1996 (Adams and Johnson 2008).

In most cases the helpless or dead were found by non-family members: housekeepers, home health aides, nurses, caretakers, or neighbors (Gurley et al. 1996). Gurley et al. (1996) found that as few as 11 per cent of found down victims were discovered by family members and only a small percentage had contact information for family members within the emergency medical system records. It is likely that many older adults who are found down after a long period of time were socially isolated with little to no social support (Adams and Johnson 2008, Seale 1995).

2.4 The Role of Social Support among Older Adults Living Alone

Older adults who live alone and who are dependent on others for activities of daily living are more likely to receive support from family (Victor et al. 2000). However, friends, particularly a confidant, have been found to provide a greater degree of emotional support and social integration, the types of support found to be some of the strongest predictors of survival among older adults (Hanson et al. 1989, Sabin 1993, Seeman and Berkman 1988). Women are more likely to receive protective benefits against ill-health and mortality from close friendship and social participation and men benefit more from the social support they receive from a partner (Holt-Lunstad, Smith, and Layton 2010, House, Landis, and Umberson 1988). This is likely due to the fact that women have traditionally filled the role of caregivers, they have had more experience and are more emotionally and mentally prepared to provide care (Yeh and Lo 2004).

Studies exploring the social experience of older adults found that as many as 40 per cent of older adults living alone had difficulties maintaining regular social contacts (Birkeland and Natvig 2009). Two factors that contribute to these difficulties are health status and the loss of family and friends (Birkeland and Natvig 2009, Victor et al. 2000). As discussed previously, older adults living alone with low functional status and poor health are often physically unable to participate with their social networks and subsequently lose those contacts. Additionally, older adults commonly experience the loss of older family members and friends resulting in a dwindling social network (Lin, Yen, and Fetzer 2008).

Older adults view living alone very differently from one another; some see it as a negative experience while others find it very gratifying (Eshbaugh 2008, Klinenberg 2012). A primary difference is health status (Gustavson and Lee 2004, Lin, Yen, and Fetzer 2008). As people age they have a greater risk of chronic conditions and age associated degenerative diseases (Denton and Spencer 2010) that can lead to a disruption of daily living (Cai, Salmon, and Rodgers 2009, Hellström, Persson, and Hallberg 2004). Older adults who enjoy good health, however, are able to live alone while being socially connected, independent, and generally have a high quality of life (QOL) (Klinenberg 2012). Older adults who are frail have an increased risk of disability, hospitalization, and dependency on others for their ADLs and IADLs that make living alone challenging (Gustavson and Lee 2004, Hellström, Persson, and Hallberg 2004). An absence of social support among these older adults can further result in the loss of functionality, loneliness, and depression, the strongest predictors of a low QOL among the elderly (Hellström, Persson, and Hallberg 2004). However, among frail seniors in the general population, nearly half were found to be living alone with a greater sense of well-being and a better functional status than frail elderly living with others (Gustavson and Lee 2004). In fact, many older adults have been found to be increasingly depressed and with a decreased QOL when they were *unable* to live alone, particularly as they became increasingly dependent on others (Gustavson and Lee 2004, Hellström, Persson, and Hallberg 2004). Alternatively, older adults who received assistance but were able to live alone were found to have a significant association with a high QOL (Hellström, Persson, and Hallberg 2004). It may be that the feeling of independence gained from living alone has a beneficial effect on the mental health of older adults that is more impactful than their frail health status on their overall well-being (Birkeland and Natvig 2009).

Good social networks and social support are important in supporting health and preventing poor health from escalating. As seen in the Kungsholmen study, the increased risk of dementia with decreasing levels of social contacts is striking. Fortunately, not all older adults living alone have poor social support, many have been found to have a greater frequency of social contacts than older adults living with others (Lim and Kua 2011). Many of these older adults find the social relationships they maintain significantly improves their QOL and allows them to lead a fulfilling and independent lifestyle (Klinenberg 2012). However, even healthy adults who live alone can be at risk in the event of ill-health or functional decline, but particularly those who lack social support as well.

2.5 Social Support and Mortality

Multiple studies over the past four decades, including large prospective studies such as Whitehall II in England and GAZEL in France, have found a significant association between low social support and mortality (Berkman et al. 2004, Holt-Lunstad, Smith, and Layton 2010, House, Landis, and Umberson 1988, Stringhini et al. 2012). According to a meta-analysis by Holt-Lunstad, Smith, and Layton (2010), having adequate social relationships, those which embed us in social networks, can increase the likelihood of survival by 50 per cent as compared against individuals with poor relationships. This has been found to be consistent across a broad spectrum of diseases and causes of death (Berkman 2000). House, Landis, and Umberson (1988), following their review of early prospective social support and mortality research, suggest that the risk to health posed by a lack of social relationships is comparable to known risk factors such as obesity, high blood pressure, physical inactivity, and smoking.

The concept 'social support' is typically operationalized into two categories: functional and structural support (Table 2.2). Functional support refers to the quality of social relationships and can include the presence of a confidant, emotional support, and/or tangible support. Emotional support is cemented by close relationships with a person or persons with whom an individual can confide, share interests, and boost self-esteem, while tangible support is characterized by a person or persons who perform practical functions such as help in the home, financial assistance, or the provision of information (Seeman 1996, Stringhini et al. 2012). Structural support refers to the quantity or frequency of social relationships within a social network and typically includes such operational variables as marital status, the quantity of family and friends, and/or the frequency of visitations. Structural support can also include the degree of social integration within the community, either social or religious (Seeman 1996, Stringhini et al. 2012).

Table 2.2: Primary categories of social support

Functional Support	**Structural Support**
Confiding (presence of a confidant)	Marital status (cohabitation, living arrangement)
Emotional (share interests, boosts self-esteem)	Contacts (number of contacts, frequency of visits)
Tangible (instrumental, practical support)	Participation (social or religious integration)

Early research on the relationship between social support and health in the late 1960s and 1970s was based on retrospective and cross-sectional studies and used measures of network size as a proxy for support (House, Landis, and Umberson 1988, Seeman and Berkman 1988). Findings from studies in the 1970s and 1980s repeatedly found that a lack of quantifiable social connections were predictive of premature mortality from all causes (Berkman et al. 2000). Later research, in light of findings that network size is not always indicative of support and can in fact be a source of negative aspects of relationships, particularly among the elderly[11] (Seeman and Berkman 1988), expanded social support measures to include qualitative measures such as perception of support and perception of loneliness (Berkman et al. 2000, Holt-Lunstad, Smith, and Layton 2010). Later research included longitudinal studies allowing for a determination of whether social support existed prior to illness and whether it was likely causally implicated in disease and mortality (House, Landis, and Umberson 1988). A review of five prospective studies by House, Landis, and Umberson (1988) determined that there is significant evidence to suggest that a lack of social relationships poses a major risk for mortality. Social relationships in these studies consisted of varying measures of marriage, contact with family and friends, and participation in social groups.

Being married has been found to be one of the strongest social support predictors of survival, particularly among men (Berkman et al. 2004, Johnson et al. 2000, Scafato et al. 2008, Stringhini et al. 2012, Williams and Umberson 2004). The marital resource model and the crisis model have been theorized to explain the effect of marital status on health. The marital resource model suggests that being married bestows better health as

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[11] Early social support studies used social network size as a proxy for support, however, later studies suggest that this may also be a source of strain and/or high demands. Among the elderly, a large network size that includes peers may include individuals with disabilities and contacts in need of social support themselves (Seeman and Berkman 1988).

compared to individuals never married, divorced, or widowed due to shared economic resources, increased support, and a positive influence on health behaviors (Williams and Umberson 2004). The crisis model suggests that the dissolution of marriage or the death of a spouse adversely affects health (Williams and Umberson 2004). Williams and Umberson (2004), following their longitudinal study from the Americans' Changing Lives survey, suggest that the crisis model exerts a stronger influence over health, with men demonstrating greater health benefits during marriage but also suffering from greater health disparities in response to short-term stressors following the dissolution of marriage or the death of a spouse. This has been particularly evident among older adults (Uchino 2004, Uchino, Cacioppo, and Kiecolt-Glaser 1996).

Older men have been found to be particularly susceptible to a health decline and increased mortality risk following the loss of a spouse, either through divorce or widowhood (Johnson et al. 2000, Williams and Umberson 2004). Conversely, the protective effect of being married has been found to decrease with age (Johnson et al. 2000). It is theorized that marital status no longer becomes a major predictor of mortality risk with age because the loss of a spouse becomes more expected as people get older and they may be more prepared for this event (Penninx et al. 1997, Sabin 1993, Seeman et al. 1987). This is not to suggest that older adults do not derive health benefits from marriage (Williams and Umberson 2004); a systematic review and meta-analysis examining marital status and mortality among the elderly found married individuals in

North America and Europe to have a lower relative risk of mortality than their non-married counterparts (Manzoli et al. 2007).

Being married generally means more shared economic resources, subsequently it is not surprising that those with a higher SES are more likely to be married, they are also more likely to have more friends, increased levels of social support (Stringhini et al. 2012), and greater social integration and community involvement (House, Umberson, and Landis 1988). Stringhini et al. (2012) found that men in higher occupational positions consistently had increased levels of support across both structural and functional measures of support as compared to men in intermediate and low occupational positions. These findings also showed that that the level of social support for men was graded by levels of social position such that each increasing level was associated with higher levels of reported support. Women, on the other hand had greater functional support among low occupational levels, and women in higher occupational positions were less likely to be married but more likely to have a larger social network as compared to women in low occupational positions (Stringhini et al. 2012).

On the opposite end of the spectrum, the negative aspects of social relationships, such as social conflicts, hostility, and unwanted demands, as well as social stressors, such as overcrowded housing, crime, and low perceived social support, are highly correlated with low SES (Taylor and Seeman 1999). The positive benefits of having social support, (i.e. having someone that cares for you, bolstering self-esteem, and the provision of tangible support) are thought to mitigate the impact of low SES on poor health outcomes (Taylor and Seeman 1999).

Academic research on social support-health relationships has seen an increase in sophistication over time in terms of use of longitudinal study designs and the incorporation of multidimensional scales to operationalize social support. Along with this sophistication, however, has come a fair degree of conceptual and operational messiness: terminology and concepts such as 'social support', 'social networks', and 'social integration' are often used interchangeably with the common goal of deciphering the association between social relationships and health (Berkman et al. 2000, House, Umberson, and Landis 1988). Furthermore, Holt-Lunstad, Smith, and Layton (2010) make the point that the literature on social relationships and mortality does not consist of easily comparable data; measures of social support are not standardized, the literature is "unwieldy", and confounding variables are inconsistent.

The unwieldy nature of social support and health literature notwithstanding, several researchers have put forth two primary causal mechanisms relating social support and mortality. First, social support may act as a stress buffer having a direct influence on immune, neuroendocrine, and cardiovascular systems (Holt-Lunstad, Smith, and Layton 2010, House, Landis, and Umberson 1988, Uchino 2006). Epidemiological evidence for this has been focused primarily on cardiovascular and immune functions, linking the role of increased social support to lower blood pressure, lower rates of atherosclerosis, and a slower progression of cardiovascular diseases, as well as the increased activity of natural killer cells that play an important role in fighting cancer cells (Uchino 2006). Additionally, social support has been linked to activity within the hypothalamic-pituitary-adrenal and sympathetic nervous system, and a reduced risk in the decline of immune regulating helper T cells in HIV positive men (Taylor and Seeman 1999). Second, the main effects model suggests that having social relationships or a positive environment encourages healthy behaviors, including improved physical activity and diet, smoking cessation, and medical treatment compliance (Berkman et al. 2000, Holt-Lunstad, Smith, and Layton 2010, Uchino 2006). It has also been theorized that the main effects model strengthens self-esteem by fostering a sense of belonging and security (Lyyra and Heikkinen 2006).

It is likely that the causal mechanism linking social support and health is not an 'either' 'or' process, but rather the effect of the stress buffer and main effects models working concurrently, forming a complex pathway (Figure 2.3) (Uchino 2004). In this pathway social support influences, and is influenced by, behavioral and psychological processes (which are themselves linked), which in turn can impact physiological processes (Berkman et al. 2000, Uchino 2006, 2004). A lack of social support can lead to depression and/or other detrimental psychological states which may lead to harmful effects on the body's biological systems (Berkman et al. 2000, Holt-Lunstad, Smith, and

Layton 2010, Uchino 2006, 2004). This process is also cyclical, the morbidity that can occur from the harmful effects on the body can in turn influence the level of support received; in other words, a person who is too ill to engage in their social network will subsequently have reduced social support (Uchino 2006, 2004). Additionally, social support and social networks can influence health behaviors and medical treatment compliance, which in turn can influence physiological systems (Berkman et al. 2000, Holt-Lunstad, Smith, and Layton 2010, Uchino 2006, 2004).

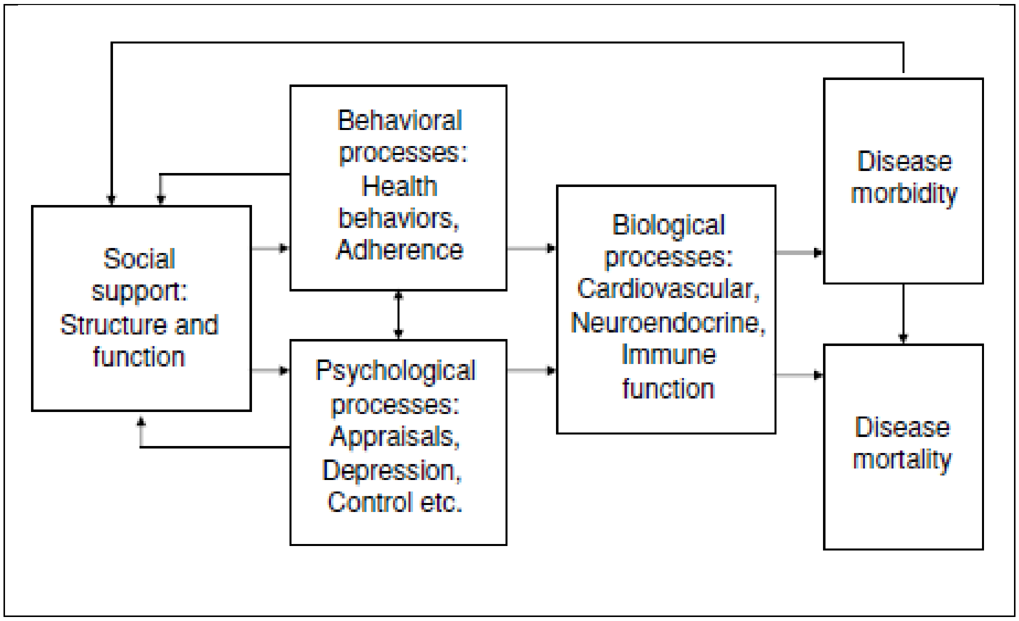

Figure 2.3: Theoretical pathway demonstrating two causal mechanisms of social support influences on and by health (Uchino 2006, 2004)

This idea that the mechanism by which social support is related to mortality is a combination of the stress buffer model working concurrently with a main effects model is supported by the upstream and downstream factors outlined by Berkman et al. (2000) (Figure 2.4). They argue that social-structural conditions that include culture,

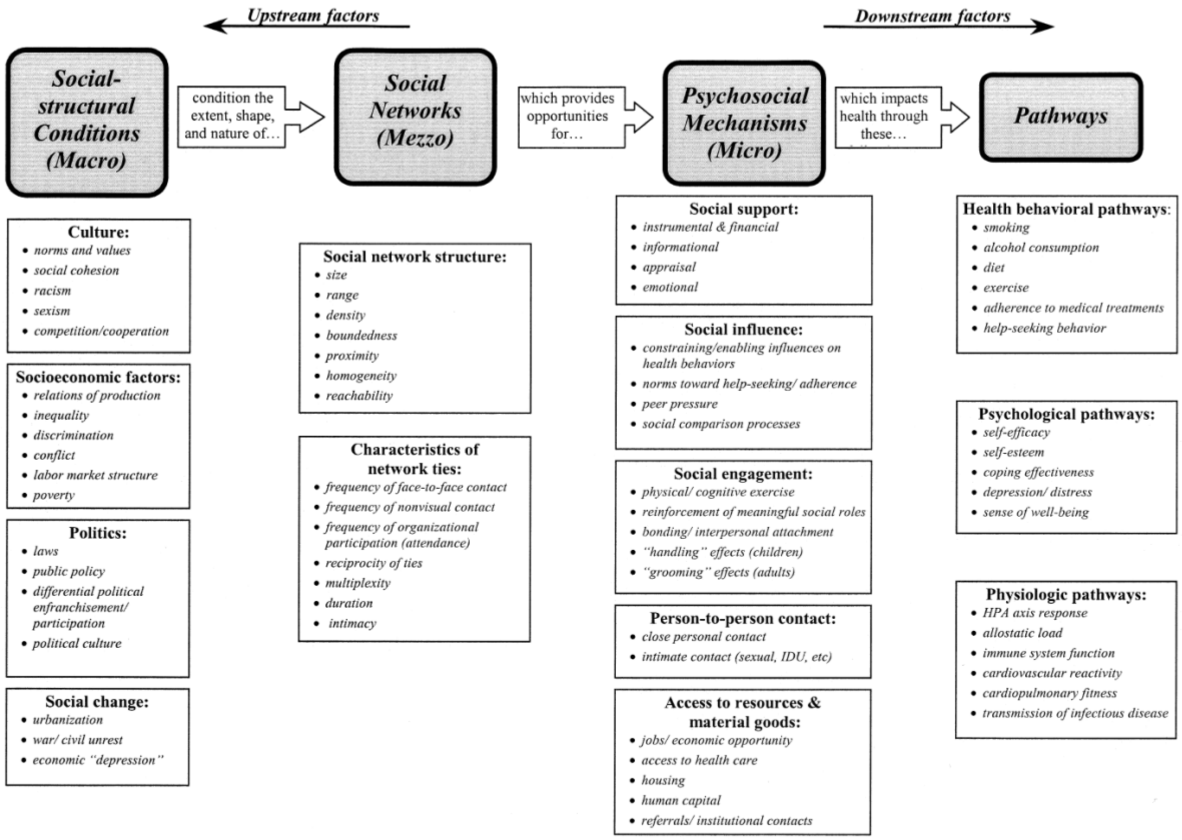

Figure 2.4: Upstream and downstream factors influencing pathways affecting health (Berkman et al. 2000)

socioeconomic factors, politics, and social change shape our social networks, including structures and characteristics. These in turn provide opportunities for social support, social influence, social engagement, person-to-person contact, and access to resources and material goods. These psychosocial mechanisms then influence health through three pathways: 1. behavioral pathways such as smoking, diet, and exercise; 2. psychological pathways such as self-esteem, coping effectiveness, and sense of well-being; and 3. physiological pathways such as allostatic load[12], immune system function, and cardiopulmonary fitness (Berkman et al. 2000).

Urban versus Rural Communities

In the early prospective social support studies (Alameda, Tecumsah, Evans, Georgia, and Gothenburg), the association between social support and mortality was stronger among urban dwellers and showed a distinctive weakening effect in rural communities, particularly among women (House, Umberson, and Landis 1988). Generally speaking, rural residents are more likely to have lower income and educational attainment, both of which increase the risk of poor health, as well as higher rates of smoking, obesity, and sedentarism (Arcury et al. 2005, Wanless, Mitchell, and Wister 2010). It is therefore not surprising that rural regions have been found to have poorer self-rated health than residents in urban centers. Additionally, rural communities have fewer clinics, hospitals, and doctors than those in urban settings, subsequently creating more difficulties accessing health care, particularly those who live in isolated regions (Arcury et al. 2005). However, rural communities have also been found to have greater social and community support, a stronger sense of belonging, and a stronger perception of the availability of social support than their urban counterparts, which could be expected to result in improved health outcomes but does not appear to do so (Kitchen, Williams, and Chowhan 2012, Ross 2002, Wanless, Mitchell, and Wister

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[12] Allostatic load is the 'wear and tear' on our bodies as a result of activity across multiple physiological systems in response to an environment perceived as stressful (McEwen 2000).

2010). The weakening effect of social support on health status in rural regions as described by House, Umberson, and Landis (1988) could account for this discrepancy, allowing other social determinants of health, as well as fewer resources and difficulties accessing health care, to exert a stronger force on health outcomes.

Wanless, Mitchell, and Wister (2010) suggest that a very weak sense of belonging is a good predictor of overall health and myriad chronic conditions among older urban women but does not appear to be as predictive among rural women. Although findings suggest that rural populations have a higher rate of chronic diseases than urban populations, older rural women reporting a very weak sense of belonging were only found to have an increased risk of heart disease. The shared risk of multiple chronic diseases, with the exception of heart disease, among rural women with either very weak or very strong sense of belonging further demonstrates the weakening association between social support and health in rural areas (Wanless, Mitchell, and Wister 2010).

Living alone has been found to be a predictor of social isolation among older adults in both urban and rural regions, but was only found to predict loneliness among older rural residents (Havens et al. 2004). As discussed previously, social isolation and loneliness have both been found to be predictors, as well as consequences, of poor health (Havens et al. 2004, Luanaigh and Lawlor 2008). Subsequently, in light of the preponderance of older adults living alone and without social support, it is becoming more important to understand the ways in which living alone may affect health outcomes among older Canadians, whether urban or rural.

Why Social Support Influences Mortality: Meaningful Measures in Older Populations

There have been several important longitudinal studies in recent years relating social support to health outcomes in older populations. In order to get a sense of the findings of this body of work, 15 studies (Table 2.3) which include both quantitative and qualitative measures of social support were retrieved and examined systematically in the manner of a systematic realist review – one that takes a systematic and reproducible search approach to address a specific question. A realist philosophical approach is appropriate when there is a desire to understand not only how many times social support has been linked to mortality, but for whom and why. Taking a detailed look at these 15 studies not only provided a better understanding of why social support influences mortality among older adults, but it also substantiated the adoption of specific "right hand side" variables in both the mortality and hospital utilization analyses in this research. Recall that there is a general concern in social support-health studies, including the 15 that were examined, about the adoption of differing support constructs and operationalizing these constructs in different ways (Holt-Lunstad, Smith, and Layton 2010). This conceptual 'slipperiness' in the construct of social support makes a meta-analysis (a direct analysis of pooled samples) invalid. This systematic look provides a starting point from which to better understand which measures of social support are most meaningful for older adults.

Table 2.3: Articles retrieved and examined systematically

Author(s) (Date)	Title	Source
Avlund, Damsgaard, and Holstein (1998)	Social relations and mortality. An eleven year follow-up study of 70-year-old men and women in Denmark.	Social Science and Medicine, 47(5): 635-643
Becofsky et al. (2015)	Influence of the Source of Social Support and Size of Social Network on All-Cause Mortality	Mayo Clinic Proceedings, 90(7): 895-902
Ellwardt et al. (2015)	Personal networks and mortality risk in older adults: A twenty-year longitudinal study	PLoS 1, 10(3): e0116731
Forster and Stoller (1992)	The Impact of Social Support on Mortality: A Seven-Year Follow-Up of Older Men and Women	Journal of Applied Gerontology, 11(2): 173-186
Hanson et al. (1989)	Social network and social support influence mortality in elderly men. The prospective population study of 'men born in 1914', Malmo, Sweden	American Journal of Epidemiology, 130(1): 100-110
Jylhä and Aro (1989)	Social Ties and Survival Among the Elderly in Tampere, Finland	International Journal of Epidemiology, 18(1): 158-164
Ljungquist, Berg, and Steen (1995)	Prediction Of Survival In 70-Year Olds	Archives of Gerontology and Geriatrics, 20: 295-307
Lyyra and Heikkinen (2006)	Perceived social support and mortality in older people	Journal of Gerontology, 61B(3): 5147-5152
Olsen et al. (1991)	Social Networks and Longevity. A 14 Year Follow-Up Study Among Elderly in Denmark	Social Science and Medicine, 33(10): 1189-1195
Penninx et al. (1997)	Effects of social support and personal coping resources on mortality in older age: The longitudinal aging study Amsterdam	American Journal of Epidemiology, 146(6): 510-519
Rodriguez-Laso, Zunzunegui, and Otero (2007)	The effect of social relationships on survival in elderly residents of a Southern European community: a cohort study.	BMC Geriatrics, 7(19): 1-12
Rosengren, Wilthelmsen, and Orth-Gomer (2004)	Coronary disease in relation to social support and social class in Swedish men - A 15 year follow-up in the study of men born in 1933.	European Heart Journal, 25: 56-63
Sabin (1993)	Social Relationships And Mortality Among The Elderly	Journal of Applied Gerontology, 12(1): 44-60
Stringhini et al. (2012)	Socioeconomic status, structural and functional measures of social support, and mortality: The British Whitehall II Cohort Study, 1985-2009.	American Journal of Epidemiology, 175(12): 1275-1283
Wilkins (2003)	Social support and mortality in seniors.	Health Reports, 14(3): 1-14

The balance of evidence from 15 longitudinal studies examining the relationship between social support and mortality suggests that increased emotional support and social integration are the measures of support that are most meaningful in terms of providing a protective effect against premature mortality among older adults. Tangible support was also found to be a meaningful measure among older adults, however, *increased* tangible support was more likely to be associated with an *increased* risk of mortality. The presence of large social networks, the most common measure of support in these 15 studies, as well as social support research since the 1970s, showed no significant association with mortality. Marital status was found to have a protective effect for older adults in one of four studies and living alone was found to have a detrimental effect in two out of five studies. Three studies found no significant associations with mortality.

Among the functional social support measures, tangible and emotional support appear to be the most closely associated with mortality outcomes, but not necessarily in the directions hypothesized. The increased risk of premature mortality that was associated with increased tangible support may be due to the need of assistance when older adults experience functional decline, poor health, or disability. This result supports the idea in the literature that increased tangible support does not confer a protective effect but rather suggests it is in response to more complex health-related needs (Kaplan et al. 1994, Penninx et al. 1997, Sabin 1993, Uchino 2009). Among the studies examined, Avlund, Damsgaard, and Holstein (1998) were the only ones to find that mortality risk decreased as tangible support increased, however it was among women with good functional ability, suggesting the help they received was not due to functional decline or poor health.

The majority of studies using emotional support found significant associations with a decreased risk of mortality as emotional support increased, especially among older adults. Among these, Hanson et al. (1989) suggest that being unmarried but with strong emotional support confers protection equal to those who are married, and Penninx et al. (1997) found that low emotional support was found to increase the likelihood of death by as much as three times in myocardial infarction patients. Additionally, the presence of a confidant, a facet of emotional support, was found to reduce the risk of mortality by 25 per cent (Rodriguez-Laso, Zunzunegui, and Otero 2007).

Functional measures of support may be better indicators for health outcomes than measures of structural support (Penninx et al. 1997, Seeman 1996, Stringhini et al. 2012). In the studies examined, 45 per cent of structural support measures had significant results in the hypothesized direction, as opposed to 63 per cent of functional support measures. Measures of social network size, a structural measure of support, were not consistently related to mortality, with significant results in only three out of 12 studies. The size of social networks was one of the earliest social support measures adopted and remains in high use today, however, previous research has found inconsistencies with measures of social network and mortality (Rosengren, Wilthelmsen, and Orth-Gomer 2004). Social networks in social support research have not been standardized and do not always include the same measures.

Marital status, a structural support measure that has enjoyed robust results over the past five decades, was surprisingly inconsistent in this review. Two out of four studies that used marital status had significant results, but one of these had a mean age of 45 (Stringhini et al. 2012). It has been suggested that older adults do not enjoy the protection of marriage as much as their younger counterparts (Penninx et al. 1997, Seeman et al. 1987). Recall that the protective effects of marriage have been found to decrease with age, but do not disappear altogether (Johnson et al. 2000). As discussed previously, it has been theorized that the protective effect of living with a spouse diminishes with age because the loss of a spouse is more expected as people age and older adults may be more prepared for this event (Penninx et al. 1997, Sabin 1993, Seeman et al. 1987).

The only structural support measure that appears to be meaningful is social integration, with five out of the seven studies that used this measure finding significant results, and four of them with samples that have a mean age of 65 and older. Social integration is composed of multiple functions that provide social contact and opportunity for participation within a social network and community, and may encourage healthy behaviors (Seeman 1996, Stringhini et al. 2012). In addition to participation in a community or social network, social integration has also been associated with a sense of belonging and well-being that "gives people reasons for living that transcend their individual selves" (Avlund, Damsgaard, and Holstein 1998, 641).

The most surprising outcome from the studies examined was the lack of significant results among older adults who lived alone. As previously discussed, older adults who live alone have been found to have poorer self-rated health, an increased number of chronic conditions and disabilities, and a higher mortality rate (Kandler et al. 2007, Kharicha et al. 2007, McCann, Donnelly, and O'Reilly 2011, Sun et al. 2007). Yet the studies reviewed here did not substantiate previous evidence, rather the majority of studies showed no significant association between living alone and mortality.

Emotional support, tangible support, and social integration are the measures of support that appear to be most meaningful for mortality outcomes among older adults. On the other hand, measures such as marital status, size of social networks, and living alone that were expected to have significant results, are not always associated with mortality. Tangible support, while proving to be a meaningful measure, has an effect in the opposite direction than hypothesized, with the more support received the greater the risk of mortality. Understanding why tangible support may have this effect is a little more intuitive than emotional support and social integration – those in greater need for tangible caregiving are likely already at an increased risk of mortality. Understanding why emotional support and social integration are related to mortality requires greater consideration.

In past research, social integration has been found to be associated with a wide variety of health outcomes, it is suggested that this structural support measure, which is often combined into a summary index of marital status, social contacts, and membership and participation in the community, is protective because it may serve to influence health behaviors (Berkman et al. 2004). Avlund, Damsgaard, and Holstein (1998) suggest that having the opportunity to participate and identify with a community and with a social network provides a reason to live, and further suggest that this type of support can be both "cause and consequence" for a will to live. Emotional support boosts self-esteem and provides feelings of self-worth, value, and usefulness in a family or community, characteristics associated with a feeling of being needed and a sense of belonging (Forster and Stoller 1992, Lyyra and Heikkinen 2006). A sense of belonging, recall, may be a factor in explaining the causal mechanism between social support and mortality; a weak sense of belonging has also been associated with poor self-rated health and negative social support (Kitchen, Williams, and Chowhan 2012, Ross 2002).

The idea that an increased sense of belonging confers protection against premature mortality among older adults may be intricately linked with having a will to live. Persons without self-esteem or a strong sense of self-worth, that feel incapable and useless from a loss of independence, may lose the essential spark that provides a will to live. Having important connections, as represented through emotional support and social integration, may provide a reason to 'get up in the morning' and participate within one's social network or in the community. This idea is bolstered by the association of increased tangible support with increased mortality. According to Krause (1997, 389), "…the inability to care for oneself and that, as a result, fosters a sense of vulnerability, weakness, and personal failure…[the] preference for self-reliance, seeking out and receiving help from others may carry ego-relevant costs". Forster and Stoller (1992, 182) go on to say "People with larger networks and older women who received a broader scope of instrumental [tangible] assistance were less likely to survive irrespective of their level of health." It may be that poor outcomes associated with increased tangible support are not purely influenced by health or poor functionality, but may also be driven by a desire for self-reliance and independence. Independence is of primary importance for many older adults (Birkeland and Natvig 2009, Gustavson and Lee 2004) and when they become reliant on others they may slowly lose their will to live.

Entering into old age, for many individuals, means an increasing loss of social interactions (Cloutier-Fisher, Kobayashi, and Smith 2011). This can stem from the death of a spouse or friends, retirement, and a decreased functional ability to participate within a community. For many, this can result in social isolation and loneliness and can further diminish health status (Luanaigh and Lawlor 2008, Yeh and Lo 2004). The loss of emotional connections and social integration, a lifeline to social networks or the community, may function to sever a sense of belonging and subsequently the somewhat intangible 'will to live'.

Improving emotional support and social integration for older adults may serve to reduce the risk of premature mortality, improve health outcomes, reduce the burden on health care systems, and subsequently increase the overall health of the population. Providing accessible community spaces for intergenerational activities, home care programs, affordable living with easy access to community resources, and programs offering paid time off for care givers are just a few of the strategies that can be instituted into public policy to improve social support among older adults (Rodriguez-Laso, Zunzunegui, and Otero, 2007). Furthermore, integrating older adults into their communities can serve to decrease both social isolation and loneliness and improve the state of their physical and mental health (Cacioppo and Hawkley 2003). However, until researchers have a better understanding of the mechanism(s) of social support, implementing strategies to improve this type of support remains challenging.

Two of the most interesting suppositions to come out of this review are the ideas that a sense of belonging and a will to live may be the mechanisms by which social support confers protection among older adults. These ideas are not common in the epidemiology and public health literature but intuitively resonate as meaningful predictors. In order for future research to build on the idea of a 'will to live' in health research, not only will standardized measures be required, but so will the development of an approach to measure what might be an important latent construct in the social support – mortality relationship.

2.6 Conclusion

The decline of social support and an increase in living alone among older populations, due in part to increased divorce rates, decreased fertility rates, and family fragmentation, may also be contributing to poor health outcomes, an increased use of health care, and increased rates of premature mortality. Social support research that includes functional and structural measures of support suggest positive social support is associated with a 50 per cent increased odds of survival while the absence of social relationships are comparable to risk factors such as obesity, high blood pressure, physical inactivity, and smoking (Holt-Lunstad, Smith, and Layton 2010, House, Landis, and Umberson 1988). These findings have been found to be consistent across a broad spectrum of diseases and causes of death and have a general association affecting all population groups (Berkman 2000, Holt-Lunstad, Smith, and Layton 2010). Low income seniors however, have been found to have the highest rates of low social support as well as the highest rates of poor health (Stringhini et al. 2012). It is this segment of the population that may be in greatest need of mitigating the negative effects of low social support.

Older adults who live alone have an increased risk of isolation, loneliness, physical injuries, multiple morbidities, and premature mortality. Yet despite these risks, older adults, whether never married, divorced, or widowed, prefer to live alone, often finding themselves greatly depressed when they are unable to do so (Birkeland and Natvig 2009, Eshbaugh 2008, Nihtilä and Martikainen 2008). Living alone allows older adults to maintain their independence and a meaningful connection with their past that is beneficial to their mental health (Birkeland and Natvig 2009). The loss of their sense of 'home', as well as their sense of belonging, at this point in their lives becomes critical to their well-being and quality of life (Eshbaugh 2008). Aging is replete with loss: the loss of a career, friends and family, health, and functionality. Home and independence may be some of the last things older adults have that is theirs and it is understandable that they want to hold on to them for as long as possible. "It's clear that for certain people, in certain conditions, living alone can lead to loneliness, unhappiness, sickness, or worse, it's also clear that it need not have such disastrous effects" (Klinenberg 2012, 26). Strong social support is a valuable asset that makes it possible for even highly dependent older adults to live alone.

Chapter Two has situated this research within the context of health geography, particularly highlighting the influence of the social environment and social relationships on health outcomes, the landscape of care, including the web of networks, social spaces, and the spatial paradox, and the urban and rural regional differences. This chapter has provided a detailed literature review on the conceptualization of social support and living alone among older adults, the segment of the population who are increasingly found to have low social support and to be living alone, and the implications these changes have on health outcomes.

Both low social support and living alone among older adults has been found to be predictive of increased mortality and morbidity in past international studies. However, living alone does not always indicate increased risk, there may in fact be protective benefits derived from the independence associated with living alone. Furthermore, by systematically reviewing 15 longitudinal social support and mortality studies, the measures of social support that are most influential on the mortality of older adults are better understood to be emotional support, tangible support, and social integration, important measures of social support used in this research. Additionally, an increased sense of belonging has been identified as conferring protection against premature mortality among older adults and is an important predictor used in this research.

The following methods chapter (Chapter Three) describes each stage of the research process. This chapter identifies and describes the data sources for both mortality and hospital utilization analyses, provides detailed measures of social support, and outlines the statistical methods used in analyses. This chapter also provides the detailed methodology and methods of the online survey.

3. METHODS

3.1 Introduction

This chapter describes the methods adopted to address the thesis objectives. There are two main methodological approaches. The first is quantitative modelling of mortality and hospital utilization outcomes from linked survey and administrative databases which addressed the first two thesis objectives: To understand the influence of low social support and living alone on mortality risk and hospital utilization in Canada. The second methodological approach was an online survey to gain a deeper understanding from health care workers about the effects of a lack of social support for older patients and to elicit solutions to mitigate the negative influence of low or lack of social support, the final thesis objective. In the first part of this chapter I describe data sources used in the analytical modelling activities, followed by a discussion of the development and implementation of the online survey.

3.2 Data Sources for Modelling of Mortality and Hospital Utilization

Survey data from Cycle 1.1 of the Canadian Community Health Survey (n=131,535) were linked with data on hospital admissions in Canada from the Discharge Abstract Database as well as mortality events from the Canadian Mortality Database to form the principal analytical platform of the first two thesis objectives. Linking health surveys with mortality and hospital administrative data is a method of data collection that connects health status and outcomes with lifestyle behaviors and characteristics that allows for detailed analysis (Sanmartin et al. 2016). Data linkages provide many of the benefits of longitudinal studies without the high costs and lengthy follow-up times and can include wider segments of the population. Administrative data, for example, are collected comprehensively on large populations and often includes segments of the population that do not interact directly with health agencies, social services, or educational institutions (Jutte, Roos, and Brownell 2011). Linked data is "an opportunity to create new data from existing sources…[and] allows for a wide range of important and often unique public health investigations" (Jutte, Roos, and Brownell 2011, 92).

The linked data in this thesis are derived from a novel data linkage from three data sources which produced two datasets: the Canadian Community Health Survey (CCHS) linked with the Canadian Mortality Database (CMDB) for mortality analysis, and the CCHS linked with the Discharge Abstract Database (DAD) for hospital utilization analysis (Shah and Manuel 2008). A unique feature of using hospital data for a data linkage in Canada is the universal health care system that allows for a nationwide hospital database, a feature that makes this type of national data linkage impossible in the United States. Data were linked in summer 2014 at Statistics Canada's headquarters in Ottawa using G-Link[13].

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[13] G-Link, or Generalized Link, is a data linkage computer application developed by Statistics Canada that is based on a data linkage algorithm developed by Fellegi and Sunter in 1969 (Chevrette 2015, Sanmartin et al. 2016).

All analyses were conducted under project number 14-HAD-MCG-4064 "Understanding the role of income and social support on health outcomes" at the McGill University site of the Canadian Research Data Centre Network, a secure laboratory which provides access to micro-data holdings of Statistics Canada, Canada's national statistical agency. Statistics Canada has in place a detailed protocol for protection of respondent confidentiality which was followed in these analyses (see http://www.statcan.gc.ca/eng/rdc/mitigation). Kelly Ann Renwick was the principal analyst and became a deemed employee while accessing data, taking an oath to protect respondent confidentiality under the Statistics Act of Canada. These procedures supercede the authority of Research Ethics Boards at Canadian universities and so there is no additional certificate included for the linked survey analyses in this thesis.

These data linkages first involved data preparation followed by a record linkage that included a quality assessment. Data preparation included identifying common identifiers (first and last name, sex, date of birth, and postal code), determining which identifiers were missing, and resolving missing data using the Historical Tax Summary File and a system to identify misspelled names (Sanmartin et al. 2016). The CCHS lacks a common unique identifier with the DAD and the CMDB and were thus linked probabilistically. Probabilistic linkages use common identifiers and rely on the likelihood that linked records belong to the same person (Chevrette 2015, Saidi 2015, Sanmartin et al. 2016). This method of record linkage used six primary steps to link the CCHS with the DAD and the CMDB:

1. Potential pairs were generated by direct mapping using a selection criteria that included a health insurance number, name, sex, date of birth, and postal code (Chevrette 2015, Saidi 2015, Statistics Canada 2014).

2. Rules were applied to each of the selection criteria that included an outcome of a complete match, a partial match (i.e. first initial versus full name, typographical mistakes, or year minus one), or a mismatch (Chevrette 2015, Saidi 2015, Statistics Canada 2014). The probability of having a true pair was associated with each outcome for a set of linked pairs versus a set of non-linked pairs, this provided a probability ratio of having a valid linked pair (Chevrette 2015, Saidi 2015).

3. Pairs were categorized as 'definitive' if they were a good pair, 'possible' if they were to be considered, and 'rejected' if they were not to be considered. Categories were determined by measuring the weight of the outcome probabilities from the selection criteria against the lower and upper thresholds of the distributions between linked and non-linked pairs. Weights below the lower threshold were rejected, weights between the lower and upper thresholds were possibilities to be considered, and weights above the threshold were accepted as definitive (Chevrette 2015, Saidi 2015, Statistics Canada 2014).

4. In order to increase the linkage quality, frequency weights were applied that refined and replaced the selection criteria outcome weights (Saidi 2015, Statistics Canada 2014). This allowed outcome agreements on rare occurrences to carry a greater weight than more common occurrences (Statistics Canada 2014).

5. Groups were formed based on weak and strong links. Weak groups consisted of links that had a possible or definitive status; strong groups were created within weak groups and consisted of links that only had a definitive status (Saidi 2015, Statistics Canada 2014). Creating groups organizes pairs in such a way as to allow for an easier conflict resolution strategy (Chevrette 2015).

6. Data linkage conflicts were resolved by mapping a one-to-multiple records relationship for the DAD (one CCHS respondent was mapped to multiple DAD events) and a one-to-one record relationship for the CMDB (one CCHS respondent was mapped to one CMDB record) (Statistics Canada 2014). Mapping

> record relationships serves to confirm the strongest linked pairs and break linked pairs with conflict (Saidi 2015). Despite resolving data linkage conflicts through mapping, most data linkages can be expected to have either false positive (an incorrect link) or false negative (not linking records that should have been linked) errors. Typically 5 – 10 per cent of data linkages are errors (Saidi 2015). Among the eligible respondents for the CCHS linkages, 0.04 per cent were found to have false positive and 2.43 per cent were found to have false negative (Sanmartin et al. 2016).

External validation in the quality of assessment for the CCHS-CMDB linkage found patterns in mortality in the Canadian population to be consistent with national estimates, suggesting the linkage is a reliable source of data for population level research (Sanmartin et al. 2016). Furthermore, analytical tests of the linkage found an increased mortality hazard ratio among people who smoked, were physically inactive, those with a very low or very high body mass index, and who had reduced servings of fruits or vegetables; this is consistent with international findings (Sanmartin et al. 2016). The primary limitation of the mortality linkage is the "healthy respondent" bias that may arise in the first year of follow-up (Sanmartin et al. 2016). This is due to the low mortality rates in the first year where those who responded to the CCHS may have been healthier than non-responders. Authors recommend excluding at least the first year of mortality follow-up in order to remove potential bias (Sanmartin et al. 2016).

Canadian Community Health Survey

The Canadian Community Health Survey (CCHS) is a cross-sectional health survey conducted by Statistics Canada with the primary objectives of health surveillance and population health research. Data are collected on health status, health care utilization, and determinants of health. The survey was first conducted every two years beginning with cycle 1.1 in 2001 with a desired target of 133,300 observations; in 2007 the sample size was reduced to 65,000 observations and administered annually (Statistics Canada 2007). Observations are assigned proportionally to the square root of estimated populations within a total of 136 health regions from each province and territory (each territory constitutes one health region) across Canada (Statistics Canada 2007). The CCHS includes one member from selected households; it excludes persons under the age of twelve, living in formal institutions, living on Crown lands or Indian reserves, and members of the armed forces. Questionnaires are administered through computer-assisted interviewing (Statistics Canada 2007).

In order to understand the influence of low social support and living alone on premature mortality and hospital burden among older adults I analyzed measures of social support, living alone, and sense of belonging as core predictors from cycle 1.1 (2001) of the CCHS. A sub-sample that included adults 55 and older who responded to the social support module on the CCHS, as well as the covariates selected for analysis, were included in the study[14] (Figure 3.1). The inclusion of social support in the CCHS cycle 1.1 was optional and left to the discretion of provinces and territories (Appendix

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[14] Only respondents who agreed to link and share their information were included in the data linkage (n=117,837). Data were weighted to adjust for respondents who did not agree to the linkage (Sanmartin et al. 2016).

1). Data were stratified into 55 – 64 and 65 and older age groups in order to assess the differences between retirees and those 10 years pre-retirement. Data were also stratified by urban and rural respondents to further compare the differences in respondents in these two regional types. Covariates from the CCHS present in all analyses included age, sex, smoking habits, income, and frailty (Table 3.1). Frailty was determined by an index derived from 29 health deficits on the CCHS (Appendix 2) and provides a score of 0 for the lowest level of frailty and 1 for the highest. Frailty cut points were validated by Statistics Canada using respondents 65 and older from cycles 2.1 (2003) and 3.1 (2005) of the CCHS linked to the DAD (Hoover et al. 2015). Results produced four cut points: non-frail, pre-frail, more-frail, and most-frail (Hoover et al. 2015).

Canadian Mortality Database

The Canadian Mortality Database (CMDB) contains data for death events in Canada from 1950 to present day. The CMDB receives data from provincial and territorial vital statistics registries in Canada with an increase of approximately 216,000 death records added annually (Statistics Canada 2013). The CMDB codes cause of death using the International Classification of Diseases tenth revision (ICD-10)[15].

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[15] The international classification of diseases is a standard of record keeping endorsed by the World Health Organization (WHO) to classify diseases and health problems for health records and death certificates by WHO member states. These compiled morbidity and mortality data are used to follow the incidence and prevalence of world health problems (WHO 2014). ICD-10 includes diagnoses from 1999 to the present.

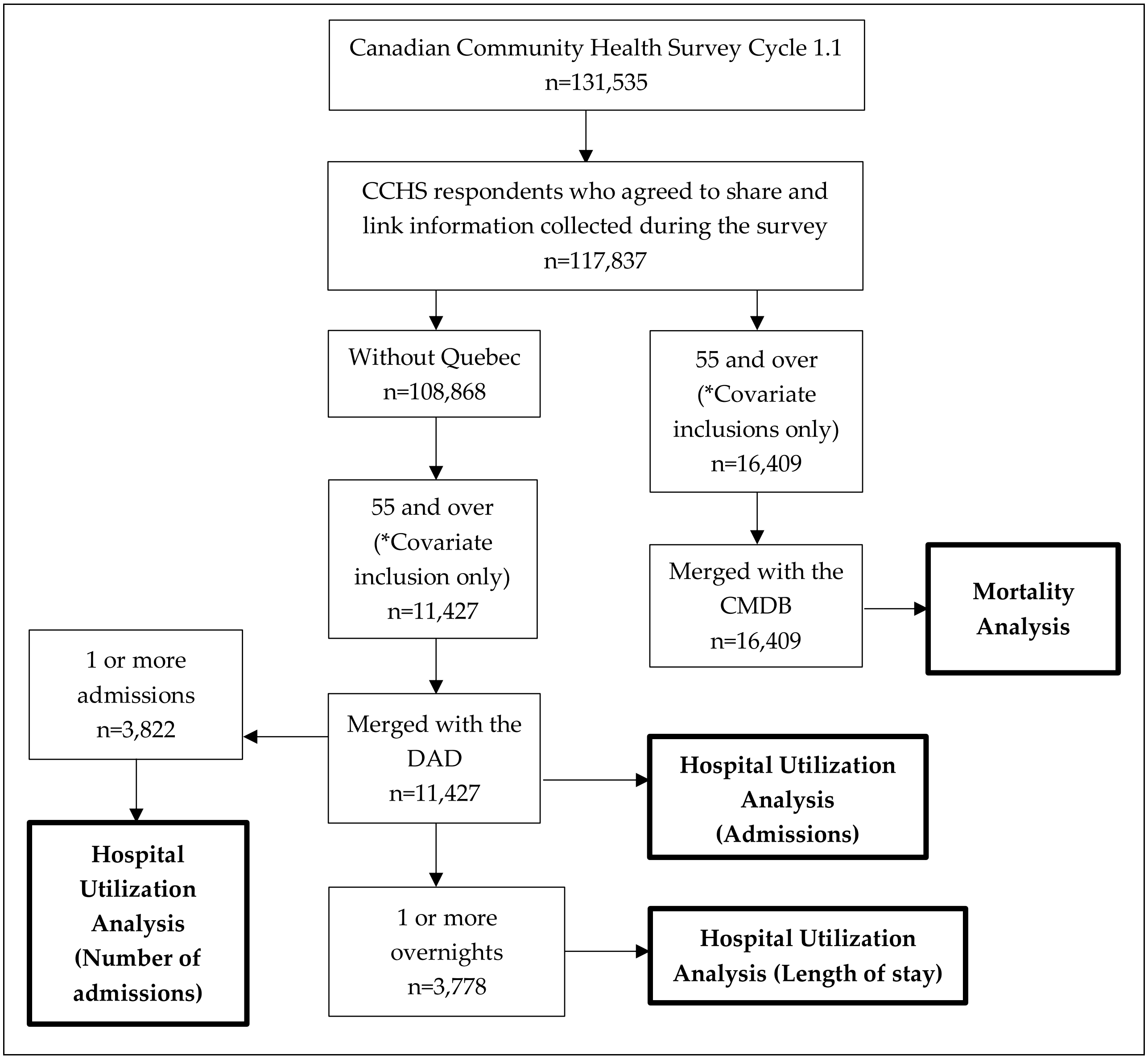

Figure 3.1: Flow diagram of sample inclusion of Canadian Community Health Survey cycle 1.1 respondents. (*Social support, living arrangement, sense of belonging, income, smoking status, and frailty)

Table 3.1: Variables included in mortality and hospital utilization analyses

Variable Type	Variable	Data Source	Dates	Description	Measure
Outcome	Mortality	CMDB	2003 – 2011	Survival analysis	Death event
Outcome	Any hospital admission	DAD	2001 – 2003	Hospital admission	Any hospital admissions (Binary)
Outcome	Total admissions	DAD	2001 – 2003	Episodes of care	Count of hospital admissions
Outcome	Length of stay	DAD	2001 – 2003	Length of stay	Count of nights spent in hospital
Core predictor	Social Support	CCHS	2001	Emotional or Informational support; Affection; Tangible support; Positive social interaction Number of close friends and relatives	Low support vs. Moderate and Highest support 0-3 contacts vs. 4 or more contacts
Core Predictor	Living Alone	CCHS	2001	Living arrangements	Living alone vs. Living with others
Core Predictor	Sense of Belonging	CCHS	2001	Sense of belonging in the community	Weak vs. Strong
Stratification variable	Urban and Rural	CCHS	2001	Geographical area	Urban vs. Rural
Stratification variable	Age	CCHS	2001	2 age groups	55 – 64 vs. 65 and older
Covariate	Age	CCHS	2001	5 year age groups	55-59; 60-64; 65-69; 70-74; 75-79; 80-84; 85+
Covariate	Sex	CCHS	2001	Men; women	Male vs. Female
Covariate	Income	CCHS	2001	Household income based on household size	Low and lowest middle income vs. Middle and high income
Covariate	Smoking	CCHS	2001	Smoking habits	All smokers vs. All non-smokers
Covariate	Frailty index	CCHS	2001	Frailty index derived from 29 deficits	Frail vs. Not frail

Discharge Abstract Database

The Discharge Abstract Database (DAD) is a national database that provides data on administrative, clinical, and demographic information on hospital discharges.

Hospital discharges are defined as deaths, sign-outs, or transfers. The DAD receives more than three million records each year from all acute care facilities in each province except Quebec[16] (CIHI 2013). Data available through the DAD include length of hospital stay, patient demographics, admission and discharge information, patient services during hospital stay, service provider information, and diagnosis, special care, and intervention information (CIHI 2013).

3.3 Operationalizing Social Support

Cycle 1.1 of the CCHS used measures of social support as developed for the Medical Outcomes Study (MOS). The MOS social support survey was developed for a two year longitudinal study designed to look at the care for patients diagnosed with chronic conditions (Sherbourne and Stewart 1991). The social support survey included 19 functional support questions which made up four dimensions of support: emotional or informational support, affection, tangible support, and positive social interactions (Table 3.2) (Sherbourne and Stewart 1991, Statistics Canada 2001). The size of a respondent's social network, a common structural support measure, was also included on the CCHS social support questionnaire.

As discussed previously, measures of support in social support research are not standardized and social support constructs are routinely operationalized differently. Nevertheless, the CCHS does provide strong measures of social support for Canadians,

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[16] The Quebec ministry of health provides discharge data to the Hospital Morbidity Database.

Table 3.2: Measures of social support on cycle 1.1 of the CCHS based on the MOS scale

Each question asks 'How often is each of the following kinds of support available to you if you need it?' with a choice of the following responses: 0 = None of the time; 1 = A little of the time; 2 = Some of the time; 3 = Most of the time; 4 = All of the time

Emotional or informational support Range low to high (0 – 32)	someone you can count on to listen to you when you need to talk?
	someone to give you advice about a crisis?
	someone to give you information in order to help you understand a situation?
	someone to confide in or talk to about yourself or your problems?
	someone whose advice you really want?
	someone to share your most private worries and fears with?
	someone to turn to for suggestions about how to deal with a personal problem?
	someone who understands your problems?
Affection Range low to high (0 – 12)	someone who shows you love and affection?
	someone who hugs you?
	someone to love you and make you feel wanted?
Tangible Support Range low to high (0 – 16)	someone to help you if you were confined to bed?
	someone to take you to the doctor if you needed it?
	someone to prepare your meals if you were unable to do it yourself?
	someone to help with daily chores if you were sick?
Positive social interaction Range low to high (0 – 16)	someone to have a good time with?
	someone to get together with for relaxation?
	someone to do things with to help you get your mind off things?
	someone to do something enjoyable with?
Structural support (not on the MOS social support survey)	*About how many close friends and close relatives do you have, that is, people you feel at ease with and can talk to about what is on your mind?

*A numerical response between 0 and 99 is required and correlates with the size of a social network

particularly older adults. Based on the review of 15 longitudinal studies discussed in Chapter Two, tangible support, emotional support, and social integration appear to be the most meaningful social support-related predictors of mortality among older adults. Tangible and emotional support are both well represented on the CCHS, thus providing appropriate measures of social support for older adults. However, the MOS survey combines emotional and informational support into a single measure that asks respondents about the availability of a confidant as well as the provision of information.

Sherbourne and Stewart (1991) suggest that measures of affection, a behavioral manifestation of love, on the MOS may be more reflective of what is traditionally thought of as emotional support, and the measures of emotional or informational support reflects the availability of supportive communication. This difference in operationalizing emotional support illustrates well the conceptual 'slipperiness' of comparing social support results across studies and must be considered when analyzing results. Social integration, though not explicitly measured on the CCHS, may be characterized by questions about positive social interactions, questions which demonstrate participation within a social network (Sherbourne and Stewart 1991).

Living arrangement was measured on the CCHS with ten possible household configurations that included living alone and some combination of a spouse, parents, children, siblings, or other[17]. For analysis purposes living alone was operationalized as either living alone or living with one or more people. Sense of belonging was measured through the general health module on the CCHS and asks "How would you describe your sense of belonging to your local community?" Possible answers included 'Very strong', 'Strong', 'Weak', and 'Very weak'. For analysis purposes this variable combined

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[17] Measures of living arrangements on the CCHS included: 1. Unattached individual living alone; 2. Unattached individual living with others; 3. Living with spouse/partner; 4. Parent living with spouse/partner, children; 5. Single parent living with children; 6. Child living with single parent; 7. Child living with single parent, siblings; 8. Child living with two parents; 9. Child living with two parents, siblings; 10. Other.

the two ‘Strong’ responses and two ‘Weak’ responses and were used as a binary measure.

A sense of belonging to the community is ranked third on the hierarchy of basic needs[18] and is necessary for psychological well-being and self-actualization (Kitchen, Williams, and Chowhan 2012, McLaren et al. 2007, Vanderhorst and McLaren 2005). While a sense of belonging is not a social support measure per se, it integrates people into their community and serves as a connection between social networks and the environment (McLaren et al. 2007). A sense of belonging can only occur if an individual has put the time in to develop relationships with others and with their community, and as a result of this energy they must feel valued, significant, and accepted (McLaren et al. 2007, Thoits 2011). A weak sense of belonging has been associated with poor health (Ross, Berthelot, and Tremblay 2002), anxiety, and depression in older adults (McLaren et al. 2007).

3.4 Mortality Analyses

A Cox proportional hazards model (Cox 1992) was used to examine the association between the core predictors (social support, living alone, and sense of belonging) and mortality risk. All statistical analyses in the thesis used Stata 13®. Social

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[18] The hierarchy of basic needs was developed by American psychologist Abraham Maslow who classified human needs into five hierarchical categories: beginning with physiological needs on the bottom, followed by safety/security, belonging/love, esteem, and lastly self-actualization at the top (Lester et al. 1983, Zalenski and Raspa 2006). Maslow argued that unfulfilled lower needs must be satisfied before moving up the hierarchy to self-actualization and psychological health (Lester et al. 1983, Zalenski and Raspa 2006).

support was further divided into four measures of support: tangible support, affection, positive social interactions, and emotional/informational support for a total of six mortality analyses. The time to event analysis included all years between 2003 and 2011. Survey respondents provided their information in 2001, the follow-up began two years later in an effort to limit both a poor health bias as well as a healthy respondent bias. A Cox proportional hazards model is appropriate for use with multiple explanatory variables, including continuous, categorical, and time-varying, it assumes the risk of an event occurring at different points in time, and makes no assumption regarding the shape of the hazard function (Cox 1992, Luke 1993).

Variables were added to analyses models incrementally to identify the progression of estimates for the core predictors from unadjusted to fully adjusted models (Table 3.3). Model one was a univariate analysis of a core predictor, model two included model one plus age and sex, model three included model two plus income, model four included model three plus smoking, and lastly, model five included model four plus frailty.

This approach to modeling also aimed to stratify by age groupings and urban/rural geographic location. Age groupings, 55 – 64 and 65+, were used in order to better understand the influence of social support on two age groups with very different mortality profiles. The urban and rural geographic location were stratified in order to take into consideration that social support for older Canadians may be experienced differently across urban and rural settings with large variations in population densities. This approach does, however, mean that there are several models to consider and with multiple models and statistical tests comes an increased risk of chance driving a significant finding. The incremental modeling approach is somewhat of an antidote to this situation, allowing the researcher to draw conclusions about trends that are robust by utilizing additional adjustments for covariates.

Table 3.3: Sample table of the association between low social support and mortality among Canadian Community Health Survey (cycle 1.1) respondents between 2003 and 2011 in urban and rural Canada

	Urban		**Rural**	
	55 - 64	**65 and older**	**55 - 64**	**65 and older**
Model 1	HR* (95% CI)	HR (95% CI)	HR (95% CI)	HR (95% CI)
Model 2	HR (95% CI)	HR (95% CI)	HR (95% CI)	HR (95% CI)
Model 3	HR (95% CI)	HR (95% CI)	HR (95% CI)	HR (95% CI)
Model 4	HR (95% CI)	HR (95% CI)	HR (95% CI)	HR (95% CI)
Model 5	HR (95% CI)	HR (95% CI)	HR (95% CI)	HR (95% CI)

Model 1: Univariate analysis
Model 2: Adjusted for age and sex
Model 3: Model 2 plus adjusted for income
Model 4: Model 3 plus adjusted for smoking status
Model 5: Model 4 plus adjusted for frailty
*Hazard Ratio

3.5 Hospital Utilization Analyses

Hospital utilization (hospital admission, number of admissions, length of stay) was examined with a two-step regression approach (described below). As with the mortality analyses, core predictors were social support, living alone, and sense of belonging. Social support was similarly divided into four measures: tangible support, affection, positive social interactions, and emotional/informational support. Hospital admissions were binary yes/no, the number of admissions was a count of each hospital admission, and length of stay was a count of each hospital overnight during the observation period.

Because most people have infrequent hospital visits, hospital utilization data collected among general population samples have a high prevalence of zeros and a strong positive skew (Diehr et al. 1999). The strategy adopted was a “double hurdle” approach as demonstrated by Asada and Kephart (2007). A logistic regression model for hospital users and non-users followed by a zero-truncated negative binomial regression for hospital users only. A negative binomial model is suitable for data with either an excess or an absence of zeros, for data that does not have an even distribution or variance, and to analyze count data when assessing an association that has multiple values. (Diehr et al. 1999, Newall and Scuffham 2008, Watson, Li, and Mitchell 2011). The “double hurdle” approach first predicted the probability of use (user vs. non-user) and second, predicted the level of use by the users (Diehr et al. 1999, Tarride et al. 2012). Hospital utilization analyses generally followed the approach of the mortality analyses with incremental model building using the same core predictors and covariates (Table 3.3).

3.6 Online Survey

I conducted a web-based email survey titled “Aging Alone and the Care of Older Patients” using LimeSurvey, a McGill University supported software, and analyzed using NVivo 11.4®. The objective of the online survey was to seek a contextual understanding of the effects of aging alone on the health care system and on the complexities of discharge decisions when older patients lack social support. The survey was intentionally designed for a low-respondent burden but it also included open-ended questions in an effort to solicit solutions to issues around discharge from health care settings and social support in older populations. The use of open-ended exploratory questions provided an important qualitative component that can be used to explore meaning and experiences (Jansen 2010).

Web-based email surveys in academic research are increasingly common as access to the internet has become more ubiquitous and internet survey software has streamlined the process (Balabanis, Mitchell, and Heinonen-Mavrovouniotis 2007, Wright 2005). Email surveys have been found to be a tenth of the cost of telephone surveys by eliminating the cost of recording equipment and transcription (Nguyen 2007). Compared to paper surveys, web-based surveys are 50 per cent cheaper without the cost of paper and postage, and have a 5-10 day faster response time (Nguyen 2007). They also allow a researcher to reach distant populations and the software accompanying most internet survey platforms allows for automated data collection, eliminating lengthy and costly transcription, and results can be exported into analytical programs (Wright 2005).

The primary disadvantages of web-based email surveys are the low response rates and difficulties reaching the general population (Wright 2005). These issues can be further exacerbated by spam filters and inactive email addresses (Fan and Yan 2010). Disadvantages can be mitigated by selecting a sample that will find relevance with the survey topic, sending email reminders, keeping the survey under 13 minutes, presenting a rigorous survey free from grammatical and typographical mistakes, providing a sensible and logical question order, and an easily navigable survey layout (Fan and Yan 2010). Internet surveys have been found to be best utilized when recruiting from a target population; telephone and postal surveys are more effective when recruiting from the general population (Dillman et al. 2009).

Doctors, physician assistants, nurses, nursing assistants, social workers, and home care providers were the target population for the online survey. I used purposive sampling by obtaining email addresses from the official websites of professional organizations (Appendix 3); these primarily included, when available, emails for boards of directors and administrative support. A total of 4,435 emails were gathered from national, provincial, state, and county level organizations. On September 9, 2015 email recipients were extended an email invitation (Appendix 4) with an embedded survey link to participate in the survey as well as a request to forward the invitation to members of their organization. Administrators who received the email invitation were encouraged to participate in the survey as well; it is presumable that administrators who have worked within health or medical organizations and with health professionals may have had experiences and/or are familiar with some of the social conditions of older patients, including social support. Surveys for residents of Ontario, Québec, and New Brunswick were offered in English and French.

Prior to publishing the survey I conducted a pilot study using participants with varying health backgrounds: medical doctors, medical students, health geography graduate students, health geography research assistants, and epidemiology graduate students (n=15). Pilot feedback responses included suggestions to define and improve terms such as 'older adults' and 'social support', avoiding questions with conjunctions such as 'and' and 'or', neutralizing leading questions, and suggestions for clarification on long and wordy questions. The final survey consisted of six quantitative (close-ended) questions and two qualitative (open-ended) questions (Table 3.4).

The survey remained open for five weeks to allow unavailable email recipients a chance to complete the survey as well as to forward the survey to interested parties. Respondents who participated in the survey were required to select an 'Agree' or 'Do not agree' button on the consent agreement prior to beginning the survey (Appendix 5). Respondents who selected 'Do not agree' were directed to the end message that followed the survey (Appendix 6).

Following the completion of the survey, data were exported into NVivo 11.4® for analysis. The primary method used to analyze qualitative survey data was content analysis, which utilizes coding and re-coding data into more quantifiable categories that allows researchers to identify less obvious concepts and organize, evaluate, and search

Table 3.4: Web-based Email Survey - “Aging Alone and the Care of Older Patients”

Quantitative Survey Questions and Possible Answers	
1. What is your role in health care provision for older patients (adults 65 years or older)?	• I do not have a role in health care provision for older patients* • Doctor • Physician assistant • Nurse • Nursing assistant • Social worker • Home care worker • Administrator • Other
2. How long have you been working with older patients? *Please feel free to add any additional thoughts on this topic in the comment box*	• 1 year or less • 2 – 5 years • 6 – 10 years • 11 – 15 years • More than 15 years • I do not work with older patients**
3. What is your best estimation of the percentage of older patients in your institution who have very infrequent visitors (i.e. from friends and family)? *Please feel free to add any additional thoughts on this topic in the comment box*	• About 25% or less • About 50% • About 75% or more • I don’t know
4. Compared to when you first began working with older patients, how do you think the number of patients with very infrequent visitors has changed? *Please feel free to add any additional thoughts on this topic in the comment box*	• Very infrequent visitors are more common now • Very infrequent visitors are less common now • I have not observed a difference • I have not been working long enough to draw a conclusion
5. What is your best estimate of the percentage of older patients in your institution that could have been cared for in the community (not in an institution) had there been available social support? Social support here refers to family members or close friends who can be counted on for help with things like meal preparation, household chores, shopping, or even just listening to problems and sharing information. *Please feel free to add any additional thoughts on this topic in the comment box*	• About 25% or less • About 50% • About 75% or more • None • I don’t know
6. Based on your experience, do you think older patients without social support are re-hospitalized after a discharge more often or less often as compared to patients with social support? *Please feel free to add any additional thoughts on this topic in the comment box*	• More often • Less often • I have not observed a difference • I don’t know
Qualitative Survey Questions	
7. How have you seen the lack of social support affect discharge planning for older patients?	Open ended comment box
8. What strategies do you think could be employed to reduce the hospitalization or institutionalization of older patients who could otherwise be cared for in the community?	Open ended comment box

*Questions 2 and 4 will not be displayed to participants who respond to question 1 with “I do not have a role in health care provision for older patients”

**Question 4 will not be displayed to participants who respond to question 2 with “I do not work with older patients”

Survey questions in French can be found in Appendix 7

through simplified data to more easily see emerging patterns and themes (Berg 2004, Cope 2010, Gillham 2005). Content analysis disaggregates survey responses into multiple themes and categories in order to better understand the meanings behind what participants have said (Shaw 2011). These can be derived as direct quotes or deeper thematic interpretations a researcher finds of interest or importance and are quantitatively identified in number and in context (Cope 2010).

It is the recursive process of coding and re-coding the qualitative text that gives rise to the interpretation of the data (Cope 2010). According to Gillham (2005, 145), "…the task is to construct categories and definitions (headings) that make sense to other people as a way of organizing and presenting the content of interviews". Cope (2010) points out that coding is an intuitive process that people instinctively perform each day as we make sense of the world.

Ethics approval

The research ethics board (REB) certificate of approval (Appendix 8) for the online survey was received July 2015. Respondent confidentiality procedures were adhered to and identities protected by separating data from names and emails, assigning a numeric identification to each survey response, and using a pseudonym when representing qualitative data through literal descriptions such as direct quotes and researcher commentary. An REB amendment (Appendix 9) was applied for following minor changes made to the email recruitment letter, survey questions, and consent form in response to the pilot study.

3.7 Conclusion

The methods I used in this study included two modelling approaches (mortality and hospital utilization) and a web based email survey. I used six core predictors (tangible support, emotional/informational support, affection, positive social interactions, living alone, and sense of belonging) to test the association with mortality using a Cox proportional hazards model, and hospital utilization using a "double hurdle" logistic regression and zero-truncated negative binomial regression model. The "double hurdle" approach first predicted the probability of hospital use and then predicted the level of use. I then conducted an online survey among a sample of health care professionals to better understand the negative effects when patients in hospital are found to have low social support.

The findings from the linked data analysis led to a better understanding of the scope of premature mortality and hospital burden among Canadians with low social support or who lived alone, which served to inform the web based email survey. The online survey facilitated an in-depth understanding of the effects of aging alone on the health care system and on the complexities of discharge decisions when patients lack social support. This component of the research was able to build on both knowledge translation and basic scientific discovery by first ascertaining if patients are increasingly likely to be alone and without functional support systems, if doctors, nurses, and other care providers are seeing this more often, and what, from their vantage, can be done about it, thereby eliciting intervention strategies to be implemented in the health care system and during the provision of care. The following three chapters report the results for the mortality analysis, hospital utilization analysis, and the online survey.

4. THE ASSOCIATION BETWEEN LOW SOCIAL SUPPORT AND MORTALITY OF OLDER CANADIANS

4.1 Introduction

In Chapter One I discussed the tragedy which occurred in Chicago as the result of a heat wave and a social structure that isolates the poor and vulnerable. This tragedy was later determined by the Centers for Disease Control to be preventable if household occupants had greater material resources, been living with others, or had greater levels of social support. This thesis is not about heat wave mortality but focuses on the everyday and examines the latter two circumstances to better understand if living alone or having poor social resources are contributors to premature mortality in a Canadian context. This Chapter reports the findings of a survival analysis based on 16,409 respondents from the first cycle of the Canadian Community Health Survey (CCHS) in 2001 linked to the Canadian Mortality Database (CMDB).

4.2 Characteristics of the Sample

There were 4,525 death events (27.58% of the sample) between September 3, 2000 and December 31, 2011 among 16,409 CCHS 1.1 respondents who were 55 years and older. Respondents had a mean age of 67.8, when stratified into two age groups, the 55 – 64 cohort had a mean age of 59.2 and the 65 and older cohort had a mean age of 74.1 (Table 4.1). The highest frequency of social support responses were for moderate levels of tangible support (47.8%), positive social interactions (47.19%), and emotional/informational support (54%), and the highest levels of affection (50.79%). Most respondents were married (53.93%), in the middle to high income range (76.79%), non-smokers (81.11%), and non-frail (81.05%). Most respondents lived with other people (58.64%), had a strong sense of belonging (66.48%), and lived in an urban environment (70.03%). Older adults more frequently reported low support across all

Table 4.1: Characteristics of CCHS respondents in the mortality analysis aged 55 and older and stratified by age

	Total n=16,409		Aged 55-64 n=6,918 (42.16%)			Aged 65 and Older n=9,491 (57.84%)		
	Freq.	%	Freq.		%	Freq.		%
Age ***(mean)***	**67.8**		**59.2**			**74.1**		
55 - 64	6,918	*42.16%*	**N/A**			**N/A**		
65 - 74	5,397	*32.89%*						
75+	4,094	*24.95%*						
Tangible Social Support								
Low	1,851	*11.28%*	682	*	9.86%	1,169	*	12.32%
Moderate	7,844	*47.80%*	3,395	*	49.07%	4,449	*	46.88%
Highest	6,714	*40.92%*	2,841	*	41.07%	3,873	*	40.81%
Affection								
Low	1,465	*8.93%*	533	*	7.70%	932	*	9.82%
Moderate	6,610	*40.28%*	2,660	*	38.45%	3,950	*	41.62%
Highest	8,334	*50.79%*	3,725	*	53.85%	4,609	*	48.56%
Positive Social Interactions								
Low	1,476	*9.00%*	488	*	7.05%	988	*	10.41%
Moderate	7,743	*47.19%*	3,220	*	46.55%	4,523	*	47.66%
Highest	7,190	*43.82%*	3,210	*	46.40%	3,980	*	41.93%
Emotional/Informational Social Support								
Low	1,592	*9.70%*	584	*	8.44%	1,008	*	10.62%
Moderate	8,863	*54.01%*	3,777	*	54.60%	5,086	*	53.59%
Highest	5,954	*36.28%*	2,557	*	36.96%	3,397	*	35.79%
Marital Status								
Married/Common Law	8,849	*53.93%*	4,517	*	65.29%	4,332	*	45.64%
Widowed	4,432	*27.01%*	668	*	9.66%	3,764	*	39.66%
Divorced/Separated	2,013	*12.27%*	1,192	*	17.23%	821	*	8.65%
Never Married	1,115	*6.80%*	541	*	7.82%	574	*	6.05%
Income								
Low	3,808	*23.21%*	1,223	*	17.68%	2,585	*	27.24%
Middle/High	12,601	*76.79%*	5,695	*	82.32%	6,906	*	72.76%
Smoking Status								
Smoker	3,099	*18.89%*	1,767	*	25.54%	1,332	*	14.03%
Non-Smoker	13,310	*81.11%*	5,151	*	74.46%	8,159	*	85.97%
Frailty								
Frail	3,109	*18.95%*	906	*	13.10%	2,203	*	23.21%
Not Frail	13,300	*81.05%*	6,012	*	86.90%	7,288	*	76.79%
Living Arrangement								
Lives Alone	6,787	*41.36%*	2,029	*	29.33%	4,758	*	50.13%
Lives with Others	9,622	*58.64%*	4,889	*	70.67%	4,733	*	49.87%
Sense of Belonging								
Weak	5,501	*33.52%*	2,498	*	36.11%	3,003	*	31.64%
Strong	10,908	*66.48%*	4,420	*	63.89%	6,488	*	68.36%
Region								
Urban	11,492	*70.03%*	4,690	*	67.79%	6,802	*	71.67%
Rural	4,917	*29.97%*	2,228	*	32.21%	2,689	*	28.33%
Mortality 2000 - 2011[†]								
Death Event	4,525	27.58%	793	*	11.46%	3,732	*	39.32%
No Death Event	11,884	72.42%	6,125	*	88.54%	5,759	*	60.68%

*p value <0.05

[†] September 3, 2000 – December 31, 2011 (Observation period)

types of social support than the younger cohort (55 – 64). Among the total sample, 11.28 per cent of respondents reported low tangible support, 8.93 per cent reported low levels of affection, nine per cent reported low positive social interactions, 9.7 per cent reported low emotional/informational support, and 33.52 per cent reported a weak sense of belonging (Table 4.1).

Within age groups, those 55 – 64 were more likely to report moderate than highest tangible support (49.07% vs. 41.07%) and emotional/informational support (54.6% vs. 36.96%), and highest as opposed to moderate affection (53.85% vs. 38.45%). An equal number of respondents reported moderate and highest positive social interactions (46.55% vs. 46.4%). Those 65 and older demonstrated a similar trend as the younger cohort and were more likely to report moderate than highest tangible support (46.88% vs. 40.81%) and emotional/informational support (53.59% vs. 35.79%), and the highest as opposed to moderate affection (48.56% vs. 41.62%). The reported positive social interactions differed from the younger cohort with more older adults reporting moderate than highest levels (47.66% vs. 41.93%) (Table 4.1).

As expected, the younger group had higher rates of marriage (65.29% vs. 45.64%), while the older group was more often widowed (39.66% vs. 9.66%), and the younger group was more often affluent with higher rates of reporting middle/high income (82.32% vs. 72.76%), presumably because a larger share of this group were still in the work force. The younger group had higher smoking rates (25.54% vs. 14.03%), and, as expected, the older group were more likely to be frail (23.21% vs. 13.10%). The older group reported higher rates of living alone (50.13% vs. 29.33%), presumably due in part to higher rates of widowhood, more often reported having a strong sense of belonging (68.36% vs. 63.89%), and more often located in urban settings (71.67% vs. 67.79%). As expected, the younger group had fewer death events (11.46% vs. 39.32%) (Table 4.1).

Women composed the majority of respondents (58.2%) and had a mean age of 68.5, men had a mean age of 66.7 (Table 4.2). As compared to women, men were more likely to report the highest levels of tangible support (48.05% vs. 35.80%), affection (54.32% vs. 48.26%), positive social interactions (48% vs. 40.81%), and emotional/informational support (38.84% vs. 34.45%). Within groups, most men reported the highest levels of social support with the exception of emotional/ informational support. More men reported moderate emotional/informational support than highest (50.45% vs. 38.84%). Most women reported moderate than highest tangible support (51.84% vs. 35.8%), positive social interactions (50.17% vs. 40.81%), and emotional/informational support (56.57% vs. 34.45%), and more women reported highest than moderate affection (48.26% vs. 43.62%). Men were more often married (67.63% vs. 44.09%), and women were more often widowed (38.62% vs. 10.84%), reflecting longer life expectancies for Canadian women compared to men (Statistics Canada 2015b). Men were more often smokers (20.60% vs. 17.66%). Women were more often frail (20.83% vs. 16.32%), much more often living alone (50.03% vs. 29.29%), and reported low income much more often than men (28.73% vs 15.50%). Men and women had a comparable sense of belonging (~66% strong vs ~33% weak), and women were

Table 4.2: Characteristics of CCHS respondents in the mortality analysis aged 55 and older and stratified by sex

	Total n=16,409		Male n=6,856 (41.78%)			Female n=9,553 (58.22%)		
	Freq.	%	Freq.		%	Freq.		%
Age ***(mean)***	**67.8**		**66.7**			**68.5**		
55 - 64	6,918	*42.16%*	3,177	*	*46.34%*	3,741	*	*39.16%*
65 - 74	5,397	*32.89%*	2,246	*	*32.76%*	3,151	*	*32.98%*
75+	4,094	*24.95%*	1,433	*	*20.90%*	2,661	*	*27.86%*
Tangible Social Support								
Low	1,851	*11.28%*	670	*	*9.77%*	1,181	*	*12.36%*
Moderate	7,844	*47.80%*	2,892	*	*42.18%*	4,952	*	*51.84%*
Highest	6,714	*40.92%*	3,294	*	*48.05%*	3,420	*	*35.80%*
Affection								
Low	1,465	*8.93%*	689	*	*10.05%*	776	*	*8.12%*
Moderate	6,610	*40.28%*	2,443	*	*35.63%*	4,167	*	*43.62%*
Highest	8,334	*50.79%*	3,724	*	*54.32%*	4,610	*	*48.26%*
Positive Social Interactions								
Low	1,476	*9.00%*	615	*	*8.97%*	861	*	*9.01%*
Moderate	7,743	*47.19%*	2,950	*	*43.03%*	4,793	*	*50.17%*
Highest	7,190	*43.82%*	3,291	*	*48.00%*	3,899	*	*40.81%*
Emotional/Informational Social Support								
Low	1,592	*9.70%*	734	*	*10.71%*	858	*	*8.98%*
Moderate	8,863	*54.01%*	3,459	*	*50.45%*	5,404	*	*56.57%*
Highest	5,954	*36.28%*	2,663	*	*38.84%*	3,291	*	*34.45%*
Marital Status								
Married/Common Law	8,849	*53.93%*	4,637	*	*67.63%*	4,212	*	*44.09%*
Widowed	4,432	*27.01%*	743	*	*10.84%*	3,689	*	*38.62%*
Divorced/Separated	2,013	*12.27%*	882	*	*12.86%*	1,131	*	*11.84%*
Never Married	1,115	*6.80%*	594	*	*8.66%*	521	*	*5.45%*
Income								
Low	3,808	*23.21%*	1,063	*	*15.50%*	2,745	*	*28.73%*
Middle/High	12,601	*76.79%*	5,793	*	*84.50%*	6,808	*	*71.27%*
Smoking Status								
Smoker	3,099	*18.89%*	1,412	*	*20.60%*	1,687	*	*17.66%*
Non-Smoker	13,310	*81.11%*	5,444	*	*79.40%*	7,866	*	*82.34%*
Frailty								
Frail	3,109	*18.95%*	1,119	*	*16.32%*	1,990	*	*20.83%*
Not Frail	13,300	*81.05%*	5,737	*	*83.68%*	7,563	*	*79.17%*
Living Arrangement		*0.00%*						
Lives Alone	6,787	*41.36%*	2,008	*	*29.29%*	4,779	*	*50.03%*
Lives with Others	9,622	*58.64%*	4,848	*	*70.71%*	4,774	*	*49.97%*
Sense of Belonging								
Weak	5,501	*33.52%*	2,280	ns	*33.26%*	3,221	ns	*33.72%*
Strong	10,908	*66.48%*	4,576	ns	*66.74%*	6,332	ns	*66.28%*
Region								
Urban	11,492	*70.03%*	4,554	*	*66.42%*	6,938	*	*72.63%*
Rural	4,917	*29.97%*	2,302	*	*33.58%*	2,615	*	*27.37%*
Mortality 2000 - 2011†								
Death Event	4,525	*27.58%*	2,064	*	*30.11%*	2,461	*	*25.76%*
No Death Event	11,884	*72.42%*	4,792	*	*69.89%*	7,092	*	*74.24%*

*$p<0.05$
†September 3, 2000 – December 31, 2011 (Observation period)

more often living in an urban environment (72.63% vs. 66.42%). More women than men reported low tangible support (12.36% vs. 9.77%) and more men than women reported low levels of affection (10.05% vs. 8.12%) and low emotional/informational support (10.71% vs. 8.98%). Both women and men reported comparable low positive social interactions (9%). And as expected, women had fewer death events than men (25.76% vs. 30.11%) (Table 4.2).

In unadjusted analyses, mortality rates during 2003 – 2011, more than two years following the start of the observation period (n=15,788), were patterned by core social support variables and living arrangement (Table 4.3). Mortality rates were consistently highest across low levels of tangible support, affection, positive social interactions, emotional/informational support, a sense of belonging, and those living alone among both age groups. In the group over 65 reporting low affection, low positive social interactions, low emotional/informational support, a very weak sense of belonging, and living alone mortality rates were 40 per cent or higher. While the 55 – 64 age group did not have mortality rates as high as the older cohort, those reporting low levels of affection, low positive social interactions, and low emotional/informational support neared 20 per cent. Low positive social interactions was the type of reported support associated with the highest mortality rate for both age groups, 18.2 per cent for the 55 – 64 age group and 46.2 per cent for the older cohort. Reported weak sense of belonging and living alone were associated with the lowest mortality rate among the 55 – 64

Table 4.3: Mean mortality rates (95% Confidence Intervals) of CCHS respondents between 2003 and 2011 and stratified by age.

	55 and older n=15,788	55 - 64 n=6,822	65 and older n=8,966
Sex			
Male	26.9 (25.8, 27.9)	12.3 (11.1, 13.4)	40.2 (38.6, 41.9)
Female	23.2 (22.3, 24.1)	8.5 (7.6, 9.4)	33.0 (31.8, 34.3)
Tangible Support			
Low	30.2 (28.0, 32.3)	14.2 (12.0, 16.8)	39.8 (36.9, 42.7)
Moderate	23.4 (22.5, 24.4)	10.0 (8.7, 10.7)	34.4 (33.0, 35.8)
Highest	24.8 (23.7, 25.8)	10.0 (8.9, 11.0)	36.1 (34.6, 37.7)
Affection			
Low	34.2 (31.8, 36.7)	17.0 (13.8, 20.2)	44.4 (41.1, 47.7)
Moderate	24.6 (23.5, 25.7)	10.0 (8.8, 11.1)	35.0 (33.5, 36.6)
Highest	23.2 (22.3, 24.1)	9.5 (8.5, 10.4)	34.7 (33.3, 36.1)
Positive Social Interactions			
Low	36.6 (34.1, 39.1)	18.2 (14.8, 21.7)	46.2 (42.9, 49.4)
Moderate	24.4 (23.4, 25.4)	10.0 (9.0, 11.1)	35.1 (33.7, 36.5)
Highest	22.7 (21.7, 23.7)	9.2 (8.2, 10.2)	34.0 (32.5, 35.6)
Emotional/Informational Support			
Low	33.4 (31.0, 35.8)	16.3 (13.2, 19.3)	43.7 (40.5, 46.8)
Moderate	23.8 (22.9, 24.7)	9.8 (8.8, 10.8)	34.6 (33.3, 36.0)
Highest	23.9 (22.7, 25.0)	9.5 (8.3, 10.6)	35.1 (33.5, 36.8)
Sense of Belonging*			
Very weak	28.5 (26.5, 30.6)	13.7 (11.4, 16.0)	41.6 (38.5, 44.7)
Somewhat weak	24.5 (23.1, 26.0)	10.0 (8.5, 11.5)	37.0 (34.8, 39.2)
Somewhat strong	22.7 (21.6, 23.7)	9.6 (8.5, 10.7)	33.2 (31.6, 34.8)
Very strong	26.2 (24.9, 27.5)	9.6 (8.1, 11.0)	36.1 (34.3, 37.9)
Living Arrangement			
Living alone	31.6 (30.4, 32.7)	13.0 (11.6, 14.5)	39.8 (38.4, 41.3)
Living with others	20.0 (19.2, 20.8)	9.0 (9.0, 10.0)	31.7 (30.4, 33.1)
Income*			
Lowest	26.2 (23.2, 29.1)	17.4 (14.3, 20.4)	43.9 (38.3, 49.5)
Lowest Middle	37.0 (35.2, 38.9)	15.1 (12.2, 18.0)	43.1 (41.0, 45.2)
Middle	29.0 (27.8, 30.2)	11.5 (10.0, 13.0)	36.7 (35.1, 38.2)
Upper Middle	18.3 (17.2, 19.4)	8.0 (7.2, 9.3)	29.8 (27.9, 31.7)
Highest	12.2 (10.8, 13.6)	7.0 (6.0, 8.7)	23.4 (20.2, 26.7)
Smoking Status			
Non-smoker	23.6 (22.8, 24.3)	7.4 (6.7, 8.2)	34.2 (33.1, 35.2)
Smoker	29.8 (28.2, 31.5)	18.5 (16.6, 20.3)	45.8 (43.0, 48.6)

*Mean mortality rates for sense of belonging and income are derived from the raw variable data on the CCHS prior to recoding the variable for binary analyses

cohort (13.7% and 13%), and reported low tangible support and living alone were associated with the lowest mortality among the cohort 65 and older (39.8%). Figures 4.1 and 4.2 present bar graphs of unadjusted mortality rates for social support results, which also display a slight increase in mortality among respondents 65 and older reporting the highest levels of tangible and emotional/informational support as compared to moderate support.

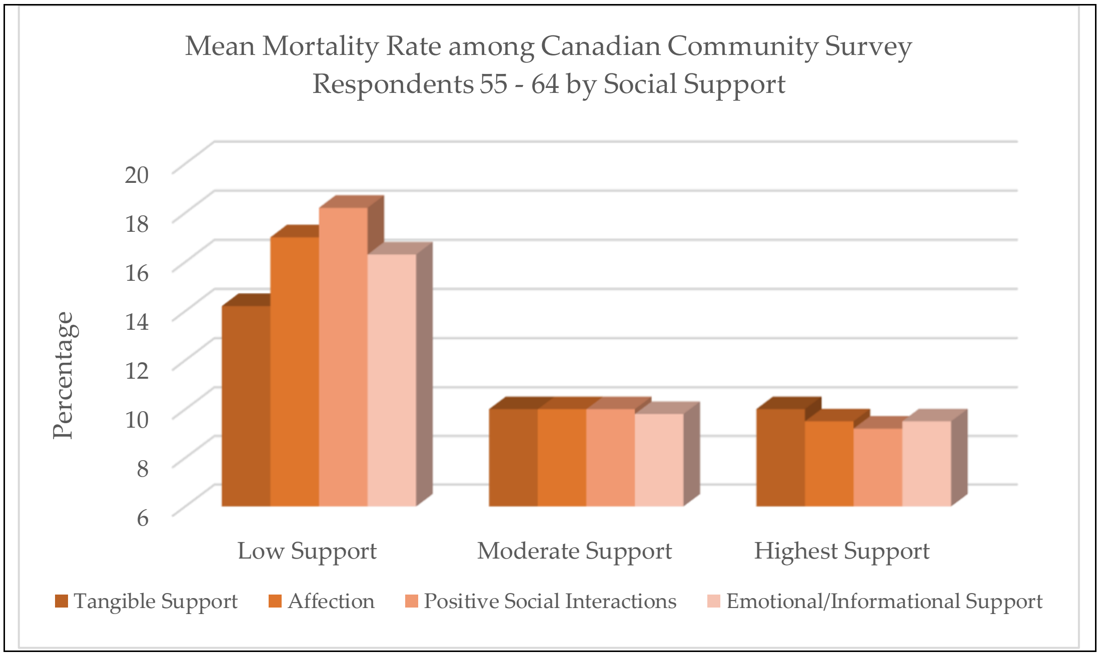

Figure 4.1: Unadjusted mean mortality rates (95% Confidence Intervals) of CCHS respondents 55-64 between 2003 and 2011 (n=6,822).

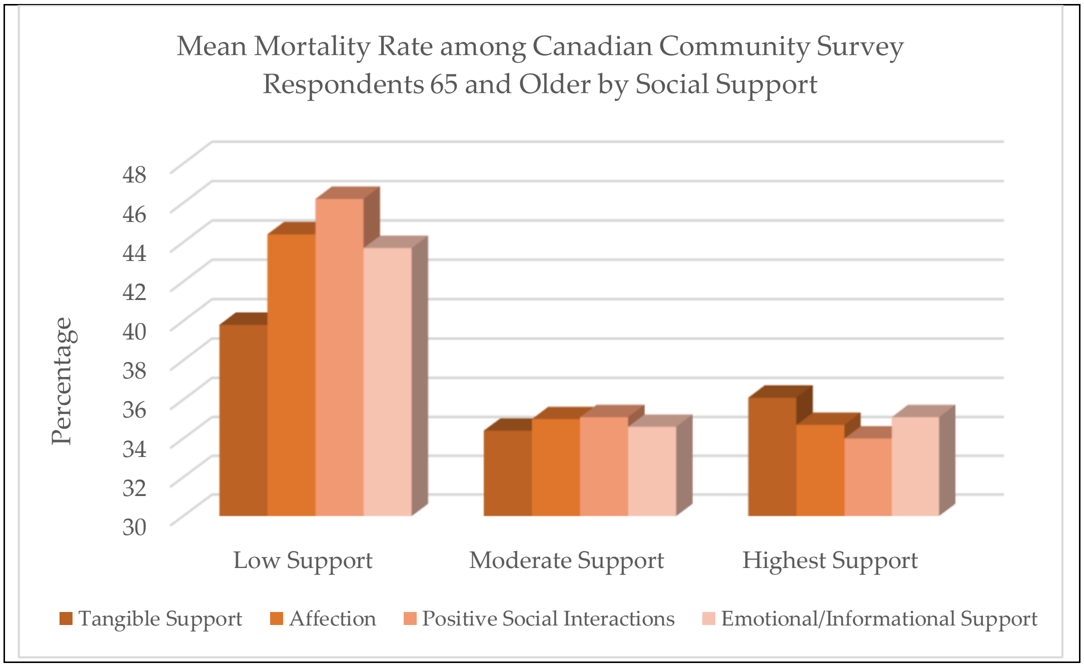

Figure 4.2: Unadjusted mean mortality rates (95% Confidence Intervals) of CCHS respondents 65 and older between 2003 and 2011 (n=8,966).

Unadjusted mortality rates for CCHS respondents with low income and those who smoke, two variables that have commonly been found to be predictive of mortality, had similar mortality rates as respondents reporting low social support (Table 4.3). Specifically, respondents 55 – 64 in the lowest income quintile had the same mean mortality rate (17.4%) as those reporting the lowest levels of affection (17%). Respondents reporting the lowest emotional support (16.3%) had slightly lower mortality rates, and those reporting the lowest positive social interactions (18.2%) had a slightly higher mortality rate. These data were also similar to the mean mortality rate for smokers (18.5%) in this sample.

Respondents 65 and older had similar results as the younger cohort. Those in the lowest income quintile had a mean mortality rate (43.9%) approximately equivalent to those reporting the lowest levels of affection (44.4%) and emotional support (43.7%), and slightly less than those reporting the lowest positive social interactions (46.2%). Smokers in this sample had a similar mean mortality rate (45.8%) to the these types of social support as well.

4.3 Multivariate Survival Analysis

This section presents results of survival analysis between 2003 and 2011, more than two years following the start of the observation period to limit both a poor health bias and a healthy respondent bias. The models are presented incrementally for a total of five models per core predictor (tangible support, affection, positive social interactions, emotional/informational support, living alone, and a sense of belonging). Model one was a univariate analysis of a core predictor, model two included model one plus age and sex, model three included model two plus income, model four included model three plus smoking, and lastly, model five included model four plus frailty.

The association between mortality and three types of social support (low levels of affection, low positive social interactions, and low emotional/informational support) through model four, as well as a weak sense of belonging through model five, supported the overall hypothesis of the thesis of low social support as a driver of mortality (Table 4.4). The hazards ratio (HR) for respondents 55 – 64 (n=6,822) with low levels of affection was 1.37 (1.07, 1.75 95% CI) and for the 65 and older age group (n=8,966) the HR was 1.17 (1.04, 1.31 95% CI). In other words, respondents 55 – 64 with low levels of affection had a 37 per cent excess risk of death and respondents 65 and older with low levels of affection had a 17 per cent excess risk of death as compared to respondents with moderate and highest levels of affection after adjusting for key determinants of mortality (age, sex, income, and smoking). Living alone was associated with premature mortality but the effect size diminished after adjustment for income and were non-statistically significant after adjustments for smoking and frailty.

The HR for respondents 55 – 64 with low positive social interactions was 1.36 (1.06, 1.75 95% CI) through model five and the HR for respondents 65 and older with low positive social interactions was 1.20 (1.07, 1.34 95% CI) through model four. The HR for respondents 55 – 64 with low emotional/informational support was 1.36 (1.06, 1.74 95% CI) and the HR for respondents 65 and older with low emotional/informational support was 1.19 (1.06, 1.33 95% CI), both through model four. The association between a weak sense of belonging and mortality was significant only for the 65 and older age group, the HR was 1.13 (1.05, 1.22 95% CI) through model five.

Table 4.4: Hazards ratio and 95% confidence interval from Cox proportional hazards analyses used to test the association between core predictors (social support, living alone, and sense of belonging) and mortality risk among CCHS respondents linked to the CMDB

Core Predictors	55 and Older n=15,788	55 - 64 n=6,822	65 and Older n=8,966
Low Tangible Support			
Model 1	**1.26 (1.14, 1.39)***	**1.46 (1.16, 1.85)***	**1.13 (1.02, 1.26)***
Model 2	**1.20 (1.09, 1.33)***	**1.53 (1.21, 1.93)***	**1.15 (1.03, 1.28)***
Model 3	**1.14 (1.03, 1.25)***	1.27 (1.00, 1.61)	1.10 (0.99, 1.23)
Model 4	1.08 (0.98, 1.19)	1.19 (0.94, 1.51)	1.06 (0.95, 1.18)
Model 5	1.00 (0.90, 1.10)	1.11 (0.87, 1.41)	0.98 (0.87, 1.09)
Low Levels of Affection			
Model 1	**1.61 (1.45, 1.78)***	**1.88 (1.49, 2.37)***	**1.41 (1.26, 1.57)***
Model 2	**1.36 (1.23, 1.51)***	**1.84 (1.46, 2.33)***	**1.28 (1.15, 1.43)***
Model 3	**1.27 (1.14, 1.40)***	**1.48 (1.16, 1.88)***	**1.21 (1.08, 1.36)***
Model 4	**1.20 (1.09, 1.34)***	**1.37 (1.07, 1.75)***	**1.17 (1.04, 1.31)***
Model 5	1.10 (0.99, 1.22)	1.26 (0.98, 1.61)	1.07 (0.95, 1.19)
Low Positive Social Interactions			
Model 1	**1.77 (1.61, 1.96)***	**2.08 (1.64, 2.64)***	**1.50 (1.34, 1.67)***
Model 2	**1.43 (1.30, 1.59)***	**2.11 (1.66, 2.68)***	**1.34 (1.20, 1.49)***
Model 3	**1.33 (1.20, 1.47)***	**1.68 (1.31, 2.16)***	**1.26 (1.13, 1.41)***
Model 4	**1.25 (1.13, 1.38)***	**1.53 (1.19, 1.97)***	**1.20 (1.07, 1.34)***
Model 5	1.11 (1.00, 1.04)	**1.36 (1.06, 1.75)***	1.07 (0.96, 1.20)
Low Emotional/Informational Support			
Model 1	**1.50 (1.35, 1.66)***	**1.78 (1.40, 2.26)***	**1.34 (1.20, 1.50)***
Model 2	**1.37 (1.24, 1.52)***	**1.77 (1.39, 2.25)***	**1.30 (1.16, 1.45)***
Model 3	**1.29 (1.17, 1.43)***	**1.48 (1.16, 1.89)***	**1.26 (1.11, 1.39)***
Model 4	**1.22 (1.10, 1.35)***	**1.36 (1.06, 1.74)***	**1.19 (1.06, 1.33)***
Model 5	1.11 (1.00, 1.23)	1.24 (0.96, 1.58)	1.08 (0.96, 1.21)
Weak Sense of Belonging			
Model 1	**1.08 (1.02, 1.16)***	**1.18 (1.01, 1.37)***	**1.16 (1.08, 1.25)***
Model 2	**1.22 (1.14, 1.30)***	**1.21 (1.04, 1.40)***	**1.22 (1.13, 1.31)***
Model 3	**1.20 (1.12, 1.28)***	1.15 (0.99, 1.34)	**1.21 (1.12, 1.30)***
Model 4	**1.17 (1.09, 1.25)***	1.09 (0.93, 1,26)	**1.19 (1.10, 1.28)***
Model 5	**1.11 (1.04, 1.19)***	1.03 (0.89, 1.21)	**1.13 (1.05, 1.22)***
Living Alone			
Model 1	**1.71 (1.61, 1.82)***	**1.48 (1.27, 1.73)***	**1.34 (1.25, 1.43)***
Model 2	**1.22 (1.14, 1.31)***	**1.54 (1.32, 1.80)***	**1.16 (1.08, 1.26)***
Model 3	**1.11 (1.03, 1.19)***	**1.29 (1.09, 1.52)***	1.07 (0.98, 1.16)
Model 4	1.07 (0.99, 1.15)	1.18 (0.99, 1.39)	1.04 (0.96, 1.13)
Model 5	1.08 (1.00, 1.16)	1.17 (0.99, 1.39)	1.06 (0.97, 1.15)

Model 1 = univariate analysis
Model 2 = model 1 plus age and sex
Model 3 = model 2 plus income
Model 4 = model 3 plus smoking status
Model 5 = model 4 plus frailty
* Results significant at the p<0.05 level

Analyses were further stratified by urban (n=11,038) and rural (n=4,750) place of residence as reported on the CCHS. Through model four (age, sex, income, and smoking), urban dwellers 55 – 64 (n=4,621) with low tangible support had a HR of 1.35 (1.01, 1.81 95% CI), with low levels of affection they had a HR of 1.36 (1.01, 1.83 95% CI), and with low emotional/informational support they had a HR of 1.46 (1.09, 1.95 95% CI) (Table 4.5). Through model five (age, sex, income, smoking, and frailty), urban dwellers 55 – 64 with low positive social support had a HR of 1.49 (1.11, 2.01 95% CI), and those living alone had a HR of 1.25 (1.02, 1.54 95% CI). Rural dwellers in the 55 – 64 (n=2,201) age group showed no significant associations for any of the core predictors (Table 4.6).

Urban dwellers 65 and older (n=6,417) with low levels of affection had a HR of 1.15 (1.01, 1.31 95% CI) through model four, and those with a weak sense of belonging had a HR of 1.16 (1.06, 1.26 95% CI) through model five (Table 4.5). Rural dwellers 65 and older (n=2,549) with low emotional/informational support had a HR of 1.35 (1.08, 1.70 95% CI) through model four, and those with low positive social interactions had a HR of 1.26 (1.01, 1.57 95% CI) through model five (Table 4.6). Tables 4.7 (55 – 64) and 4.8 (65 and older) include summary results.

Table 4.5: Hazards ratio and 95% confidence intervals for urban dwellers from Cox proportional hazards analyses used to test the association between core predictors (social support, living alone, and sense of belonging) and mortality risk among CCHS respondents linked to the CMDB

Core Predictors	55 and Older n=11,038	55 - 64 n=4,621	65 and Older n=6,417
Low Tangible Support			
Model 1	**1.24 (1.22, 1.39)***	**1.64 (1.24, 1.16)***	1.08 ((0.96, 1.23)
Model 2	**1.18 (1.05, 1.32)***	**1.73 (1.31, 2.29)***	1.10 (0.97, 1.24)
Model 3	1.12 (1.00, 1.26)	**1.47 (1.10, 1.96)***	1.05 (0.93, 1.20)
Model 4	1.07 (0.95, 1.20)	**1.35 (1.01, 1.81)***	1.02 (0.90, 1.15)
Model 5	0.98 (0.88, 1.10)	1.20 (0.90, 1.61)	0.93 (0.83, 1.06)
Low Levels of Affection			
Model 1	**1.61 (1.43, 1.81)***	**1.89 (1.43, 2.51)***	**1.40 (1.23, 1.59)***
Model 2	**1.34 (1.19, 1.50)***	**1.86 (1.40, 2.47)***	**1.26 (1.11, 1.43)***
Model 3	**1.25 (1.11, 1.41)***	**1.52 (1.13, 2.05)***	**1.20 (1.05, 1.37)***
Model 4	**1.18 (1.05, 1.33)***	**1.36 (1.01, 1.83)***	**1.15 (1.01, 1.31)***
Model 5	1.07)0.95, 1.21)	1.23 (0.92, 1.67)	1.04 (0.91, 1.19)
Low Positive Social Interactions			
Model 1	**1.72 (1.53, 1.93)***	**2.26 (1.71, 3.00)***	**1.42 (1.25, 1.61)***
Model 2	**1.37 (1.22, 1.54)***	**2.30 (1.73, 3.05)***	**1.25 (1.10, 1.42)***
Model 3	**1.28 (1.13, 1.44)***	**1.90 (1.41, 2.55)***	**1.19 (1.04, 1.35)***
Model 4	**1.20 (1.07, 1.36)***	**1.72 (1.28, 2.31)***	1.13 (0.99, 1.29)
Model 5	1.06 (0.94, 1.20)	**1.49 (1.11, 2.01)***	1.01 (0.88, 1.15)
Low Emotional/Informational Support			
Model 1	**1.48 (1.32, 1.67)***	**1.93 (1.45, 2.56)***	**1.29 (1.13, 1.47)***
Model 2	**1.32 (1.17, 1.48)***	**1.91 (1.44, 2.53)***	**1.23 (1.08, 1.40)***
Model 3	**1.25 (1.11, 1.41)***	**1.63 (1.22, 2.19)***	**1.18 (1.03, 1.34)***
Model 4	**1.18 (1.05, 1.33)***	**1.46 (1.09, 1.95)***	1.13 (0.99, 1.29)
Model 5	1.06 (0.94, 1.20)	1.30 (0.97, 1.74)	1.02 (0.89, 1.16)
Weak Sense of Belonging			
Model 1	**1.11 (1.03, 1.20)***	1.18 (0.98, 1.42)	**1.19 (1.10, 1.30)***
Model 2	**1.24 (1.14, 1.34)***	1.22 (1.00 1.46)	**1.24 (1.15, 1.36)***
Model 3	**1.23 (1.13, 1.32)***	1.15 (0.96, 1.39)	**1.24 (1.14, 1.35)***
Model 4	**1.20 (1.12, 1.30)***	1.10 (0.91, 1.33)	**1.23 (1.13, 1.33)***
Model 5	**1.14 (1.06, 1.23)***	1.05 (0.87, 1.27)	**1.16 (1.06, 1.26)***
Living Alone			
Model 1	**1.69 (1.57, 1.82)***	**1.55 (1.29, 1.86)***	**1.31 (1.21, 1.42)***
Model 2	**1.22 (1.12, 1.32)***	**1.62 (1.35, 1.96)***	**1.15 (1.05, 1.25)***
Model 3	**1.11 (1.02, 1.21)***	**1.39 (1.13, 1.71)***	1.06 (0.96, 1.16)
Model 4	1.07 (0.98, 1.17)	**1.26 (1.03, 1.55)***	1.03 (0.93, 1.13)
Model 5	1.07 (0.98, 1.17)	**1.25 (1.02, 1.54)***	1.04 (0.94, 1.14)

Model 1 = univariate analysis
Model 2 = model 1 plus age and sex
Model 3 = model 2 plus income
Model 4 = model 3 plus smoking status
Model 5 = model 4 plus frailty
* Results significant at the $p<0.05$ level

Table 4.6: Hazards ratio and 95% confidence intervals for rural dwellers from Cox proportional hazards analyses used to test the association between core predictors (social support, living alone, and sense of belonging) and mortality risk among CCHS respondents linked to the CMDB

Core Predictors	55 and Older n=4,750	55 - 64 n=2,201	65 and Older n=2,549
Low Tangible Support			
Model 1	**1.25 (1.02, 1.54)***	1.20 (0.77, 1.86)	**1.27 (1.01, 1.60)***
Model 2	**1.27 (1.04, 1.56)***	1.20 (0.77, 1.87)	**1.29 (1.03, 1.63)***
Model 3	1.16 (0.94, 1.43)	0.97 (0.62, 1.52)	1.21 (0.96, 1.53)
Model 4	1.11 (0.90, 1.36)	0.97 (0.62, 1.51)	1.16 (0.91, 1.46)
Model 5	1.04 (0.85, 1.28)	1.03 (0.66, 1.60)	1.07 (0.85, 1.36)
Low Levels of Affection			
Model 1	**1.57 (1.29, 1.92)***	**1.83 (1.21, 2.78)***	**1.40 (1.12, 1.76)***
Model 2	**1.42 (1.17, 1.73)***	**1.77 (1.17, 2.70)***	**1.34 (1.07, 1.68)***
Model 3	**1.29 (1.05, 1.58)***	1.37 (0.88, 2.11)	1.25 (1.00, 1.57)
Model 4	**1.25 (1.02, 1.53)***	1.38 (0.89, 2.14)	1.21 (0.96, 1.52)
Model 5	1.17 (0.96, 1.43)	1.31 (0.84, 2.01)	1.13 (0.90, 1.42)
Low Positive Social Interactions			
Model 1	**1.89 (1.56, 2.28)***	**1.68 (1.06, 2.66)***	**1.73 (1.41, 2.14)***
Model 2	**1.62 (1.35, 1.97)***	**1.67 (1.05, 2.64)***	**1.61 (1.31, 1.99)***
Model 3	**1.47 (1.21, 1.79)***	1.24 (0.77, 2.00)	**1.51 (1.22, 1.87)***
Model 4	**1.36 (1.12, 1.65)***	1.16 (0.72, 1.87)	**1.41 (1.13, 1.75)***
Model 5	1.21 (1.00, 1.49)	1.13 (0.70, 1.81)	**1.26 (1.01, 1.57)***
Low Emotional/Informational Support			
Model 1	**1.48 (1.21, 1.82)***	1.42 (0.89, 2.27)	**1.47 (1.18, 1.84)***
Model 2	**1.50 (1.22, 1.84)***	1.40 (0.88, 2.25)	**1.52 (1.21, 1.90)***
Model 3	**1.39 (1.13, 1.70)***	1.13 (0.70, 1.83)	**1.44 (1.15, 1.81)***
Model 4	**1.30 (1.07, 1.60)***	1.15 (0.71, 1.85)	**1.35 (1.08, 1.70)***
Model 5	1.22 (0.99, 1.50)	1.12 (0.69, 1.80)	1.26 (1.00, 1.58)
Weak Sense of Belonging			
Model 1	1.01 (0.89, 1.15)	1.19 (0.91, 1.56)	1.06 (0.92, 1.23)
Model 2	1.15 (1.00, 1.31)	1.19 (0.91, 1.56)	1.14 (0.98, 1.32)
Model 3	1.13 (0.99, 1.28)	1.16 (0.89, 1.51)	1.12 (0.97, 1.30)
Model 4	1.07 (0.94, 1.22)	1.07 (0.82, 1.40)	1.07 (0.93, 1.24)
Model 5	1.04 (0.91, 1.18)	1.01 (0.77, 1.32)	1.05 (0.90, 1.21)
Living Alone			
Model 1	**1.76 (1.56, 1.98)***	**1.38 (1.04, 1.83)***	**1.41 (1.23, 1.60)***
Model 2	**1.24 (1.10, 1.41)***	**1.38 (1.04, 1.83)***	**1.21 (1.05, 1.39)***
Model 3	1.08 (0.94, 1.25)	1.11 (0.82, 1.50)	1.10 (0.93, 1.28)
Model 4	1.07 (0.93, 1.23)	1.05 (0.78, 1.41)	1.08 (0.93, 1.27)
Model 5	1.10 (0.96, 1.27)	1.06 (0.79, 1.43)	1.12 (0.95, 1.31)

Model 1 = univariate analysis
Model 2 = model 1 plus age and sex
Model 3 = model 2 plus income
Model 4 = model 3 plus smoking status
Model 5 = model 4 plus frailty
*Results significant at the p<0.05 level

Table 4.7: Summary table of hazards ratios among CCHS respondents 55 – 64 with a 95% CI

Core Predictor	Sample n=6,798	Urban Dwellers n=4,621	Rural Dwellers n=2,201
Low Tangible Support	Not significant	1.35 (1.01, 1.81)*	Not significant
Low Levels of Affection	1.37 (1.07, 1.75)*	1.36 (1.01, 1.83)*	Not significant
Low Positive Social Interactions	1.36 (1.06, 1.75)**	1.49 (1.11, 2.01)**	Not significant
Low Emotional/ Informational Support	1.36 (1.06, 1.74)*	1.46 (1.09, 1.95)*	Not significant
Weak Sense of Belonging	Not significant	Not significant	Not significant
Living Alone	Not significant	1.25 (1.02, 1.54)**	Not significant

*Through model 4 (age, sex, income, and smoking)
**Through model 5 (age, sex, income, smoking, and frailty)

Table 4.8: Summary table of hazards ratios among CCHS respondents 65 and older with a 95% CI

Core Predictor	Sample n=8,966	Urban Dwellers n=6,417	Rural Dwellers n=2,549
Low Tangible Support	Not significant	Not significant	Not significant
Low Levels of Affection	1.17 (1.04, 1.31)*	1.15 (1.01, 1.31)*	Not significant
Low Positive Social Interactions	1.20 (1.07, 1.34)*	Not significant	1.26 (1.01, 1.57)**
Low Emotional/ Informational Support	1.19 (1.06, 1.33)*	Not significant	1.35 (1.08, 1.70)*
Weak Sense of Belonging	1.13 (1.05, 1.22)**	1.16 (1.06, 1.26)**	Not significant
Living Alone	Not significant	Not significant	Not significant

*Through model 4 (age, sex, income, and smoking)
**Through model 5 (age, sex, income, smoking, and frailty)

Kaplan-Meier (K-M) survival analyses measured the proportion of CCHS respondents surviving based on a core predictor and adjusted for age, sex, income, smoking, and frailty for the sample of CCHS respondents in adjusted analyses and stratified by age (Figures 4.3 – 4.9). Curves that are shown correspond to significant results from the Cox proportional hazards model in Table 4.4. K-M survival curves are a step-wise visual representation of times-to-event estimates and are a common method for approaching different survival times (Rich et al. 2010). Intervals between horizontal lines represent a death event, subsequently the smoother the line the fewer the death events that occurred during the observation period. The length of vertical lines represents the change in cumulative probability as the curves progress (Rich et al. 2010).

In the following K-M curves, respondents with low levels of support or a weak sense of belonging consistently have more interrupted curve lines, while those with moderate and the highest amount of support and a strong sense of belonging have smoother curves. The blue curves show a consistent influence of low levels of affection, low positive social interactions, low emotional/informational support, and a weak sense of belonging on the likelihood of a death event. The red curves represent moderate levels of social support and a strong sense of belonging. The green curves representing the highest levels of social support are not consistently the "flattest" curves with the most favorable survival profile. Recall that those reporting moderate or highest levels of social support across the constructs did not experience vastly different mortality rates in unadjusted analyses (Table 4.3). In other words, there is not as much consistency in the distance in survival curves between those reporting highest or moderate levels of social support as there is between these two categories and low levels of social support.

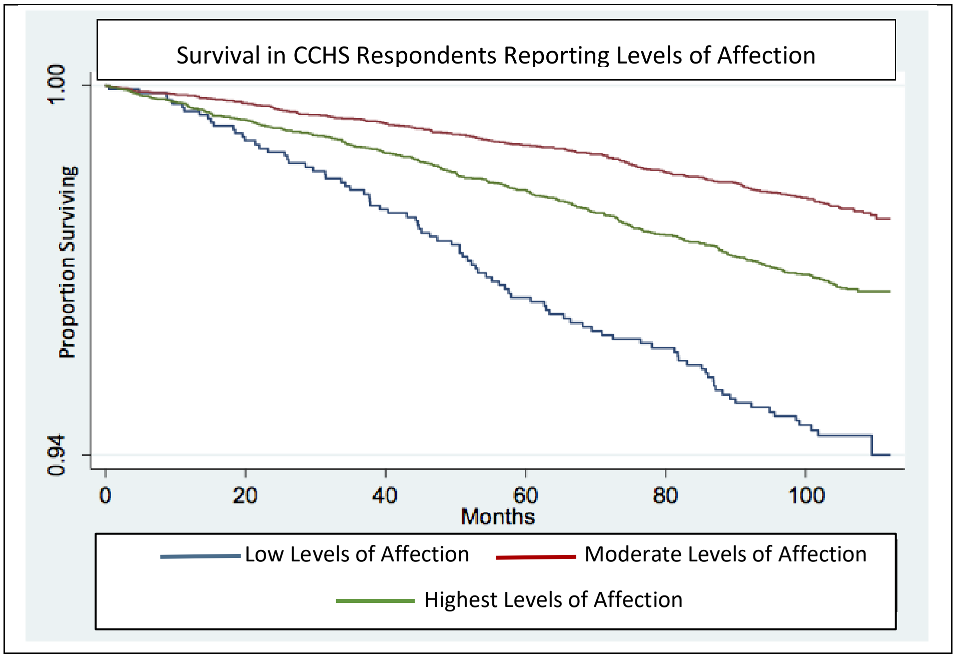

Figure 4.3: Survival curves of CCHS respondents 55 – 64 with low, moderate, and highest levels of affection between 2003 and 2011, n=6,822. Adjusted for age, sex, income, and smoking.

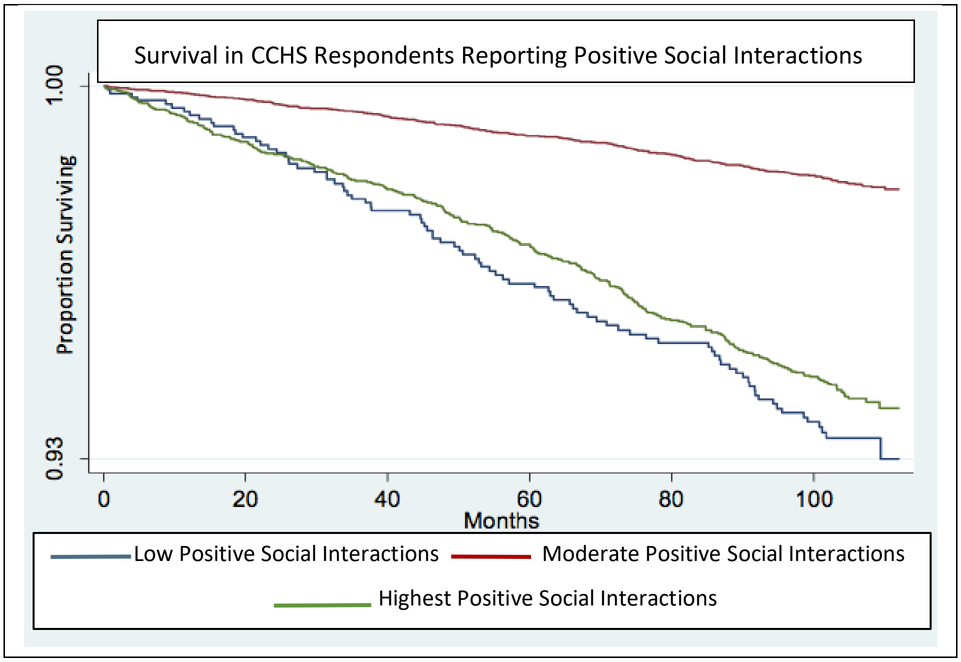

Figure 4.4: Survival curves of CCHS respondents 55 – 64 with low, moderate, and highest positive social interactions between 2003 and 2011, n=6,822. Adjusted for age, sex, income, smoking, and frailty.

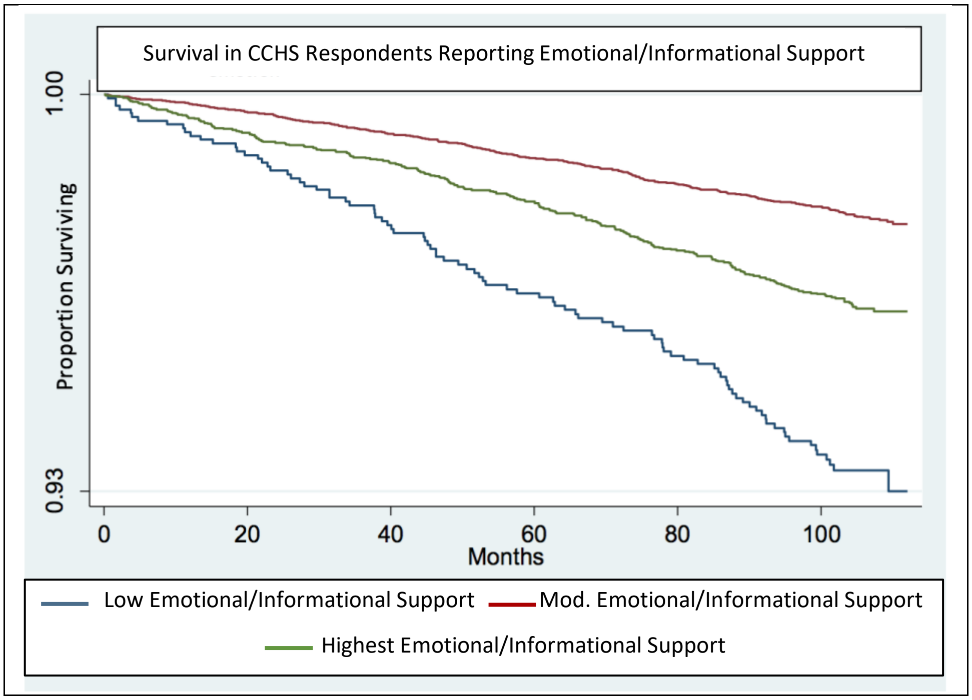

Figure 4.5: Survival curves of CCHS respondents 55 – 64 with low, moderate, and highest emotional/informational support between 2003 and 2011, n=6,822. Adjusted for age, sex, income, and smoking.

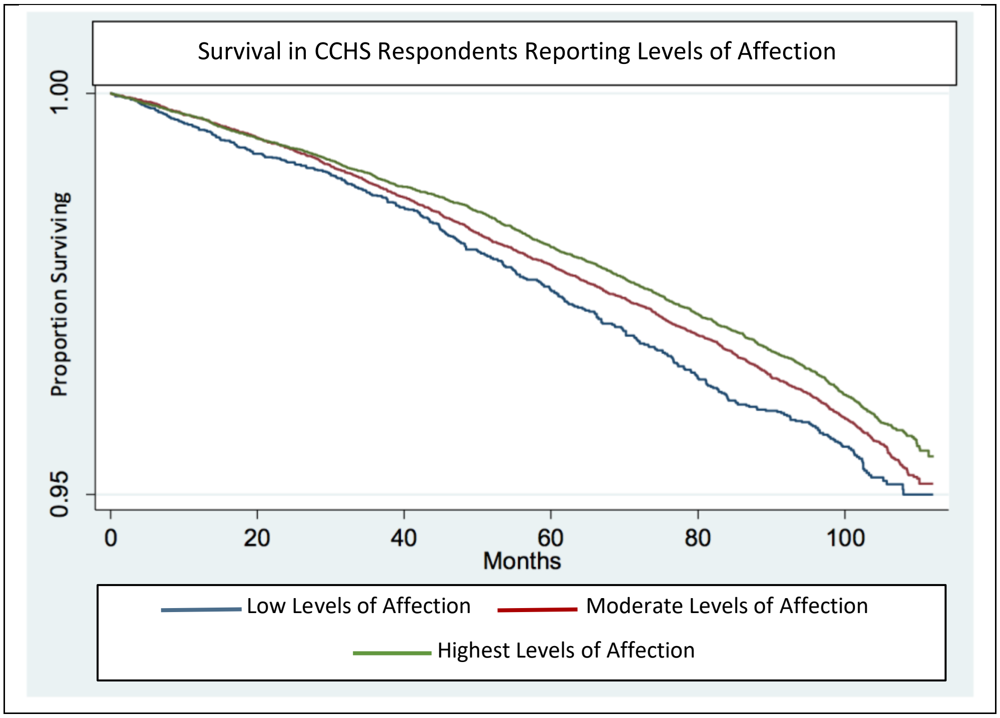

Figure 4.6: Survival curves of CCHS respondents 65 and older with low, moderate, and highest levels of affection between 2003 and 2011, n=8,966. Adjusted for age, sex, income, and smoking.

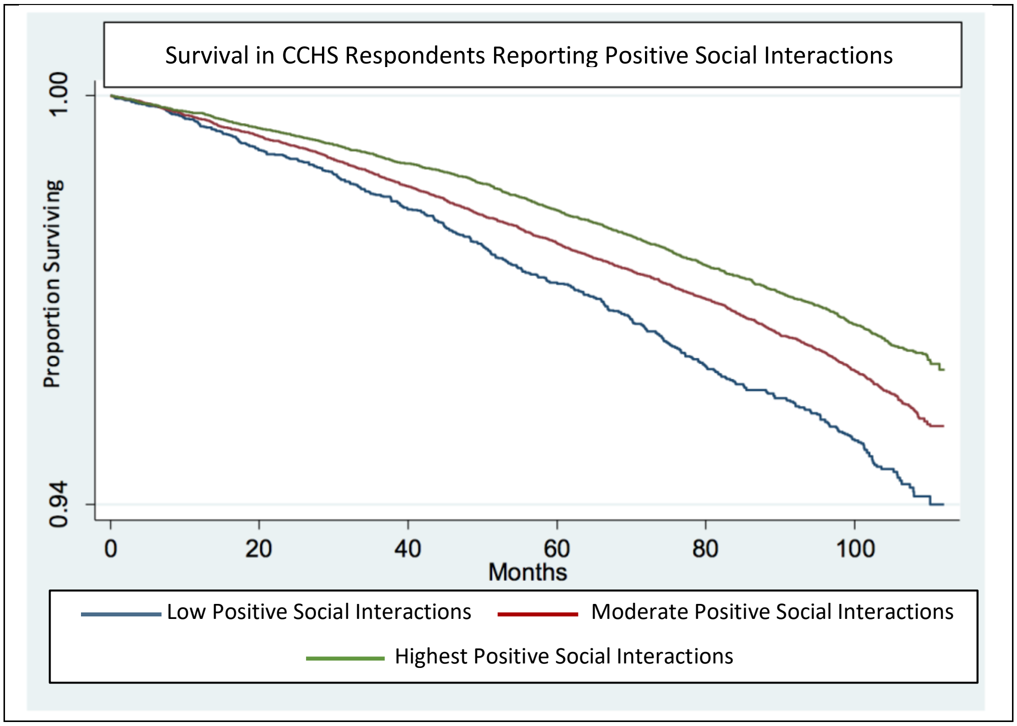

Figure 4.7: Survival curves of CCHS respondents 65 and older with low, moderate, and highest positive social interactions between 2003 and 2011, n=8,966. Adjusted for age, sex, income, and smoking.

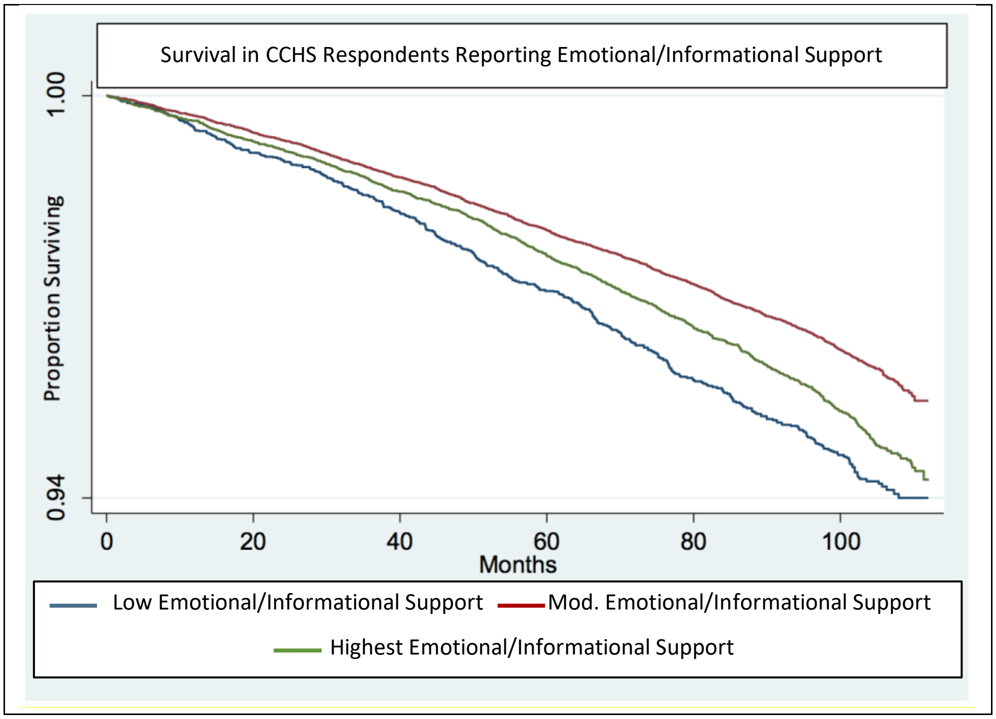

Figure 4.8: Survival curves of CCHS respondents 65 and older with low, moderate, and highest emotional/informational support between 2003 and 2011, n=8,966. Adjusted for age, sex, income, and smoking.

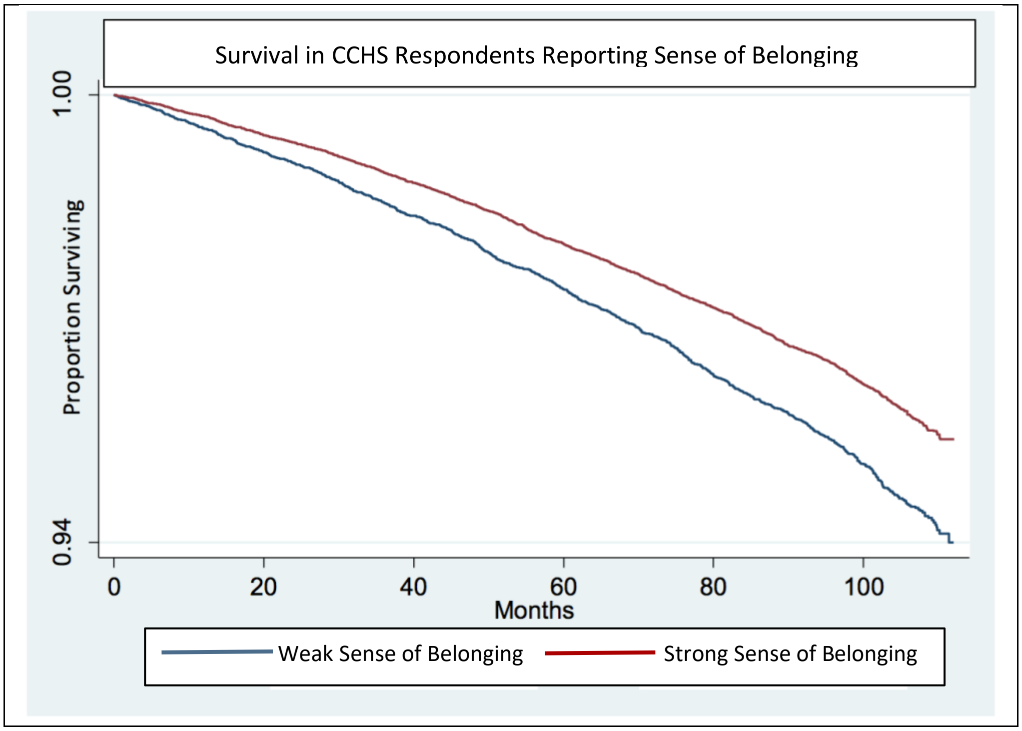

Figure 4.9: Survival curves of CCHS respondents 65 and older with a weak and strong sense of belonging between 2003 and 2011, n=8,966. Adjusted for age, sex, income, smoking, and frailty.

4.4 Conclusion

Mortality for older Canadians is patterned by levels of reported social support, with low levels generally associated with increased risk of mortality. The effect sizes among both age groups in the multivariate analyses ranged from 1.17 to 1.37 in models that do not adjust for frailty and 1.13 to 1.36 in models that adjust for frailty. The effect sizes are comparable to findings from other social support and mortality research outside Canada for all-cause and cardiovascular disease mortality, and studies measuring a decreased risk of mortality with high levels of social support (Becofsky et al. 2015, Berkman et al. 2004, Holt-Lunstad et al. 2015, Penninx et al. 1997, Rodriguez-Laso, Zunzunegui, and Otero 2007, Stringhini et al. 2012, Wilkins 2003).

However, the types of support that show stronger associations with either mortality or survival vary. As discussed in Chapter Two, social support and health studies rarely use comparable data, measures are not standardized, covariates are inconsistent, and statistical methods vary, making comparisons across studies difficult. Tangible support and living alone are two such examples. From the 15 studies reviewed systematically and discussed in Chapter Two, four have findings suggesting a positive association between tangible support and mortality among older adults (Forster and Stoller 1992, Ljungquist, Berg, and Steen 1995, Penninx et al. 1997, Sabin 1993), one found a negative association among women with good functionality (Avlund, Damsgaard, and Holstein 1998), and two found no significant results (Ellwardt et al. 2015, Lyyra and Heikkinen 2006).

Many studies have suggested the positive association between tangible support and mortality is due to the need of assistance when older adults experience functional decline, poor health, or disability and are already at an increased risk of mortality (Kaplan et al. 1994, Penninx et al. 1997, Sabin 1993, Uchino 2009). Recall that there was no significant association between low tangible support and mortality among older adults in these analyses. In fact, in unadjusted analyses mortality rates began to increase from moderate to highest tangible support in this age group. Urban dwellers 55 – 64 did have a significant association between low tangible support and mortality, with a HR of 1.35 (1.01, 1.81 95% CI) through model four (smoking). This association among the younger cohort was unexpected. Presumably, when this age group receives tangible support it is for reasons other than functional decline, poor health, or disability associated with aging.

Among the systematically reviewed studies, two found an increased risk of mortality associated with older adults living alone (Avlund, Damsgaard, and Holstein 1998, Hanson et al. 1989) and three found no significant associations (Ellwardt et al. 2015, Jylhä and Aro 1989, Lyyra and Heikkinen 2006). These analyses found an association between living alone and mortality among urban dwellers 55 – 64 only, with a HR of 1.25 (1.02, 1.54 95% CI) through model five (frailty). Due to a preponderance of literature suggesting older adults who live alone have difficulties maintaining social relationships, are significantly more likely to suffer from both loneliness and social isolation, have a greater number of chronic conditions, a greater risk of disabilities, and a higher mortality rate (Birkeland and Natvig 2009, Kandler et al. 2007, Kharicha et al. 2007, Lim and Kua 2011, McCann, Donnelly, and O'Reilly 2011, Sun et al. 2007), the lack of a significant association between living alone and mortality among older adults was perhaps the most surprising results. That being said, the literature does tell us that older adults who are unable to live alone or who become increasingly dependent on others are at a greater risk for depression, and among frail older adults, those living alone actually experienced a greater sense of well-being than those living with others, despite their functional status (Gustavson and Lee 2004). Birkeland and Natvig (2009) suggest that the independence gained from living alone has a beneficial effect on the mental health of older adults that outweighs their frail health status. Living alone, with the appropriate level of supportive care based on functional status, may be a recommended living arrangement for older adults with a proclivity for independence.

Emotional support and social integration were the types of social support found to be most meaningful among older adults in terms of providing a protective effect against premature mortality from the 15 studies reviewed systematically and discussed in Chapter Two. These results are consistent with my own. Emotional support represents a functional measure of support, specifically close relationships with a person or persons with whom an individual can confide, share interests, and boost self-esteem (Seeman 1996, Stringhini et al. 2012). In previous research, strong emotional support has been found to confer protection to unmarried men that is equal to the protective effect of having a spouse (Hanson et al. 1989), low emotional support has been found to increase the risk of mortality by as much as three times in myocardial infarction patients (Penninx et al. 1997), and the presence of a confidant has been found to reduce the risk of mortality by 25 per cent (Rodriguez-Laso, Zunzunegui, and Otero 2007). The analyses presented here found a statistically significant association between low emotional/informational support and mortality among older adults with a HR of 1.19 (1.06, 1.33 95% CI) through model four. The influence of low emotional/

informational support on mortality was even stronger in the younger cohort with a HR of 1.36 (1.06, 1.74 95% CI), also through model four.

The effect sizes and confidence intervals of the association between low levels of affection and mortality among both cohorts were similar to the association between low emotional/informational support and mortality. For the younger cohort the HR for affection was 1.37 (1.07, 1.75 95% CI) and for those 65 and older the HR was 1.17 (1.04, 1.31 95% CI). Both emotional/informational support and affection are functional measures of support, but they reflect different types of relationships. CCHS survey questions about emotional/informational support pertain to close relationships with someone who can provide information, problem solving, and confiding. Survey questions about affection pertain to whether someone is available to provide hugs and love. When interpreting these results it is important to recall that Sherbourne and Stewart (1991) suggest that on the original Medical Outcomes Study (MOS) Social Support Survey, their label of affection, a behavioral manifestation of love, may in fact be emotional support, and emotional/informational support may be more reflective of supportive communication.

Social integration represents a structural measure of social support that is characterized by participation in a community or social network. While social integration is not explicitly measured on the CCHS, positive social interactions on the MOS, a functional support measure, does capture participation within a social network

(Sherbourne and Stewart 1991). The bulk of the social support studies systematically reviewed and discussed in Chapter Two found a significant negative association between social integration and mortality (Avlund, Damsgaard, and Holstein 1998, Rodriguez-Laso, Zunzunegui, and Otero 2007, Rosengren, Wilthelmsen, and Orth-Gomer 2004, Sabin 1993, Wilkins 2003). Social integration has been found to be associated with a wide variety of health outcomes in past research, and may confer protection by influencing positive health behaviors (Berkman et al. 2004). We must also be aware that being healthy may be a prerequisite for social integration – those in functional decline or with a disability might be at increased risk of death and as a result have poorer integration.

As discussed in Chapter Two, social integration provides opportunities to participate and identify with a social network and a community, and thus has been associated with a sense of belonging (Avlund, Damsgaard, and Holstein 1998). A sense of belonging, though not common in the social support literature, has also been theorized to contribute to the main effects model that explains the mechanism relating social support and mortality (Lyyra and Heikkinen 2006). Additionally, a weak sense of belonging has been associated with negative social support (Kitchen, Williams, and Chowhan 2012). Among CCHS respondents, the older cohort were more likely to report a strong sense of belonging (68.36 vs. 63.89%). These results are consistent with previous Canadian research (Kitchen, Williams, and Chowhan 2012, Ross 2002). It is likely that older adults have spent more time forming attachments and may have more time to participate in the community (Ross 2002). However, older adults have also been found to be at a greater risk of severing their sense of belonging following retirement, decreased functional ability, and the death of a spouse or friends (Cloutier-Fisher, Kobayashi, and Smith 2011). This may serve to explain why the older cohort were the only group to have a significant association between a weak sense of belonging and mortality (HR of 1.13 (1.05, 1.22 95% CI) through frailty) despite reporting a high frequency of sense of belonging.

The addition of a frailty index to the final models was expected to appreciably decrease the strength of the associations between predictor variables and mortality given that frailty indices, which are composed of accumulated health deficits, have been validated in multiple studies as strongly predictive of mortality, institutionalization, and the need for health care services (Hoover et al. 2015). Low positive social interactions was the only predictor to maintain significance with the addition of frailty for the younger cohort, and a weak sense of belonging was the only predictor to do so for the 65 and older cohort (Table 4.4). A frailty index has not been used in social support research in Canada in this type of analysis and the fact that low positive social interactions among the 55 – 64 age group and a weak sense of belonging among the 65 and older age group were still significant after adjusting for frailty is telling of the importance of these types of support among Canadians of different age groups. These concepts should be carefully considered when thinking about strategies to approach decreased social resources in Canada. This is not to suggest that models that lose significance with the addition frailty are no longer important. Income and smoking are two powerful predictors of mortality, models that maintain significance through these covariates should be carefully considered when approaching strategies to resolve decreased social resources.

Stratified analyses of urban and rural dwellers paint a more in-depth picture of how different groups of Canadians are impacted by different types of support and living arrangements, with very different results among pre- and post-retirement groups. Results suggest that urban dwellers aged 55 – 64 have a greater sensitivity to social resources than their rural counterparts. Among this sample, the association between mortality and all core predictors except a weak sense of belonging were significant, with low positive social interactions and living alone both significant through frailty. Rural dwellers in the younger cohort, on the other hand, had no significant relationships between mortality and any of the core predictors. This is in keeping with previous research that suggests that the association between social support and mortality has a smaller effect in rural communities (House, Umberson, and Landis 1988, Wanless, Mitchell, and Wister 2010). Interestingly, urban dwellers 55 – 64 were the only group to show an association between mortality and both low tangible support and living alone. Why would this group be so much more reliant on others that it could impact their mortality? Could rural dwellers be more self-reliant? These discrepancies between regional groups, and a lack of associations for rural dwellers in the younger age group would be an interesting area for future research.

Rural dwellers 65 and older showed significant associations with mortality and low emotional/informational support, through model four (smoking), and low positive social interactions through model five (frailty). These results suggest that positive social interactions and emotional/informational support become more meaningful to rural dwellers as they age, yet interestingly these do not appear to be as important for older urban dwellers. Older urban dwellers were the only group to have a significant association between a weak sense of belonging and mortality. In fact, the opposing results between urban and rural respondents suggests the need for different approaches to mitigate the negative health effects of low social support in cities as compared with rural areas, as well as by age, and requires further research to better understand why these differences occur.

Low social support is associated with premature mortality in a large sample of older Canadian and the effect size is comparable to other known risk factors for premature mortality such as obesity with HR effect sizes between 1.18 and 1.29 (Flegal et al. 2013), sedentarism with HR effect sizes between 1.17 and 1.24 (Biswas et al. 2015), and smoking, with HR effect sizes as low as 1.30 and as high as 1.58 (Zheng et al. 2014) and relative risk effect sizes between 1.34 and 1.54 (Qin et al. 2013). The unadjusted mean mortality rates in this research for both low income and smokers were comparable to respondents in both age groups reporting the lowest levels of affection, emotional support, and positive social interactions. These data suggest that social support variables are associated with mortality to a similar degree as income and smoking, well known determinants of poor health and mortality (Kontis et al. 2014, Lantz et al. 2010, Stringhini et al. 2017). Additionally, the size of the influence on mortality for low social support is similar to that for many studies outside Canada as discussed previously (Becofsky et al. 2015, Berkman et al. 2004, Penninx et al. 1997, Rodriguez-Laso, Zunzunegui, and Otero 2007, Stringhini et al. 2012, Wilkins 2003). This study was unique compared to past international research in that it had a large sample with multiple measures of social support and considered two age groups and urban/rural differences. There is evidence that social/emotional deprivation of low social support is more important as a risk factor for premature mortality than is tangible support or living alone and that differing social support constructs have differing influences on mortality in urban compared to rural locations.

This study also tells us more about the social support characteristics of Canadians both pre- and post-retirement, as well as between women and men. With the exception of emotional support, most men reported the highest levels of social support as compared to women, most of whom reported moderate social support, with the exception of affection. This was surprising because women generally have more emotionally intimate relationships than men (Fowler, Wareham-Fowler, and Barnes 2013, Kawachi and Berkman 2001). Most men reported moderate levels of emotional/informational support and most women reported the highest levels of affection. An explanation to these unexpected results may be found in how the measures of social support on the CCHS were operationalized. As discussed previously, measures of emotional/informational support may be more indicative of the provision of information and communication, and affection may be more closely related to emotional support (Sherbourne and Stewart 1991). If this is indeed the case, these results validate myriad findings that women are more likely to maintain emotional relationships. Additionally, women have also been found to provide more social support, particularly to their spouses (Kawachi and Berkman 2001), which may explain why most men in this study, the majority of whom are married, reported the highest levels of support.

The 65 and older cohort reported lower social support across all types of support as compared to the 55 – 64 group. This was expected considering older adults today are experiencing reduced social support as compared to previous generations, and the 65 and older group were much more likely to live alone than the younger cohort. Given what we know about the differences in social support by age, gender, and urban/rural locations, how do we ensure that older Canadians do not experience low social support? And how do we approach social support in different geographic locations?

The findings here ask us to think about demographic shifts that increasingly place more Canadians in a situation of living alone and with less social support than previous generations.

This research was intended to better understand if living alone or reporting low levels of social support contributed to increased risks of mortality in a Canadian context. Older respondents with fewer social resources, particularly low levels of affection, low positive social interactions, low emotional/informational support, and a weak sense of belonging had an increased risk of premature mortality. Living alone was not associated with an increased risk of mortality after adjustment for income in the older cohort. Living alone with fewer material resources may increase the vulnerability of older adults and thus may increase the risk of premature mortality. This is an issue that requires further research in order to better understand the manner in which living alone can influence older Canadians.

5. THE ASSOCIATION BETWEEN LOW SOCIAL SUPORT AND HOSPITAL UTILIZATION AMONG OLDER CANADIANS

5.1 Introduction

The mortality analyses reported in Chapter Four suggested that low levels of affection, low positive social interactions, low emotional/informational support, and a weak sense of belonging were the core constructs of social support that increased the risk of premature mortality in the overall sample. Frequency of hospital admission and length of stay among older adults are of particular concern in light of a rapidly aging population who may be facing a decrease in social support, an increase in living alone, and a decline in financial security enjoyed by previous generations of older adults. Additionally, annual federal and provincial health care expenditures are nearing $250 billion, with nearly 30 per cent directed at hospitals, of which 50 per cent is spent on older adults (CIHI 2017, Standing Committee on Finance 2011). Because hospitals are the most expensive form of health care delivery, and older adults are the heaviest users of hospitals, it is important to understand factors that may influence hospital burden.

The hospital utilization analysis drew from a sample of 16,409 Canadian Community Health Survey (CCHS) respondents 55 and older linked to the Discharge Abstract Database (DAD) (See Chapter Four for a full description of CCHS respondents included in both mortality and hospital utilization analyses). The Québec Ministry of Health provides discharge data to the Hospital Morbidity Database, not the Discharge Abstract Database, thus Québec respondents from the CCHS did not have hospitalization records available for linkage, reducing the sample size for the hospitalization analyses reported in this chapter to 11,427.

5.2 Hospitalization Characteristics of the Sample

Among the sample of respondents available to draw from for analyses (n=11,427), 6,035 did not have a hospital admissions and 5,392 had an admission (Table 5.1). When stratified by age, more than one-third of respondents 55 – 64 had admissions (36.88%), and more than half of respondents 65 and older had admissions (54.57%), reflecting expected increases in hospital events with age. There were 5,392 respondents who had at least one admission, including non-acute admissions. Most respondents with an admission had only one admission (39.82%) and the fewest number of respondents had five or more admissions (14.39%). The same pattern was seen when stratified by age: 47.47 per cent of respondents 55 – 64 had at least one admission and 10.97 per cent had five or more admissions. Among respondents 65 and older, 36.11 per cent of respondents had at least one acute or non-acute admission and 16.05 per cent had five or more admissions. The majority of respondents who had at least one overnight in hospital, including non-acute admissions, stayed between four and ten nights (30.32%). Among the 55 – 64 cohort, the percentage of respondents who spent three nights or less (32.08%) was close to the percentage who stayed between four and ten nights (34.81%). The older cohort, however, had a similar frequency of overnights in the range of four to ten overnights (28.58%) and 11 to 29 overnights (27.15%).

Table 5.1: Acute and non-acute hospital utilization outcomes among CCHS respondents 55 and older and stratified by age

Outcomes	Total			Aged 55-64			Aged 65 and Older		
	Freq.		%	Freq.	**n**	%	Freq.	**n**	%
Hospital Admission†		**11,427**			**4,769**			**6,658**	
No Admissions	6,035		52.81%	3,010		63.12%	3,025		45.43%
1 or more Admissions	5,392		47.19%	1,759		36.88%	3,633		54.57%
Number of Admissions†		**5,392**			**1,759**			**3,633**	
1 Admission	2,147		39.82%	835	*	47.47%	1,312	*	36.11%
2 Admissions	1,328		24.63%	438	*	24.90%	890	*	24.50%
3 - 4 Admissions	1,141		21.16%	293	*	16.66%	848	*	23.34%
5+ Admissions	776		14.39%	193	*	10.97%	583	*	16.05%
Length of Stay†		**3,786**			**1,060**			**2,726**	
3 Nights or Less	892		23.56%	340	*	32.08%	552	*	20.25%
4 - 10 Nights	1,148		30.32%	369	*	34.81%	779	*	28.58%
11 - 29 Nights	940		24.83%	200	*	18.87%	740	*	27.15%
30+ Night	806		21.29%	151	*	14.25%	655	*	24.03%

*p value <0.05

†Not including Quebec, September 1, 2000 - March 31, 2004

5.3 Multivariate Results

This section presents logistic regression modelling results for hospital use and zero-truncated negative binomial modelling results for number of admissions and length of stay for hospital users for events that occurred between September 2000 and March 2004. The models are presented incrementally for a total of five models per core predictor (affection, positive social interactions, emotional/informational support, living alone, and a sense of belonging). Model one was a univariate analysis of a core predictor, model two included model one plus age and sex, model three included model two plus income, model four included model three plus smoking, and lastly, model five included model four plus frailty. Due to the small sample size of respondents with at least one admission and at least one hospital overnight, results are not reported for analyses stratified by urban and rural regions.

Multivariate Analyses of Hospital Admissions

Models predicting the odds of any hospital admission generally showed an influence of most social support variables in the hypothesized direction in unadjusted models and models adjusting for age and sex, but attenuation of effect sizes in fully adjusted models (Table 5.2). The exception to these findings were the results for sense of belonging where the odds ratio remained elevated at 1.14 (1.02, 1.28 95% CI) through model five (age, sex, income, smoking, and frailty) for adults 65 and older. Respondents in this age group with a weak sense of belonging had a 14 per cent increased risk of being hospitalized as compared to respondents with a strong sense of belonging.

Multivariate Models of Number of Admissions

The sample of respondents was reduced following the logistic regression to include only respondents who had at least one hospital admission, this was further reduced to include only respondents with an acute admission (n=3,822). Among the 55 – 64 age group (n=1,080), results from a zero-truncated negative binomial regression found a significant association between the number of hospital admissions and low positive social interactions with an incidence rate ratio (IRR) of 1.46 (1.08, 1.97 95% CI) and living alone with an IRR of 1.22 (1.01, 1.48 95% CI), both through model four (age, sex, income, and smoking) (Table 5.3). In other words, respondents 55 – 64 with low positive social interactions and who had at least one acute hospital admission, had a predicted number of admissions 1.46 times that of respondents with moderate or highest positive social interactions. Respondents 55 – 64 that were living alone with at least one acute hospital admission, had a predicted number of admissions 1.22 times that of respondents 55 – 64 and living with others.

Table 5.2: Odds ratio and 95% confidence interval from logistic regression analyses used to test the association between core predictors (social support, living alone, and sense of belonging) and hospital admission among CCHS respondents linked to the DAD

Core Predictors	55 and Older n=11,427	55 - 64 n=4,769	65 and Older n=6,658
Low Levels of Affection			
Model 1	**1.36 (1.18, 1.57)***	**1.49 (1.16, 1.92)***	**1.21 (1.02, 1.45)***
Model 2	**1.24 (1.07, 1.44)***	**1.48 (1.15, 1.90)***	1.14 (0.95, 1.37)
Model 3	1.14 (0.98, 1.32)	**1.32 (1.02, 1.71)***	1.06 (0.88, 1.27)
Model 4	1.12 (0.96, 1.30	1.30 (1.00, 1.69)	1.04 (0.87, 1.25)
Model 5	0.98 (0.84, 1.14)	1.12 (0.85, 1.46)	0.93 (0.77, 1.12)
Low Positive Social Interactions			
Model 1	**1.49 (1.30, 1.72)***	**1.46 (1.13, 1.89)***	**1.36 (1.15, 1.61)***
Model 2	**1.30 (1.13, 1.51)***	**1.46 (1.13, 1.89)***	**1.25 (1.05, 1.49)***
Model 3	**1.19 (1.03, 1.38)***	1.30 (1.00, 1.70)	1.16 (0.97, 1.38)
Model 4	1.16 (1.00, 1.35)	1.27 (0.97, 1.66)	1.13 (0.95, 1.36)
Model 5	0.97 (0.83, 1.13)	1.03 (0.78, 1.36)	0.95 (0.79, 1.14)
Low Emotional/Informational Support			
Model 1	**1.22 (1.06, 1.41)***	1.26 (0.98, 1.64)	1.14, (0.95, 1.36)
Model 2	1.15 (0.99, 1.33)	1.26 (0.97, 1.63)	1.10 (0.92, 1.32)
Model 3	1.06 (0.91, 1.23)	1.14 (0.87, 1.48)	1.03 (0.86, 1.24)
Model 4	1.04 (0.89, 1.21)	1.12 (0.86, 1.46)	1.01 (0.84, 1.21)
Model 5	0.89 (0.76, 1.04)	0.94 (0.71, 1.23)	0.87 (0.72, 1.05)
Weak Sense of Belonging			
Model 1	**1.15 (1.06, 1.26)***	1.12 (0.96, 1.29)	**1.25 (1.12, 1.39)***
Model 2	**1.22 (1.12, 1.33)***	1.12 (0.97, 1.30)	**1.27 (1.14, 1.43)***
Model 3	**1.20 (1.10, 1.31)***	1.10 (0.95, 1.27)	**1.25 (1.12, 1.40)***
Model 4	**1.19 (1.09, 1.30)***	1.08 (0.93, 1.25)	**1.25 (1.11, 1.39)***
Model 5	1.09 (1.00, 1.20)	1.00 (0.87, 1.17)	**1.14 (1.02, 1.28)***
Living Alone			
Model 1	**1.48 (1.37, 1.60)***	**1.22 (1.05, 1.42)***	**1.24 (1.13, 1.37)***
Model 2	**1.15 (1.06, 1.26)***	**1.23 (1.06, 1.42)***	**1.13 (1.02, 1.26)***
Model 3	1.04 (0.95, 1.14)	1.12 (0.95, 1.31)	1.01 (0.90, 1.14)
Model 4	1.03 (0.94, 1.13)	1.10 (0.93, 1.29)	1.00 (0.89, 1.13)
Model 5	1.03 (0.94, 1.14)	1.08 (0.92, 1.28)	1.02 (0.91, 1.15)

Model 1 = univariate analysis
Model 2 = model 1 plus age and sex
Model 3 = model 2 plus income
Model 4 = model 3 plus smoking status
Model 5 = model 4 plus frailty
*Results significant at the p<0.05 level

The 65 and older age group (n=2,742) had a significant association between number of admissions and a weak sense of belonging only. The IRR was 1.12 (1.02, 1.22 95% CI) through model four. In other words, adults 65 and older with a weak sense of belonging and at least one acute hospital admission had a predicted number of admissions 1.12 times that of older adults with a strong sense of belonging (Table 5.3).

Table 5.3: The incidence rate ratio and 95% confidence interval from a zero-truncated negative binomial regression used to test the association between core predictors (social support, living alone, and sense of belonging) and the predicted number of admissions among CCHS respondents linked to the DAD

Core Predictors	55 and Older n=3,822	55 - 64 n=1,080	65 and Older n=2,742
Low Levels of Affection			
Model 1	**1.16 (1.02, 1.32)***	1.17 (0.88, 1.57)	1.14 (0.99, 1.32)
Model 2	**1.15 (1.01, 1.31)***	1.20 (0.90, 1.60)	1.14 (0.99, 1.31)
Model 3	1.09 (0.96, 1.26)	1.09 (0.81, 1.48)	1.09 (0.95, 1.27)
Model 4	1.09 (0.95, 1.25)	1.09 (0.81, 1.46)	1.09 (0.94, 1.26)
Model 5	1.01 (0.87, 1.15)	0.97 (0.73, 1.28)	1.02 (0.89, 1.19)
Low Positive Social Interactions			
Model 1	**1.28 (1.14, 1.46)***	**1.55 (1.16, 2.08)***	**1.20 (1.04, 1.38)***
Model 2	**1.27 (1.13, 1.45)***	**1.58 (1.19, 2.12)***	**1.20 (1.04, 1.38)***
Model 3	**1.22 (1.07, 1.39)***	**1.46 (1.08, 1.95)***	1.15 (1.00, 1.32)
Model 4	**1.21 (1.07, 1.38)***	**1.46 (1.08, 1.97)***	1.14 (0.99, 1.31)
Model 5	1.09 (0.96, 1.23)	1.20 (0.90, 1.58)	1.05 (0.91, 1.21)
Low Emotional/Informational Support			
Model 1	**1.15 (1.01, 1.32)***	1.25 (0.92, 1.68)	1.12 (0.96, 1.30)
Model 2	**1.15 (1.01, 1.32)***	1.28 (0.95, 1.75)	1.12 (0.96, 1.30)
Model 3	1.11 (0.96, 1.27)	1.17 (0.85, 1.60)	1.08 (0.93, 1.26)
Model 4	1.09 (0.95, 1.26)	1.16 (0.85, 1.60)	1.07 (0.92, 1.25)
Model 5	1.01 (0.89, 1.16)	1.02 (0.76, 1.36)	1.01 (0.87, 1.16)
Weak Sense of Belonging			
Model 1	1.09 (1.00, 1.19)	0.99 (0.83, 1.19)	**1.13 (1.03, 1.23)***
Model 2	1.09 (1.00, 1.19)	0.99 (0.83, 1.19)	**1.13 (1.03, 1.25)***
Model 3	1.07 (0.99, 1.17)	0.96 (0.80, 1.14)	**1.12 (1.02, 1.22)***
Model 4	1.07 (0.99, 1.16)	0.95 (0.79, 1.14)	**1.12 (1.02, 1.22)***
Model 5	1.02 (0.94, 1.11)	0.92 (0.78, 1.09)	1.06 (0.97, 1.16)
Living Alone			
Model 1	1.05 (0.98, 1.14)	**1.32 (1.11, 1.57)***	0.96 (0.88, 1.04)
Model 2	1.06 (0.98, 1.15)	**1.31 (1.09, 1.57)***	1.01 (0.92, 1.11)
Model 3	1.00 (0.91, 1.09)	**1.22 (1.01, 1.48)***	0.94 (0.85, 1.04)
Model 4	1.00 (0.91, 1.08)	**1.22 (1.01, 1.48)***	0.94 (0.85, 1.03)
Model 5	1.00 (0.91, 1.08)	1.18 (0.99, 1.42)	0.95 (0.86, 1.04)

Model 1 = univariate analysis
Model 2 = model 1 plus age and sex
Model 3 = model 2 plus income
Model 4 = model 3 plus smoking status
Model 5 = model 4 plus frailty
*Results significant at the p<0.05 level

Multivariate Models of Length of Stay

The sample of respondents was again reduced following analyses for the number of admissions to include only respondents who had at least one acute overnight admission in hospital (n=3,778) (Table 5.4). Among the 55 – 64 age group (n=1,060), there was an association between length of stay and low positive social interactions with an IRR of 1.73 (1.21, 2.51 95% CI) through model four, and low emotional/informational support with an IRR of 1.45 (1.01, 2.05 95% CI) and living alone with an IRR of 1.32 (1.06, 1.65 95% CI), both through model five. Respondents in this age group with low positive social interactions, low emotional/informational support, and living alone had predicted respective lengths of stays 1.73, 1.45, and 1.32 times that of respondents with the highest support or living with others.

Table 5.4: The incidence rate ratio and 95% confidence interval from a zero-truncated negative binomial regression used to test the association between core predictors (social support, living alone, and sense of belonging) and the predicted length of stay (days) among CCHS respondents linked to the DAD

Core Predictors	55 and Older n=3,778	55 - 64 n=1,060	65 and Older n=2,718
Low Levels of Affection			
Model 1	**1.54 (1.28, 1.82)***	**1.72 (1.20, 2.44)***	**1.46 (1.21, 1.79)***
Model 2	**1.51 (1.28, 1.79)***	**1.77 (1.23, 2.52)***	**1.43 (1.19, 1.73)***
Model 3	**1.35 (1.14, 1.60)***	1.40 (0.98, 2.03)	**1.32 (1.09, 1.60)***
Model 4	**1.31 (1.12, 1.55)***	1.39 (0.97, 1.97)	**1.30 (1.07, 1.57)***
Model 5	**1.30 (1.11, 1.52)***	1.22 (0.87, 1.72	**1.31 (1.08. 1.58)***
Low Positive Social Interactions			
Model 1	**1.73, 1.46, 2.01)***	**2.12 (1.48, 3.03)***	**1.57 (1.31, 1.90)***
Model 2	**1.68 (1.43, 1.97)***	**2.18 (1.52, 3.13)***	**1.52 (1.27, 1.82)***
Model 3	**1.51 (1.28, 1.79)***	**1.79 (1.23, 2.56)***	**1.40 (1.17, 1.68)***
Model 4	**1.48 (1.25, 1.73)***	**1.73 (1.21, 2.51)***	**1.38 (1.15, 1.67)***
Model 5	**1.35 (1.15, 1.58)***	1.38 (0.97, 1.95)	**1.31 (1.09, 1.57)***
Low Emotional/Informational Support			
Model 1	**1.60 (1.34, 1.92)***	**1.92 (1.32, 2.77)***	**1.51 (1.23, 1.84)***
Model 2	**1.63 (1.38, 1.93)***	**2.01 (1.40, 2.97)***	**1.51 (1.25, 1.84)***
Model 3	**1.45 (1.21, 1.72)***	**1.62 (1.11, 2.36)***	**1.38 (1.13, 1.68)***
Model 4	**1.40 (1.17, 1.67)***	**1.58 (1.08, 2.32)***	**1.35 (1.11, 1.65)***
Model 5	**1.36 (1.15, 1.62)***	**1.45 (1.01, 2.05)***	**1.34 (1.09, 1.61)***
Weak Sense of Belonging			
Model 1	**1.17 (1.06, 1.31)***	1.01 (0.81, 1.26)	**1.23 (1.09, 1.39)***
Model 2	**1.17 (1.05, 1.30)***	1.01 (0.81, 1.26)	**1.23 (1.09, 1.39)***
Model 3	1.11 (1.00, 1.23)	0.91 (0.74, 1.14)	**1.19 (1.05, 1.34)***
Model 4	1.08 (0.98, 1.21)	0.86 (0.69, 1.06)	**1.19 (1.05, 1.34)***
Model 5	1.03 (0.93, 1.14)	0.79 (0.64, 0.96)*	**1.13 (1.01, 1.27)***
Living Alone			
Model 1	**1.46 (1.32, 1.62)***	**1.61 (1.31, 2.01)***	**1.30 (1.16, 1.45)***
Model 2	**1.32 (1.19 , 1.46)***	**1.61 (1.30, 1.99)***	**1.23 (1.11, 1.39)***
Model 3	**1.15 (1.03, 1.28)***	**1.32 (1.04, 1.67)***	1.11 (0.97, 1.25)
Model 4	**1.14 (1.02, 1.27)***	**1.31 (1.04, 1.67)***	1.09 (0.96, 1.25)
Model 5	**1.16 (1.05, 1.30)***	**1.32 (1.06, 1.65)***	1.12 (0.99, 1.26)

Model 1 = univariate analysis
Model 2 = model 1 plus age and sex
Model 3 = model 2 plus income
Model 4 = model 3 plus smoking status
Model 5 = model 4 plus frailty
*Results significant at the $p<0.05$ level

The 65 and older age group (n=2,718) had significant associations with low levels of affection, low positive social interactions, low emotional/informational support, and a weak sense of belonging with length of stay, all through model five. Low levels of affection had an IRR of 1.31 (1.08, 1.58 95% CI), low positive social interactions had an IRR of 1.31 (1.09, 1.57 95% CI), low emotional/informational support had an IRR of 1.34 (1.09, 1.61 95% CI), and lastly, a weak sense of belonging had an IRR of 1.13 (1.01, 1.27 95% CI). Tables 5.5 (55 – 64) and 5.6 (65 and older) include summary results for all hospital utilization analyses.

Table 5.5: Summary table of final results from hospital utilization regressions among CCHS respondents 55 – 64 with a 95% CI

Core Predictor	Hospital Admissions (Odds Ratio)	Number of Admissions (Incidence Rate Ratio)	Length of Stay (Incidence Rate Ratio)
Low Levels of Affection	Not significant	Not significant	Not significant
Low Positive Social Interactions	Not significant	1.46 (1.08, 1.97)*	1.73 (1.21, 2.51)*
Low Emotional/ Informational Support	Not significant	Not significant	1.45 (1.01, 2.05)**
Weak Sense of Belonging	Not significant	Not significant	Not significant
Living Alone	Not significant	1.22 (1.01, 1.48)*	1.32 (1.06, 1.65)**

*Through model 4 (age, sex, income, and smoking)
**Through model 5 (age, sex, income, smoking, and frailty)

Table 5.6: Summary table of final results from hospital utilization regressions among CCHS respondents 65 and older with a 95% CI

Core Predictor	Hospital Admissions (Odds Ratio)	Number of Admissions (Incidence Rate Ratio)	Length of Stay (Incidence Rate Ratio)
Low Levels of Affection	Not significant	Not significant	1.31 (1.08, 1.58)**
Low Positive Social Interactions	Not significant	Not significant	1.31 (1.07, 1.57)**
Low Emotional/ Informational Support	Not significant	Not significant	1.34 (1.09, 1.61)**
Weak Sense of Belonging	1.14 (1.02, 1.28)**	1.12 (1.02, 1.22)*	1.13 (1.01, 1.27)**
Living Alone	Not significant	Not significant	Not significant

*Through model 4 (age, sex, income, and smoking)
**Through model 5 (age, sex, income, smoking, and frailty)

5.4 Conclusions

The hospital utilization analyses shared similar findings with mortality analyses; hospital use, particularly length of stay, was patterned by levels of social support. Effect sizes in hospital utilization analyses included an OR of 1.14 for whether a hospital admission occurred in older adults, while IRRs ranged from 1.12 – 1.46 for number of admissions in both age groups, and 1.13 – 1.73 for length of stay in both age groups. Among these, IRR effect sizes ranged from 1.31 – 1.45 in length of stay for both age groups in fully adjusted models.

Previous international research has found that older adults living with non-relatives, as opposed to a spouse or family, are three times as likely to be admitted to hospital for short stays (Aliyu, Adediran, and Obisesan 2003). The authors suggest that during times of illness, older adults are able to turn to family for care such as feeding, toileting, bathing, and managing medications; physicians are more likely to treat older patients with these types of care resources on an outpatient basis (Aliyu, Adediran, and Obisesan 2003). Other studies, have found increased readmissions significantly associated with social isolation, with a HR of 1.98 in fully adjusted models among heart failure patients (Rodriguez-Artalejo et al. 2006), an OR of 1.19 among married people of all ages for reduced readmissions (Hasan et al. 2010), an OR of 4.18 for increased admissions among non-married Canadian patients with chronic obstructive pulmonary disease (COPD) (Wong et al. 2008), rates of hospital admission among asthma patients were found to be 30 per cent higher for patients with negative support from their closest confidant (Wainwright et al. 2007), and among frail older adults, living alone has been significantly associated with having a hospital admission or readmission, with an OR of 2.59 (Landi et al. 2004). Little research is available on the number of admissions or length of stay and social support for acute hospital admissions, the majority of the hospital utilization literature pertains to admission and readmissions. However, living alone has been significantly associated with length of stay for older COPD patients with an OR of 1.33 (Antonelli et al. 2001).

Living alone was only found to have a significant association among respondents in the 55 – 64 age group and only with number of admissions (IRR 1.22) and length of stay (IRR 1.32). Living alone was also only significant among urban respondents 55 – 64 in the mortality analyses. These results across multiple analyses suggest that while much research is focused on older adults living alone, it may be that living alone among younger cohorts are the segment of the population in greater need of further research. At this stage in their lives, adults living alone prior to retirement may not be prepared for care in the home during times of illness, and perhaps have more of an expectation of a living partner at that age. And it may be that living alone is not appreciated until adults on the verge of retirement begin to feel dependence on others. The discrepancy in international research and hospital admission findings reported here may be a result of older Canadians who are living alone being better equipped for care than older adults in other regions. This may also be reflected in the middle/high income status of most CCHS respondents 65 and older: those living alone were less vulnerable and were perhaps less frequent users of health care.

Low positive social interactions was the only other predictor that had a significant association with number of admissions in the younger cohort, with an IRR of 1.46 through model four. Canadian adults in the decade prior to retirement who do not have strong participation within their social network or in their community had a predicted number of admissions nearly one and a half times higher as those who did. Additionally, this predictor also had a significant association with length of stay in both age groups, with an IRR of 1.73 in the younger cohort and an IRR of 1.31 in the older cohort, significance was maintained through models adjusted for frailty in the older group. Low positive social interactions also had significant associations in mortality analyses with both age groups, and maintained significance through frailty in the younger group. As discussed in the previous chapter, social integration, a measure of participation in social networks and in the community, has been associated with a wide variety of health outcomes, and may confer protection by influencing positive health behaviors (Berkman et al. 2004). As such it is perhaps not surprising that low positive social interactions is shown to be an important variable in terms of health outcomes. Additionally, as discussed in the previous chapter, those who are unable to participate due to poor health, functional decline, or disability may already be at an increased risk of poor health outcomes that lead to increased hospital burden.

Hospital admissions had no significant associations with any core predictors (affection, positive social interactions, emotional/informational support, living alone, and a sense of belonging) in the younger cohort, but were found to have a significant association with a weak sense of belonging among the older cohort (OR 1.14) (this maintained statistical significance through adjustment for frailty). A weak sense of belonging was also the only predictor in the older cohort to have a significant association with number of admissions (IRR 1.12), although the effect size was attenuated with the addition of frailty for this measure. A weak sense of belonging among the older cohort was one of four predictors to have a significant association with length of stay (IRR 1.13), which was maintained through model five (frailty). Recall a weak sense of belonging was the only predictor in the mortality analyses to remain significant in fully adjusted models in the older cohort. As discussed in the previous chapter, losing touch with the community and experiencing the loss of a spouse or family and friends can weaken a sense of belonging (Cloutier-Fisher, Kobayashi, and Smith 2011). The persistence of a sense of belonging with significant associations across all outcomes in analyses in the 65 and older age group suggests this is an important predictor of hospitalization and mortality and should be considered as an important variable in future social support research.

Low emotional/informational support had a significant association with length of stay in both age groups, with an IRR of 1.45 in the younger cohort and an IRR of 1.34 in the older group, both maintained significance through fully adjusted models that included frailty. Emotional support has been widely regarded in social support literature as an important variable conferring protection against mortality (Hanson et al. 1989, Penninx et al. 1997, Rodriguez-Laso, Zunzunegui, and Otero 2007). Findings here suggest that emotional/informational support may also confer protection against longer hospital stays. Although it is important to reiterate that Sherbourne and Stewart (1991) suggest that emotional/informational support on the MOS Social Support Survey may be more reflective of informational support, and affection survey questions may actually reflect true emotional support.

Low levels of affection in mortality research were quite similar to findings from emotional/informational support in both age groups; the same is true in length of stay analyses for the older cohort, with an IRR of 1.31, which, like emotional/informational support, also remained significant through adjustment for frailty. Length of stay has shown itself to be the hospitalization outcome most sensitive to social support measures (affection, positive social interactions, emotional/informational support, and sense of belonging, all maintaining significance through models including frailty). These results suggest that 1) Among older adults it is length of stay that is the type of hospital utilization most influenced by low social support, perhaps suggesting that low social support influences discharge decisions and readmissions and ultimately prolongs stays; and 2) There is evidence that weak sense of belonging and social support measures that include lack of positive social interactions, low emotional/informational support, and low levels of affection, influence poor health outcomes on measures like mortality and length of hospital stay.

6. AGING, LOW SOCIAL SUPPORT, AND HEALTH: OBSERVATIONS FROM FRONTLINE PRACTIONERS

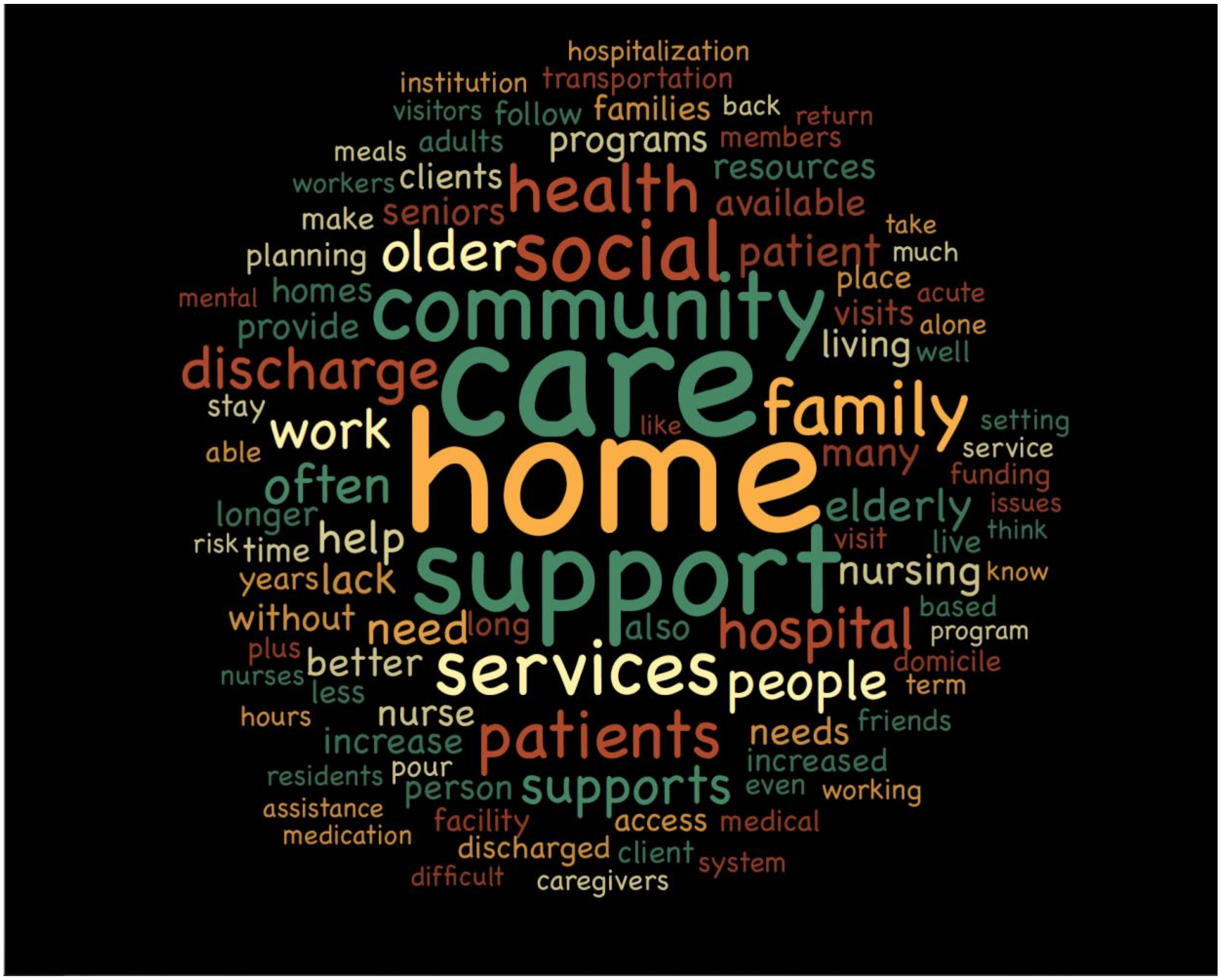

Figure 6.1: Word cloud from total survey responses created in NVivo 11.4

6.1 Introduction

This chapter presents the results of an online survey conducted among health care providers and social workers to better understand the challenges of working with older adults with little or no social support in a care context. The topics of inquiry were the degree of infrequent visitors and changes over time in visitations from family and friends, the degree with which older adults could be cared for in the community with available social support, the rate of re-hospitalizations among older adults without social support, the effect of low social support on hospital discharges, and strategies that could be used to reduce the hospitalization of older adults with low social support. The survey consisted of six quantitative and two qualitative questions: 1. What is your role in health care provision for older patients?; 2. How long have you been working with older patients?; 3. What is your best estimation of the percentage of older patients in your institution who have very infrequent visitors (i.e. from friends and family)?; 4. Compared to when you first began working with older patients, how do you think the number of patients with very infrequent visitors has changed?; 5. What is your best estimate of the percentage of older patients in your institution that could have been cared for in the community (not in an institution) had there been available social support?; 6. Based on your experience, do you think older patients without social support are re-hospitalized after a discharge more often or less often as compared to patients with social support?; 7. How have you seen the lack of social support affect discharge planning for older patients?; 8. What strategies do you think could be employed to reduce the hospitalization or institutionalization of older patients who could otherwise be cared for in the community? Figure 6.1, at the start of this chapter, depicts in the form of a word cloud the culmination of survey responses, with the increased frequency of words represented by increased size. Home and care were the most commonly used words with a frequency of over 1000. Support and community followed, with word counts over 750 and 550 respectively.

6.2 Results

A total of 4,438 recruitment emails were sent to professional organizations for medical providers and social workers on September 15, 2015, with a request to forward survey invitations to organization members. Automated email responses replied that 271 were undeliverable due to "invalid recipient" or had "permanent errors" and failed to deliver, and 18 were sent to organization members that were inactive (Table 6.1). A total of 4,149 emails were sent to valid email addresses, however 40 respondents replied that their organization requires formal research approval prior to participating, 32 respondents replied that their organization prohibits the solicitation of correspondence to their members, and two respondents replied that they were a pediatric facility (Table 6.1). A total of 4,075 emails were sent to potentially viable survey respondents. Within the first week of the initial recruitment, 562 completed responses were submitted, with 1,017 total submissions at the end of the survey period (October 16, 2015). While 108 recruitment emails initially received an 'out of the office' automated response, many personal emails were received that included recipients who had forwarded the email to interested parties, recipients who had completed the survey and posted the recruitment survey in their digital newsletter or social media, or recipients who had chosen not participate citing lack of relevance (Table 6.1). Emails were also received from recipients who shared personal experiences of caring for an aging loved one and expressed the importance of social resources and their support for this survey and research.

Table 6.1: Email responses to survey recruitment letter

Type of Response	Frequency
Automated response: Email undeliverable "Invalid email" or "Permanent errors"	271
Automated response: Recipient is "Out of the office" or "On vacation"	108
Automated response: Recipient is no longer a member or email is no longer in use	18
Organization requires formal in-house ethics approval	40
Organization policy prohibits recipient from forwarding solicitations	32
Recipient has forwarded the recruitment email to councillors, supervisor or committee for approval	17
Recipient has completed the survey and/or forwarded the email to organization members or interested parties	30
Recipient has completed the survey and/or posted the survey in their organization's digital newsletter or social media	9
Recipient has completed the survey	4
Recipient did not want to participate because did not feel they were relevant to the survey	6
Recipient verified the legitimacy of the survey with Dr. Nancy Ross and McGill University's ethics board	1

A response rate is difficult to gauge due to the nature of the recruitment letter requesting the survey be forwarded to organization members and interested parties, however, a direct submission/viable email recruitment ratio would be equal to 25 per cent. This is a commendable response rate considering web-based surveys have an average response rate of 11 per cent, and due to the preponderance of spam filters this number can be even lower for web-based surveys using an email invitation (Fan and Yan 2010).

The results of the quantitative questions indicated that the majority of respondents were nurses with more than 15 years of experience. The majority of nurses, including nursing assistants, perceived that 50 per cent of older patients have very infrequent visitors and further suggested that very infrequent visitors are more common now than when they first began working with older adults. The majority of all respondents suggested that 25 per cent or less of the older patients within institutions could have been cared for in the community had there been available social support, and the overwhelming majority felt that older patients without social support are re-hospitalized more often after a discharge as compared to patients with social support.

The qualitative questions were coded and re-coded into multiple themes and categories using NVivo 11.4® analytical software. The most common themes for question 7, 'How have you seen the lack of social support affect discharge planning for older patients?' were home and community care, long term care facilities, delays in discharges, family support, difficulties with hospital discharges or a lack of discharge planning, and an increase in hospital admissions and re-admissions. The most common themes for question 8 'What strategies do you think could be employed to reduce the hospitalization or institutionalization of older patients who could otherwise be cared for in the community?' were home care, community outreach, insurance and funding, awareness and education, integrated and improved medical care, caregiver support, and discharge planning and follow-up.

"What is your role in health care provision for older adults (adults 65 years or older)?"

The majority of submissions (n=1,017) were from nurses (30%), followed by 'other' (21.5%). 'Other' responses included accountant, advocacy, CEO, case manager, child of aging parent, dietician, elder life coordinator, funder, government planner, imaging technologist, occupational therapist, physiotherapist, and spiritual care (See Appendix 10 for the complete list). The remaining responses included physician assistants (16.15%), administrators (10.7%), social workers (9.7%), doctors (4%), home health provides (3.2%), and nursing assistants (1.6%) (Table 6.2). Less than ten per cent of recipients selected no role with older adults. Question one allowed for multiple answers to be selected, 55 respondents selected multiple roles.

Table 6.2: Online survey question 1 - What is your role in health care provision for older adults (adults 65 years or older)?

Occupation	Frequency	Percentage	Crossed with "No role with older adults"	Crossed with 'Other'	Multiple positions selected	Multiple positions listed
Doctor	41	4.03%	0	0	0	
Physician Assistant	164	16.13%	3	3	0	
Nurse	305	29.96%	2	34	46	Social worker; Home health provider; Administrator
Nursing Assistant	16	1.57%	0	0	1	Social worker
Social Worker	99	9.73%	4	9	3	Home health provider; Administrator
Home Health Provider	33	3.24%	0	6	5	Administrator
Administrator	109	10.72%	2	11		
Other	219	21.53%	8			
No role with older adults	86	8.46%				
Total submissions	1,017					
Total w/ multiple positions	1,072					

“How long have you been working with older patients?”

Out of the total sample, 993 respondents answered question two. The majority of respondents had worked for ‘more than 15 years’ (52.38%), followed by ‘2 – 5 years’ (15.04%), ‘6 -10 years’ (14.94%), ‘11 – 15 years’ (11.47%), and ‘one year or less’ (2.81%) (Table 6.3). Based on the average number of years per category, the collective years worked total 12,675.

Table 6.3: Total number of years survey respondents have been working with older patients

Years worked	Frequency	Percentage
1 year or less	26	2.81%
2 – 5 years	139	15.04%
6 – 10 years	138	14.94%
11 – 15 years	106	11.47%
More than 15 years	484	52.38%
Total years worked*	**12,675**	

*Years working based on average number per category

“What is your best estimation of the percentage of older patients in your institution who have very infrequent visitors (i.e. from friends and family)?”

> *“I also work for the Medicare cabinets office and I would say probably 40% of the elderly who die go unnoticed for quite some time due to lack of visitors and lack of societal interaction” (Respondent 260, Physician Assistant)*

Out of the total sample, 972 respondents answered question three. Responses included ‘About 25% or less’ (37.65%), ‘About 50%’ (32.92%), ‘About 75% or more’ (11.32%), and ‘I don’t know’ (18.11%) (Table 6.4). Table 6.5 includes responses by occupation.

Table 6.4: Total responses for question 3 - What is your best estimation of the percentage of older patients in your institution who have very infrequent visitors (i.e. from friends and family)?

Response	Frequency	Percentage
About 25% or less	366	37.65%
About 50%	320	32.92%
About 75% or more	110	11.32%
I don’t know	176	18.11%
Total responses	**972**	

Table 6.5: Online survey question 3 - What is your best estimation of the percentage of older patients in your institution who have very infrequent visitors (i.e. from friends and family)? by occupation

Occupation	Frequency	Percentage	Occupation	Frequency	Percentage
Doctor	**41**		**Social Worker**	**92**	
About 25% or less	19	46.34%	*About 25% or less*	42	45.65%
About 50%	15	36.59%	*About 50%*	32	34.78%
About 75% or more	2	4.88%	*About 75% or more*	9	9.78%
I don't know	5	12.20%	*I don't know*	9	9.78%
Physician Assistant	**163**		**Home Health Provider**	**13**	
About 25% or less	66	40.49%	*About 25% or less*	1	7.69%
About 50%	53	32.52%	*About 50%*	8	61.54%
About 75% or more	16	9.82%	*About 75% or more*	3	23.08%
I don't know	28	17.18%	*I don't know*	1	7.69%
Nurse	**295**		**Administrator**	**80**	
About 25% or less	106	35.93%	*About 25% or less*	39	48.75%
About 50%	111	37.63%	*About 50%*	2	2.50%
About 75% or more	42	14.24%	*About 75% or more*	8	10.00%
I don't know	36	12.20%	*I don't know*	11	13.75%
Nursing Assistant	**15**		**Other**	**209**	
About 25% or less	4	26.67%	*About 25% or less*	76	36.36%
About 50%	8	53.33%	*About 50%*	59	28.23%
About 75% or more	3	20.00%	*About 75% or more*	22	10.53%
I don't know	0	0.00%	*I don't know*	52	24.88%

Fifteen per cent (14.92, 15.51 95% CI) of respondents who traditionally spend more time in a caregiving role with patients (nurses, nursing assistants, and home health providers) reported that 75 per cent or more patients had very infrequent visitors. Respondents who traditionally spend less in a caregiving role with patients (doctors, physician assistants, social workers, and administrators) reported that 75 per cent of patients had very infrequent visitors (9.65% (9.36, 9.94 95% CI)). These results have been found to have a statistically significant difference with a p-value less than 0.001, demonstrating the difference between professional bias that might occur among different levels of care.

“Compared to when you first began working with older patients, how do you think the number of patients with very infrequent visitors has changed?”

> *“Over the last 20 years of my practice, I notice a decline in family presence. However, living in a rural urban center, many of the elderly from small communities have to be moved into the larger urban setting for LTC [long term care] -- and this does have an impact on family connection. Moreover, in the last two years I am now seeing First Nation older adults and that is something rare.” (Respondent 573, Nurse)*

Out of the total sample, 854 respondents answered question four. Answers included ‘Very infrequent visitors are more common now’ (33.84%), ‘Very infrequent visitors are less common now’ (8.67%), ‘I have not observed a difference’ (48.59%), and ‘I have not been working long enough to draw a conclusion’ (8.9%) (Table 6.6). Table 6.7 includes responses by occupation.

Table 6.6: Total responses for question 4 - Compared to when you first began working with older patients, how do you think the number of patients with very infrequent visitors has changed?

Response	Frequency	Percentage
Very infrequent visitors are more common now	289	33.84%
Very infrequent visitors are less common now	74	8.67%
I have not observed a difference	415	48.59%
I have not been working long enough to draw a conclusion	76	8.90%
Total responses	854	

Respondents who traditionally spend more time in a caregiving role with patients (nurses, nursing assistants, and home health providers) had a mean response of 38.76 per cent (38.57, 38.94 95% CI) that the number of patients with very infrequent visitors are more common now. Respondents who traditionally spend less time in a caregiving role with patients (doctors, physician assistants, social workers, and administrators) had a mean response of 30.43 per cent (30.24, 30.62 95% CI) that the number of patients with very infrequent visitors are more common now. These results have been found to have a statistically significant difference with a p-value less than 0.001, further highlighting the difference between professional bias that might occur among different levels of care.

Table 6.7: Online survey question 4 - Compared to when you first began working with older patients, how do you think the number of patients with very infrequent visitors has changed?

Occupation	Frequency	Percentage	Occupation	Frequency	Percentage
Doctor	**41**		**Social Worker**	**85**	
Very infrequent visitors are more common now	8	19.51%	*Very infrequent visitors are more common now*	28	32.94%
Very infrequent visitors are less common now	5	12.20%	*Very infrequent visitors are less common now*	4	4.71%
I have not observed a difference	26	63.41%	*I have not observed a difference*	46	54.12%
I have not been working long enough to draw a conclusion	2	4.88%	*I have not been working long enough to draw a conclusion*	7	8.24%
Physician Assistant	**153**		**Home Health Provider**	**13**	
Very infrequent visitors are more common now	33	21.57%	*Very infrequent visitors are more common now*	4	30.77%
Very infrequent visitors are less common now	15	9.80%	*Very infrequent visitors are less common now*	2	15.38%
I have not observed a difference	85	55.56%	*I have not observed a difference*	7	53.85%
I have not been working long enough to draw a conclusion	20	13.07%	*I have not been working long enough to draw a conclusion*	0	0.00%
Nurse	**281**		**Administrator**	**76**	
Very infrequent visitors are more common now	113	40.21%	*Very infrequent visitors are more common now*	29	38.16%
Very infrequent visitors are less common now	29	10.32%	*Very infrequent visitors are less common now*	3	3.95%
I have not observed a difference	121	43.06%	*I have not observed a difference*	38	50.00%
I have not been working long enough to draw a conclusion	18	6.41%	*I have not been working long enough to draw a conclusion*	6	7.89%
Nursing Assistant	**14**		**Other**	**191**	
Very infrequent visitors are more common now	4	28.57%	*Very infrequent visitors are more common now*	70	36.65%
Very infrequent visitors are less common now	2	14.29%	*Very infrequent visitors are less common now*	14	7.33%
I have not observed a difference	8	57.14%	*I have not observed a difference*	84	43.98%
I have not been working long enough to draw a conclusion	0	0.00%	*I have not been working long enough to draw a conclusion*	23	12.04%

<u>"What is your best estimation of the percentage of older patients in your institution that could have been cared for in the community (not in an institution) had there been available social support?"</u>

> *"Depending upon the health and ability of the caregiver, I feel that many more of the older adults that are being cared for in residential areas could be lessened if they had appropriate, capable and willing family members" (Respondent 785, Nurse)*

Out of the total sample, 953 respondents answered question five. Answers included 'About 25% or less' (39.87%), 'About 50%' (26.34%), 'About 75% or more' (11.23%), 'None' (6.19%), or 'I don't know' (16.37%) (Table 6.8). Table 6.9 includes responses by occupation.

Table 6.8: Total responses for question 5 - What is your best estimation of the percentage of older patients in your institution that could have been cared for in the community (not in an institution) had there been available social support?

Response	Frequency	Percentage
About 25% or less	380	40.08%
About 50%	251	26.34%
About 75% or more	107	11.23%
None	59	6.19%
I don't know	156	16.37%
Total responses	**953**	

More than a quarter of respondents (26.39% (26.02, 26.76 95% CI)) who traditionally spend more time in a caregiving role with patients (nurses, nursing assistants, and home health providers) felt that 75 per cent or more of institutionalized patients could be cared for in the community with available social support. Doctors, physician assistants, social workers, and administrators less often (13.74% (13.46, 14.02

95% CI)) felt that 75 per cent or more of institutionalized patients could be cared for in the community with available social support.

Table 6.9: Online survey question 5 - What is your best estimation of the percentage of older patients in your institution that could have been cared for in the community (not in an institution) had there been available social support?

Occupation	Frequency	Percentage	Occupation	Frequency	Percentage
Doctor	**40**		**Social Worker**	**90**	
About 25% or less	18	45.00%	*About 25% or less*	42	46.67%
About 50%	11	27.50%	*About 50%*	25	27.78%
About 75% or more	3	7.50%	*About 75% or more*	10	11.11%
None	1	2.50%	*None*	5	5.56%
I don't know	7	17.50%	*I don't know*	8	8.89%
Physician Assistant	**163**		**Home Health Provider**	**13**	
About 25% or less	55	33.74%	*About 25% or less*	0	0.00%
About 50%	54	33.13%	*About 50%*	4	30.77%
About 75% or more	25	15.34%	*About 75% or more*	7	53.85%
None	3	1.84%	*None*	1	7.69%
I don't know	26	15.95%	*I don't know*	1	7.69%
Nurse	**286**		**Administrator**	**78**	
About 25% or less	119	41.61%	*About 25% or less*	45	57.69%
About 50%	91	31.82%	*About 50%*	8	10.26%
About 75% or more	25	8.74%	*About 75% or more*	11	14.10%
None	17	5.94%	*None*	8	10.26%
I don't know	34	11.89%	*I don't know*	6	7.69%
Nursing Assistant	**15**		**Other**	**202**	
About 25% or less	7	46.67%	*About 25% or less*	85	42.08%
About 50%	3	20.00%	*About 50%*	40	19.80%
About 75% or more	1	6.67%	*About 75% or more*	17	8.42%
None	3	20.00%	*None*	18	8.91%
I don't know	1	6.67%	*I don't know*	42	20.79%

"Based on your experience, do you think older patients without social support are re-hospitalized after a discharge more often or less often as compared to patients with social support?"

> *"Social support contributes to the physical, mental, emotional and spiritual health of a client. If these elements are missing then health is not optimal. Also, there may not be the awareness of when or the ability to access health care at the appropriate time resulting in a deterioration of health that needs re-hospitalization" (Respondent 61, Administrator)*

Out of the total sample, 989 respondents answered question six. Answers included 'More often' (84.33%), 'Less often' (4.65%), 'I have not observed a difference'

(5.06%), and 'I don't know' (5.97%) (Table 6.10). Table 6.11 includes responses by occupation.

Table 6.10: Total responses for question 6 - Based on your experience, do you think older patients without social support are re-hospitalized after a discharge more often or less often as compared to patients with social support?

Response	Frequency	Percentage
More often	834	84.33%
Less often	46	4.65%
I have not observed a difference	50	5.06%
I don't know	59	5.97%
Total responses	**989**	

Table 6.11: Online survey question 6 - Based on your experience, do you think older patients without social support are re-hospitalized after a discharge more often or less often as compared to patients with social support?

Occupation	Frequency	Percentage	Occupation	Frequency	Percentage
Doctor	**41**		**Social Worker**	**92**	
More often	32	78.05%	*More often*	80	86.96%
Less often	3	7.32%	*Less often*	4	4.35%
I have not observed a difference	3	7.32%	*I have not observed a difference*	4	4.35%
I don't know	3	7.32%	*I don't know*	4	4.35%
Physician Assistant	**164**		**Home Health Provider**	**13**	
More often	144	87.80%	*More often*	13	100.00%
Less often	9	5.49%	*Less often*	0	0.00%
I have not observed a difference	8	4.88%	*I have not observed a difference*	0	0.00%
I don't know	3	1.83%	*I don't know*	0	0.00%
Nurse	**302**		**Administrator**	**82**	
More often	258	85.43%	*More often*	69	84.15%
Less often	12	3.97%	*Less often*	6	7.32%
I have not observed a difference	18	5.96%	*I have not observed a difference*	2	2.44%
I don't know	14	4.64%	*I don't know*	5	6.10%
Nursing Assistant	**14**		**Other**	**212**	
More often	9	64.29%	*More often*	178	83.96%
Less often	1	7.14%	*Less often*	5	2.36%
I have not observed a difference	2	14.29%	*I have not observed a difference*	12	5.66%
I don't know	2	14.29%	*I don't know*	17	8.02%

There is a great deal more agreement among respondents who spent more time and less time with patients for this question than previous quantitative questions. The overwhelming agreement that older adults are re-hospitalized more often when they lack social support speaks to the pervasiveness of this issue and the need to devise strategies to mitigate the lack of support for many older adults. Questions seven and eight further probe this problem from the perspective of discharge planning, and elicit strategies that can be implemented in both the community and medical facilities.

"How have you seen the lack of social support affect discharge planning for older patients?"

> *"Patients leave the hospital with an inadequate understanding of their medications and treatment. It doesn't help that the aging services such as VNA [Visiting Nurses Association], nursing home staff, rehabs and Office for Aging have a skeleton crew of knowledgable [sic] people and are too overwhelmed to spend the time patients need to gain a better understanding of their medical problems and issues relating to the same. Furthermore the level of education for people in these positions has gone down overtime. Medical assistants now take the place of LPNS's and some RN's, RN's take the place of nurse managers, midlevel providers are often expected to perform at the same level as an MD (unless the physician in charge understands the role of a midlevel provider) and so on. And finally people are living longer with less. Less social support for an aging nation that is crippled with multiple medical problems leaving them vulnerable to injury, illness, suicide, polypharmacy, hunger, depression, etc., etc." (Respondent 446, Physician Assistant)*

Out of the total sample, 808 respondents answered question seven. I coded responses into 19 primary categories(Table 6.12), three of which were further coded into secondary categories. The most common responses were home and community care (26.73%), community or long term facility (19.93%), delays discharge (18.69%), family support (14.48%), difficulties with discharge planning (13.12%), and frequent hospital admissions or re-admissions (12.5%).

Table 6.12: Responses for question 7 (primary categories) - How have you seen the lack of social support affect discharge planning for older patients?

Primary Category	Frequency	Percentage respondents (n=808)
Home and community care*	216	26.73%
Community or long term facility	161	19.93%
Delays discharge	151	18.69%
Family support*	117	14.48%
Difficulties with discharge planning*	106	13.12%
Frequent hospital admissions or re-admissions	101	12.50%
Social resources	90	11.14%
Social support	89	11.01%
Decline in health and QOL	84	10.40%
Compliance	80	9.90%
Not applicable	42	5.20%
Financial difficulties	36	4.46%
Patients fearful	32	3.96%
Increased risks	31	3.84%
Rehab and transitional care	30	3.71%
Patient advocate	24	2.97%
Impacts patient decision making	11	1.36%
Medical errors	7	0.87%

*Primary categories with secondary categories

A hospital discharge is usually accompanied by new treatments and medications for a patient, or a change in medications or medication dosages. The risk of error during this period of self-care can be high and can contribute to readmission. Medical errors following a hospital discharge occur in approximately half of adult patients and as many as 23 per cent experience adverse events, most commonly as adverse drug events, half of which are preventable (Kripalani et al. 2007). Post-discharge medical errors and adverse events are primarily attributed to four discharge challenges: inpatient-outpatient physician discontinuity, changes and discrepancies in medication regimen, self-care responsibilities and social support, and ineffective patient-physician communication (Kripalani et al. 2007). Proper discharge planning that includes a needs assessment, medication reconciliation, patient education, outpatient appointments, and telephone follow-up can mitigate medical errors and reduce hospital readmission (Kripalani et al. 2014).

Discharge planning is a common occurrence in many hospitals and consists of a patient centered care plan intended to reduce the length of stay, reduce hospital readmission, and maintain continuity of care (Gonçalves-Bradley et al. 2016). Discharge planning is also a transference of responsibility from hospital providers to primary care physicians and the patient (Kripalani et al. 2007). This process is usually performed by a social worker, nurse, attending physician, or case manager, and can be formal, following standard procedures with a detailed hospital record, or informal, without a protocol or hospital record (Lin et al. 2012).

1. Home and Community Care

Home and community care was the most common response as a factor affecting discharge planning. More than a quarter of respondents who answered question seven included a response about the need for some type of care in the home or community. These responses were further coded into secondary categories, the most common were tangible and social support (49.54%), home support and care (37.96%), and family care (15.28%) (Table 6.13).

Home care (discussed in detail below) refers to medical or tangible support in the home. Survey respondents specifically highlighted the lack of tangible support as the most common factor affecting hospital discharges within the home and community care category (49.54%) (Table 6.13). Tangible support generally includes activities such

Table 6.13: Responses for question 7 (secondary categories) - How have you seen the lack of social support affect discharge planning for older patients?

Home and community care n=216

Secondary Category	Frequency	Percentage
Tangible and social support	107	49.54%
Home support and care	82	37.96%
Family care	33	15.28%
Community services	25	11.57%
Physical and functional limitations	12	5.56%
Formal care	5	2.31%

Family support n=117

Secondary Category	Frequency	Percentage
Decreasing family support	70	59.83%
Impacts of family support	28	23.93%
Role of family	14	11.97%
Spousal support	6	5.13%

Difficulties with discharge planning n=106

Secondary Category	Frequency	Percentage
Discharge plans more complicated	68	64.15%
Weak discharge plans	25	23.58%
Unsuccessful discharges	16	15.09%
Social support not considered	11	10.38%

Multiple sub-categories suggested by respondents

as meal preparation, shopping and errands, housekeeping and home maintenance, transportation, assistance managing medications, and navigating health care systems. The lack of this type of support can result in the lack of access to medication, follow-up medical visits, or even access to food, all of which can result in the deterioration of an illness or injury post discharge:

> *"They are not well taken care of when they leave. For example, perhaps little things are not considered upon discharge, etc.. like groceries, errands, that need to be done. This may not be a health related specific concern however, is something that perhaps the client cannot do independently that overall contributes to their health decline." (Respondent 635, Nurse)*

> *"they are not able to get to their appointments as needed. they are not able to pick up their meds. they may or may not have appropriate food choices in their home.*

> *they do not understand their own limitations"(Respondent 91, Home Health Provider)*

> *"No social support to pick up medications, remind patients to take medications, go to the grocery store. These services are not covered by the medicare home health benefit. Increased depression when lacking social support leads to increased rehospitalization rates" (Respondent 119, Nurse)*

Hand in hand with tangible support is home support and care. This type of support was the second most common response as a factor affecting hospital discharge within the home and community care category (37.96%) (Table 6.13). This is a step beyond tangible support and social support that generally refers to more full time support in the home and/or medical support, particularly post discharge:

> *"Yes. Older patients are typically unable to handle their post-op discharge care without assistance, and end up without timely intervention, resulting in more medical and post-op complications, often delaying help for signs of infection, confusion/difficulty ambulating exacerbated by pain medication (often given for foo [sic] long a period) and poor diet and nutrition due to inability to secure and prepare fresh, wholesome food." (Respondent 294, Physician Assistant)*

> *"There is a serious lack of planning on what is practical given a person's mobility. A perfect example, I had a patient with both ankles broken. She called and said they told her to stay off her feet, adamant that she was NO WEIGHT BEARING yet she didn't know how she was going to take a bath. I called the doctor to see if she could have home health and they thought it was a great idea, but no one thought of it BEFORE she was discharged. You would think that is a rare occurrence, but this sort of thing happens CONSTANTLY! Patients sent home with dressing changes and they can't reach their lower legs to put the dressing on. I could go on and on and on." (Respondent 501, No position selected)*

Family care was the third most common survey response as a factor affecting discharge within the home and community care category (15.28%) (Table 6.13). This secondary category refers to the difficulties with discharge planning when families are unable to provide care or patients are concerned about being a burden to their family, these responses included both physical and emotional support:

> *"It's difficult for a variety of reasons, ADL [activities of daily living] assistance, taking medications properly, understanding the reality of their diagnosis and it's [sic] consequences. This doesn't even touch base with the emotional aspects, issues of feeling alone, of loss, feeling disconnected, lack of belonging or feeling useless or a burden to family." (Respondent 142, Social Worker)*
>
> *"YES! We have held patients for several days because there was no one to aid in their care. Family members and friends are maxed to the extreme and cannot take on extra activities such as visiting in the hospital or more so taking the responsibility of personal care." (Respondent 427, Nurse)*
>
> *"Caregivers are starting to refuse to take their parents home stating caregiver burnout. This in turn leaves patients in hospital and creates a lot more work for our DCP [discharge planner] to find support and services to meet the needs of the older adults at home." (Respondent 471, Elder life coordinator in hospital program)*

The remaining sub-categories of the home and community care category that affect discharge planning included community services, physical and functional limitations, and formal care (Table 6.13). Community services includes resources that support older adults in their home, or access to community medical care. Respondents highlighted the limitations of community programs, the importance of transportation, and access to primary care:

> *"Patients have to rely on provincial programs for support and this can make discharge planning more challenging because there are limitations in the amount of support these programs can provide. Also these programs do not assist with*

> *many IADL's [instrumental activities of daily living] such as shopping, banking etc" (Respondent 133, Social Worker)*

> *"In part, the lack of social support can affect discharge but I feel the larger problem is the lack of access to primary care in the community. Older adults cannot get out to see their GP easily and in the first few weeks of discharge they may need medical follow up 2-4 times. Older adults are discharged earlier but they can not [sic] manage all of the complex medical conditions. This is why they get re hospitalized." (Respondent 205, Nurse Practitioner)*

> *"support is usually help with meals and housework- very rarely do they have support to attend anything in the community, or simply enjoy a trip outside their home. Emotional support is sorely lacking esp when they are single or their children live away." (Respondent 143, Caregiver)*

Survey respondents noted that physical and functional limitations can delay discharge planning or result in discharges to long term care rather than home. These limitations can interfere with discharge compliance, they can prevent older adults from accessing medical care or medications, and can interfere with older adults performing their activities of daily living (ADLs) (basic self-care tasks such as bathing, feeding, or toileting) and instrumental activities of daily living (IADLs) (errands, housework, home maintenance, meal preparation, or help with finances).:

> *"From my experience of 15 years in the community I would say the two greatest risk factors are medications and nutrition - those without social support struggle in these areas as they are too physically or cognitively unwell to independently feed themselves (obtaining and/or preparing food) or self administer [sic] medications safely." (Respondent 757, Nurse)*

> *"Patients ability to follow up with discharge instructions is very limited & often does not get done, ie: blood work, diagnosic [sic] testing, follow up with GP, changes in medications etc. They can become overwhelmed with discharge*

> *information given and/or not quite understand what they are supposed to be doing after discharge." (Respondent 653, Nurse)*
>
> *"the individual is discharged and may not understand what is needed to remain at home; forgets; needs interactions with others in order to be reminded of how to perform self care [sic]; someone to assist with ADLs and IADLs; someone to show that someone cares" (Respondent 745, Nurse Educator)*

Several respondents specifically highlighted the difficulties accessing formal care as another factor affecting discharge planning. Respondents noted the importance of having a primary source of care as well as the lack of family in the face of cuts to medical programs:

> *"Many times depression, self neglect [sic], poor nutrition, and medication mismanagement occur if they are not accountable to someone. One of the home care nursing roles is to do health assessment visits to see how the client is coping on a weekly or monthly basis. The nurse may be the only person the client see's and often there can be issues with the above mentioned." (Respondent 51, Nurse)*
>
> *"Clients cannot go home without adequate support, either formal or informal. With constant cuts to the formal supports system, clients are more and more becoming dependent on family/social support. This social support often is not there due to a number of factors, which leads to clients being waitlisted for complex care and waiting in hospital for the complex care bed." (Respondent 224, Nurse)*
>
> *"Yes but the [sic] not necessarily from the informal caregiver. The lack of social support is the [sic] sometimes due to the patients ability to access services, availability of services to meet their individual needs. There is a lack of formal social supports." (Respondent 649, Administrator)*

2. Community or Long Term Facility

The second most common response to the question 'how have you seen the lack of social support affect discharge planning for older patients?' was the admission of patients to community or long term care (LTC) facilities (19.93%). Respondents frequently noted premature discharges to LTC when hospitals have a shortage of beds and are unable to allow patients to wait until arrangements for support or home care can be made:

> *"Discharge planning is minimal. In my experience the hospital needs the bed so the patient is pushed into senior homes that are not necessarily in the best interest of the patient." (Respondent 36, Social Worker)*
>
> *"There has been a large increase in the number of patients who have no home support or who have family who cannot cope and drop their relative at emerg. They find their way to LTC [long term care] frequently this way." (Respondent 489, Long term care nurse educator)*

This was noted by some respondents to be particularly true among patients who are marginalized and do not have the financial means to pay for home care:

> *"Discharge planning for older patients without social supports is more difficult as the Home Care system in this province requires a backup plan if workers are not available. Those without family or friends to act as backup more often end up in some type of institutional setting earlier than those with supports in place. I find that the more affluent the patient, the more likely they have support either from their children or through paid helpers if their children are unable to help. The more marginalized a person is, the more often they are institutionalized at a younger age." (Respondent 803, Social Worker)*

A common theme among respondents was that even when family is available older adults are often placed in LTC facilities. Families frequently have difficulty finding time to provide support when working and caring for their own families or when families are fragmented. Additionally, post-discharge institutionalization can be temporary while waiting for support or home care to be established, however this often ends up permanent:

> *"If they have no one to advocate for them then decisions are just made and the senior ends up going along with it. patients are deemed LTC before they get a chance to recuperate from whatever illnes [sic] took them to the hospital in the first place. After a few weeks lying in a hospital bed the senior can no longer function so they get placed into ltc. If they had a social network they would insist on all resources that would be available and possibly still take the patient home with the proper resourses [sic]" (Respondent 396, Nurse)*

> *"Significantly, in my geographic area many young people leave for work else where [sic]. Older adults often have children 'away'. LTC facilities house older adults from smaller district communities and families have a harder time 'being connected'." (Respondent 573, Nurse)*

> *"Often residents are moved from their homes and from assisted living to residential care, just because they have no familial support close by. They might be able to manage on their own if they have family close by to do the extras like shopping and medication management, but as they have no one either at all or else no one close by, they end up coming into residential care after any event that might take them into the hospital." (Respondent 637, Nurse)*

3. Discharge Delays

The third most common response to how the lack of social support affects discharge planning were discharge delays (18.69%). Older adults without support or caregivers at home are difficult to discharge and often have a longer hospital stay. Delays can occur in order for family members to make arrangements to provide care, for hospitals to arrange for home care, or for arrangements to be made for a long term care facility, which can often have long wait times. Additionally, the lack of transportation home can make implementing a discharge problematic:

> *"lack of social support has meant difficult to discharge, also because there are limited placements available in the community, this leads leads [sic] to increased hospital stay, and ultimately impacting bed capacity for hospital. Some patients have stayed in acute care for as long as 1 and 1.5 years while waiting placement" (Respondent 828, Nurse Educator)*
> *"Absolutely, to the point that many elderly folks stay almost double the time someone with strong family support would stay just because there are not enough services for folks in community, I believe." (Respondent 748, Nursing Instructor)*

> *"older patients stay in hospital longer waiting for the professional care-providers to organize their home-support, meds, equipment etc. When there is social support this occurs much more quickly." (Respondent 644, Nurse)*

It is common that patients are fearful to go home alone after a discharge, one respondent noted that patients will self-sabotage in order to remain in hospital longer:

> *"Patients are extremely apprehensive about discharge; they worry about being alone and being successful. I've seen patients attempt to self-sabotage their therapy progress, in hopes extending their stay." (Respondent 214, Social Worker)*

> *"The patients are reluctant to leave, which delays discharge and increases risk of hospital acquired illnesses. It also prevents other patients from getting the room, and resources to help care for them. The utilization of resources for patients prolonging discharge increases cost as well." (Respondent 326, Physician Assistant)*

4. Family Support

The fourth most common response to how the lack of social support affects discharge planning was family support (14.48%). These responses were further coded into secondary categories, the most common were decreasing family support (59.83%), impacts of family support (23.93%), and the role of family (11.97%) (Table 5.13). More than half of the respondents in the family support category highlighted decreasing family support as an important factor in discharge planning. These comments supported the argument that older adults today have less familial support than previous generations. Respondents suggested that family members today are busy due to work, caring for their own children, caregiver burnout, family fragmentation, spousal caregivers who themselves are ill, and a general 'unwillingness' to be involved in care:

> *"yes. But, I see it more like this: the family is fried. One or maybe two people have been doing all the work and they can't keep it up. They can't work full time, parent full time, and do all the work for their parents full time, and have a marriage work. It's too much. Also, when that parent is up all night, too, it becomes impossible." (Respondent 252, Nurse)*
>
> *"Often discharge planning is difficult as there are family members that live far away, trying to make decisions for their loved one. With a lack of social support, patients rebound back to the hospital more quickly." (Respondent 124, Physician Assistant)*
>
> *"I just took care of an elderly gentleman with severe pulmonary fibrosis. He drove himself to the hospital. He takes care of his wheelchair bound wife and had a neighbor looking in on her. No children or other family members are around. They are barely getting by and reluctant to have outside help. He will be held in the hospital until we can figure out a safe plan that helps him and his wife." (Respondent 302, Physician Assistant)*
>
> *"No family involvement in patient discharge plan, no willingness to be involved even though letters have been sent requesting their presence in team meetings and no answer when called on the phone or refusal to participate if you happen to get them on the phone." (Respondent 218, Nurse)*

Within the family support category, nearly a quarter of respondents highlighted the impacts of family support as a factor affecting discharge planning. Respondents suggested the lack of family support can result in reduced autonomy and independence for older adults, an increased risk in the home, an increased use of community resources, a prolonged recovery or an increased risk of poor health, and, as discussed previously, increased chance of admittance to a LTC facility and longer lengths of stay:

> *"I acted as "case manager" for both my parents and often for their close friends. Many just fall thru the cracks if no family is closely involved" (Respondent 850, Retired Social Worker/Caregiver)*
>
> *"Yes it will dictate weather [sic] they can go home safely or not in many cases, however, many times "social support" is not enough unless family and friends can provided [sic] 24hr committed care at home." (Respondent 510, Physician Assistant)*
>
> *"As a family member i [sic] have recently experienced the situation of having my grandmother discharged back to a retirement building after 60 days in rehab post fractured hip repair. The co-ordination of care, other than transfer of medications, was completely lacking and left in the hands of the family. Luckily one of the primary caregivers is not working and could and continues to devote time to ensuring my grandmother is kept safe and socially sitmulated [sic]. Without involved family, she would have been discharged to a precarious living situation until her name comes up on a nursing home list." (Respondent 607, Family Caregiver)*
>
> *"From my many years of previous direct social work practice, policy and research perspectives, of course not having family, social and caring professional supports have a great impact on the physical and mental health of individuals who have experiences wiht [sic] institutional stays in healthcare systems. This in turn negatively affects the individual's ability ot [sic] recoup from the ill affects [sic] of the stay in regards to their ability to react positively to the stimuli of every day [sic] living required for optimal recovery. From both clinical and functional rehabilitative points of view, without these supports, naturally there is a much greater chance of relapse and return to the more expensive form of instructional care." (Respondent 866, Social Worker)*

The presence of family support can result in faster discharges and better navigation of health care systems:

> *"Yes, its [sic] is the promise of family support that often pushes hospital staff to discharge." (Respondent 531, Occupational Therapist)*

> *"As a caregiver of elderly people - although a pediatrician - I can tell you that my abilities and my knowledge of access to the system has prevent [sic] 3-5 hospitalizations at least in my parents." (Respondent 678, Doctor/Caregiver)*

One respondent went so far as to suggest too much family support creates more complications:

> *"I think discharge planning is easier without social support because there is less need to co-ordinate diverse family and friend resources. At discharge time, the bigger the family, the more complicated is the co-ordination of details." (Respondent 116, Doctor)*

The role of family is also highlighted by respondents within the family support category as affecting discharge planning. Family provide valuable information about patients that may not be discerned by the patients themselves and families play an important role supporting and navigating the services provided in the community:

> *"There is often a misunderstanding of the patient's preadmission baseline. In addition, the informal social support (i.e. family member) provides invaluable context to the patient's functional status, previous medical history and the assistance available within the facility" (Respondent 230, Nurse Practitioner)*

> *"difficult to provide services they may need without involvement of family. Homecare only does so much, less in our community than larger centers and we have no assisted living. Family support is essential. More community support is necessary on multiple levels" (Respondent 474, Doctor)*

> *"Yes, most discharge plans for older adults absolutely rely on family members to organize and provide services. Discharges are often delayed when there is no available family." (Respondent 871, Social Worker)*

Spousal support was also suggested as a factor that affects discharge planning within the family support category. Several respondents noted that because adult children are often working and caring for their own families caregiving duties fall to the spouse when one is available. In many cases, the spouse of an ill patient often has health concerns of their own:

> *"Most times it is the spouse who is the caregiver and if the caregiver gets sick, the children are often working and are not able to take over the role, we often get husband and wife admitted." (Respondent 52, Nurse)*

> *"Currently we have an 84 y/o patient in acute care facility for the past 9 days - even though he is clinically cleared for discharge. His elderly partner cannot care for him. APS was already involved prior to the hospitalization d/t concerns of neglect. Does not qualify for Medicaid - but does not have funds for LTC. These types of social issues occur at least 1x/mo [month] in our rural, small community hospital. Patients d/c'd [discharged] to home health or home hospice without the social support needed happen frequently too." (Respondent 490, Nurse)*

5. Difficulties with Discharge Planning

A common theme in response to what factors affect discharge planning for older patients were overall difficulties (13.12%). General difficulties included complicated discharge plans (64.15%), weak discharge plans (23.58%), unsuccessful discharges (15.09%), and social support not considered by discharge staff (10.38%) (Table 6.13). The majority of respondents within the difficulties with discharge planning sub-category commented on the complications that arise when patients lack social support at home:

> *"I have observed that social support is a major contributor to the type of discharge plan an older patient might be given. Depending on if a patient has social support, certain measures need to be taken to minimize re-hospitalization." (Respondent 441, Volunteer Researcher)*

> *"Although discharge planning, in most cases, is initiated at the time of admission, I find that the lack of social support in certain older patients present a problem making discharges challenging [sic]." (Respondent 486, Physician Assistant)*

> *"Often this client base is thought to be at more risk when living alone at home with no social supports. Teams appear more confident in the discharge plan if social supports are readily available to have regular interaction with the client. Thus, it seems that lack of social support could lead to increased suggestions for supportive housing environments." (Respondent 389, Social Worker)*

Nearly a quarter of respondents in the difficulties with discharge sub-category suggested that weak discharge plans are problematic in hospitals and other health care facilities:

> *"I have seen discharge delayed, I have seen unsafe discharge plans made because "there is no other option", I have seen a lack of advocacy that leads to people being discharged inappropriately" (Respondent 626, Nurse)*

> *"There is a profound lack of discharge planning, any kind of assessment, or co-ordination of community support or family consultation or education of the family prior to discharge. We are in a health care crisis both in the hospital and in the community. These decisions are financially driven with lack of common sense, compassion, and are not client centered decisions. Business has replaced health care professionals with substandard care that has become unrecognizable." (Respondent 665, Nurse)*

> *"No impact. Hospitals send them at home without letting the family know, in a taxi, even at 11:00PM. True story." (Respondent 949, Social Worker)*

A number of respondents found discharges to be unsuccessful when older adults do not have the proper social support:

> *"For those older patients still living at home, many are discharged without ensuring they have homecare, family available etc.. I have seen an elderly person being discharged and sent home in a taxi. She lives alone and was too anxious to be able to unlock her door, and therefore sat on her stoop until someone saw her. She was re-hospitazed [sic] soon after, loss [lost] her will to live and passed away." (Respondent 676, Child of Older Adult)*

> *"Without proper supports in the community (including transportation), adherence to a discharge plan is difficult." (Respondent 185, Administrator for Independent Living)*

> *"I find patients are discharged from hospital regardless of the supports in place. attempts are made to try and enlist proper supports to keep the patient at home but there are usually not enough supports for the level of care the client needs and they very frequently end up back in hospital" (Respondent 651, Nurse)*

Lastly, a small number of respondents believed social support was not considered during discharges, resulting in difficulties for older adults post-discharge:

> *"I have seen that discharge planners often don't adequately consider the social support or lack thereof when making discharge plans... until it becomes a complete barrier to discharge." (Respondent 139, Administrator)*

> *"Often the hospitals don't seem to be aware of the importance of social supports for patients being discharged to the community. The focus seems to be on discharging patients out of hospital without sufficient investigation of the support available. Unless family members speak up and say "I can't look after him/her at home" (and they have a lot of guilt saying that), their family member is quite frequently sent home with insufficient social support." (Respondent 640, Nurse)*

> *"Yes. Physicians and hospitals are unaware of the requirements once someone is sent home, they look at getting older patients out of the hospital bed. There is no consideration for the efforts required for simple activities of daily living and who will assist with those" (Respondent 727, Health Promotion for Older Adults)*

6. Frequent Hospital Admissions or Re-admissions

Multiple respondents suggested older adults without proper social support experience frequent hospital admissions and readmissions which further complicate discharge planning (12.5%). Respondents suggested the presence of social support, medical compliance, and doctor follow-ups have fewer readmissions:

> *"Seniors who have been referred & followed up within a timely manner following d/c [discharge] with Home Care & Support in addition to social supports appear to have less re-admissions to acute care." (Respondent 186, Social Worker)*

These respondents cited poor compliance or difficulties following discharge instructions, the lack of self-care or assistance with care following a discharge, premature discharges, and lack of a patient advocate as the primary reasons for frequent admissions and readmissions:

> *"Manifested in the following ways: Rehospitalizations [sic], self-neglect, medication mismanagement, exacerbation of existing co-morbidities, depression, follow up appointments missed/unscheduled, etc." (Respondent 184, Administrator)*

> *"The patient often return to the hospital without the appropriate support systems in place at home. Therefore the patient fails to adapt to their new limitations in their current environment. Very sad- it's practically predictable." (Respondent 860, Nurse)*
> *"Patients sent home too early relapse more often. It is also difficult to get appointments to consult a doctor promptly enough to address the health issues before they deteriorate. Older people seem to have less drive in fighting for their*

> *rights. Some are afraid to ask for fear of sounding like a complainer. When no social support is in place an ailing older person is left pretty stranded." (Respondent 610, Caregiver)*

> *"Working in a LTC setting I have observed many admissions that would never have happened if the individual had an advocate in the community. In some cases, social support alone would not be enough to support people in their own homes but having that social support to coordinate the care that is required to support community living is essential. Without that social support, health care teams are more reluctant to discharge from acute care back to home. I would anticipate that re-hospitalizations are greater for these individuals as well for many reasons" (Respondent 514, Occupational Therapist)*

A common theme among respondents was that a lack of support also meant more calls to 911, ambulance transports, and an overuse of the emergency department:

> *"in my profession (ambulance medic) lack of social support = more ambulance transports" (Respondent 167, Firefighter/Medic)*

> *"I work in an ED and more elderly patients who live alone are admitted at least overnight than those with good support at home." (Respondent 299, Physician Assistant)*

> *"yes. they need more in home services when they are dc [discharged] home, and even with teaching and support simple things like med compliance fall apart. more addictions. More Hoarding. more ER [emergency room] visits OR the opposite, avoiding Dr's [sic], hospitals, no taking their meds and letting things get so out of control they have to be sent to LTC [long term care]." (Respondent 570, Care Coordinator)*

> *"Throughout my career patients lacking social support have ended up in nursing homes or discharged home with brief in-home care that quickly is discontinued. Those people then fail to thrive and end up back in the ED to repeat the cycle." (Respondent 380, Physician Assistant)*

7. Other Factors Affecting Discharge Planning

Less common responses to the question 'how have you seen the lack of social support affect discharge planning for older patients?' included social resources, social support, decline in health and quality of life, compliance, financial difficulties, patients fearful, increased risks, rehab and transitional care, patient advocate, impacts patient decision making, and medical errors (Table 5.12):

> <u>Social resources</u>: *"Resource issue - community access to OT [occupational therapy] is limited due to high caseloads and ineffecient [sic] process/systems issues. Individuals without social supports are not as healthy as those with them. Obtaining the physical care supports through the community programs availible [sic] in the region can be complex and when there is no one to help with this process, people remain in institutions." (Respondent 524, Occupational Therapist)*

> <u>Social support</u>: *Social support is everything - it is their will to get up, to get changed, it supports meals and transportation to important proactive visits. It helps especially in cold climates where getting out is difficult and therein, social connectivity far more cut off. Illness is the symptom to lack of social support and then perpetuates as the cause. (Respondent 41, Social Worker)*

> <u>Decline in health and quality of life</u>: *"Less social support equates to more frequent emergency room visits, increased hospital admissions, Increased risk for morbidity and moratlity [sic] rate increase, social isolation" (Respondent 192, Nurse)*

> <u>Compliance</u>: *"Many elderly do not understand their medications or all their discharge instructions, and are unable to get to follow up rehab appointments. Some are not able to make their own meals or find transportation" (Respondent 157, Nurse)*

Financial difficulties: *"patients are often left to decide between buying things like walkers or wheelchairs instead of food because of fixed incomes. Discharge planners in hospital only cover the most basic needs and leave the clients to do most of the organization aspect of home care, nursing etc." (Respondent 650, Social Worker)*

Patients fearful: *"In speaking with older patients, they are anxious about returning home on their own following procedures like hip or knee replacements. They want more support but the CCAC [community care access centre] is always trying to provide them with the minimum or moves quickly to get them off of the roster without listening to their concerns." (Respondent 3, Nurse)*

Increased risks: *"Yes, older adults without social supports suffer from great risk for falls, depression, isolation, suicide, etc. A myriad of issues that social support could avoid." (Respondent 670, Recreation Coordinator)*

Rehab and transitional care: *"Yes, they are more often discharged to skilled nursing facilities to borrow more time to set up social services." (Respondent 317, Physician Assistant)*

Patient advocate: *"Yes.....fragmented approach ....everyone in the health care system is compartmentalized and health care personal [sic] assume that everyone has access to computers and information online and this just isn't the case...... If the elderly person doesn't have a good advocate they can get lost in the system...." (Respondent 38, No position selected)*

Impacts patient decision making: *"We end up making the decisions in most cases! This affects self-determination because in most cases many older adults suffer from Dementia and are incapable of making decisions." (Respondent 247, Social Worker)*

Medical errors: *"Medication not taken at the right time or right dosage or even the wrong medication. Meal preparation is a chore for elders. Loneliness-" (Respondent 64, Director of Care)*

“What strategies do you think could be employed to reduce the hospitalization or institutionalization of older patients who could otherwise be cared for in the community?”

> *“This is very difficult in a culture that stresses individualism, in general. I think a cultural shift is needed more than anything. This can start with a dialog, and the fact that the percentage of our aging population is rapidly increasing. Hopefully this expanding demographic will have an increasing voice for supportive community services, as well as awareness of these issues, in general. I also think the economic reality will help increase community resources as well...that caring for people in place is far more affordable and sustainable that relying mainly on hospitals. Psychosocial support is the key to overall wellness in every demographic in this country, I believe.” (Respondent 167, Firefighter/Medic)*

Out of the total sample, 819 respondents answered question eight. I coded responses into 26 primary categories (Table 6.14), six of which were further coded into secondary categories. The most common responses were home care (47.74%), community outreach (37.24%), insurance and funding (18.8%), increase awareness and education (13.06%), integrated and improved medical care (11.84%), caregiver support (11.36%), and the improvement of discharge planning and follow-up (11.23%).

1. Home Care

Home care was the most common response to strategies that could reduce the hospitalization or institutionalization of older patients who could otherwise be cared for in the community (47.74%). Nearly half of the respondents who answered this question included a response to some degree about home care (n=391). These responses were re-coded into eight secondary categories (table 6.15); the most common were the provision of tangible support (36.83%), improving home care services (32.99%), medical house calls (27.37%), and the provision of transportation services (22.51%).

Table 6.14: Responses for question 8 (primary categories) - What strategies do you think could be employed to reduce the hospitalization or institutionalization of older patients who could otherwise be cared for in the community?

Primary Category	Frequency	Percentage respondents (n=819)
Home care*	391	47.74%
Community outreach*	305	37.24%
Insurance and funding	154	18.80%
Increase awareness and education*	107	13.06%
Integrated and improved medical care*	97	11.84%
Caregiver support*	93	11.36%
Discharge planning and follow-up*	92	11.23%
Socialization	72	8.79%
Social support and networks	64	7.81%
Medical social worker and social services	60	7.33%
Connect with patients	39	4.76%
Occupational and physical therapy	38	4.64%
Residential and congregate living	38	4.64%
Early intervention and planning	34	4.15%
Family limited or fragmented	26	3.17%
Transitional and convalescent care	25	3.05%
Personal support worker	22	2.69%
Social isolation and loneliness	22	2.69%
On call support	18	2.20%
Affordable housing	17	2.08%
Electronic monitoring	15	1.83%
Dementia care	10	1.22%
Patient advocate	10	1.22%
Hospice and palliative care	7	0.85%
Avoid emergency department visits	6	0.73%
Societal risk	4	0.49%

*Primary strategies with secondary categories

Home care is a catch all term that refers to any type of care in the home. Home health care or home health is the provision of support by medical professionals that assist with rehabilitation therapies, medical treatments, or prescription management. Home care can also include tangible support such as assistance with ADLs or IADLs. Home care has been found to decrease emergency department visits and long term hospitalizations, both of which can lead to rapid functional decline, loss of independence, and permanent institutionalization (Stall, Nowaczynski, and Sinha 2013).

Table 6.15: Responses for question 8 (secondary categories) - What strategies do you think could be employed to reduce the hospitalization or institutionalization of older patients who could otherwise be cared for in the community?

Home care n=391		
Secondary Category	**Frequency**	**Percentage**
Tangible support	144	36.83%
Improved home care	129	32.99%
Medical house calls	107	27.37%
Transportation services	88	22.51%
Check-ins	45	11.51%
Social isolation	6	1.53%
Medical phone support	4	1.02%

Community outreach n=305		
Secondary Category	**Frequency**	**Percentage**
General comments	141	46.23%
Day programs	70	22.95%
Community health	46	15.08%
Volunteer visitors	39	12.79%
Faith based	7	2.30%

Increase awareness and education n=107		
Secondary Category	**Frequency**	**Percentage**
Families on aging and support	36	33.64%
Medical professionals on aging	19	17.76%
Available resources	18	16.82%
Community education	18	16.82%
Patients	10	9.35%
Outcome and end of life discussions	5	4.67%
Social Isolation	2	1.87%

Integrated and improved medical care n=97		
Secondary Category	**Frequency**	**Percentage**
Collaborative and multidisciplinary teams	26	26.80%
General comments	15	15.46%
Continuity and coordination of care	12	12.37%
Geriatric care	10	10.31%
Improved communications with medical	10	10.31%
More community and specialty clinics	8	8.25%
Person centered care	6	6.19%
Pharmacare and reducing polypharmacy	5	5.15%
Universal electronic medical records	3	3.09%

Caregiver support n=93		
Secondary Category	**Frequency**	**Percentage**
Available support and resources	52	55.91%
Funding and paid leave	22	23.66%
Better family support	12	12.90%
Involve in planning and discharge	2	2.15%

Discharge planning and follow-up n=92		
Secondary Category	**Frequency**	**Percentage**
Discharge follow-up	39	42.39%
Improved discharge planning	31	33.70%
Restorative care and assessment	11	11.96%
Person centered discharge planning	7	7.61%
In home support following discharge	5	5.43%
Increased communication and collaboration	5	5.43%

Multiple sub-strategies suggested by respondents

Home care in Canada provides an assortment of services for short term post-acute care, short term acute mental health, and palliative care that allows patients to remain in their home thereby “preventing, delaying, or substituting for long-term care or acute care alternatives” (Clark 2007, 50). The goals of home care are to replace expensive acute care services, replace care in long-term facilities, support families caring for family members, and to allow incapacitated patients an opportunity to maintain independence and stave off functional decline (Clark 2007, Government of Canada 2016). In an effort to reduce hospital spending and provide patients opportunities for care at home, a home care policy was included in Extended Health Care Services (EHCS), a category of the Canada Health Act (CHA), in 2004 as part of a ten year plan to strengthen health care (Clark 2007, Romanow 2002). Home and community care within the EHCS may include nursing, personal care and assistance with ADLs, physiotherapy, occupational therapy, speech therapy, social work, dietitian services, homemaking, and respite services (Government of Canada 2016).

The CHA requires provinces to meet five criteria in order to receive full federal funds: public administration, comprehensiveness, universality, portability, and accessibility (Madore 2005). However, although EHCS can improve quality of life, they are not considered medically necessary and are not included within the five required criteria (Lanoix 2016). Subsequently, home care programs are not required by federal mandates to be insured nor are there restrictions on extra billing or user-fees (Clark 2007, Lanoix 2016). The federal government provides funds through health and social services general transfers, but as each province designs their own framework for home care and determines what is and is not medically necessary, inequities develop across geographic regions (Clark 2007, Lanoix 2016, Romanow 2002). Furthermore, as provincial governments transition between political parties, health care reform is common; services once considered medically necessary may quickly become unnecessary (Lanoix 2016). As one respondent pointed out:

> *"Over the years our province has restricted the services that can be provided by funded home support. If they were to reinstitute light housework, food prep and extend the number of hours per week, this would go a long way to address the issue in your question." (Respondent 223, Nurse)*

Additionally, because home care is limited to post-acute care, mental health, and palliative care, a further discrepancy arises from the gap in home care for the chronically ill (Cool 2012, Health Canada 2004, Romanow 2002).

Home care for post-acute patients is integrated into services following hospital discharge as an alternative to a prolonged hospital stay or care in a long term facility. Such an intervention at the point of discharge has potential benefits for 30 to 50 per cent of eligible patients (Ogilvie and Eggleton 2012), however, 2/3 of total home care patients in Canada require long term care (Kirby and LeBreton 2002). Currently, patients with long-term and chronic illnesses, factors commonly found among older adults, are expected to pay some or all of their home care costs (Cool 2012, Ogilvie and Eggleton 2012).

The Canadian Medical Association (CMA) recommended in 2009 that medically necessary services expand to include services in the home and the community, not merely hospitals and physicians offices, which, Lanoix (2016) argues, opens the door to exclude tangible support. Lanoix (2016) goes on to argue that within the CMA there remains a strong divide between medical and social care. Critics of the current home care policy argue that the federal government's hesitancy to expand home care services is based on their fear of moral hazard[19] and the "myth of family abandonment" as families opt for formal home care (Clark 2007, 53). Clark (2007) and Lanoix (2016) both suggest that the government is hesitant to expand home care because of their underlying belief in 'familism', the familial responsibility for taking care of elderly family members. The government argues that "only when the family caregiving resource is exhausted is it the government's responsibility to step in to provide support" (Clark 2007, 53). The glaringly obvious concern here is the assumption that there is family available to provide support. And in many cases, even when older adults have children, they are not always available to provide support. Adult children often migrate for work or school opportunities, they may be working and raising families of their own, and in many cases, adult children are themselves aging and have their own health concerns, creating a situation where the old are caring for the very old:

> *"Better community supports for chronic illness, transportation for shopping health apps etc Home and garden care, snow shovelling [sic] etc Do not rely only on informal caregivers...for folks in their 80s and 90s, even their sons and daughters are in their 60s and 70s with health issues of their own!" (Respondent 893, Nurse)*

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[19] Moral hazard is the frivolous use of medical services and is considered one of the largest obstacles to the implementation of home care as a medically necessary service (Clark 2007, Ogilvie and Eggleton 2012).

Much like the Canadian health care system, Medicare[20] in the U.S. does not cover home care for the chronically ill; recipients are only eligible for home care when their condition is expected to improve (U.S. Centers for Medicare & Medicaid Services). Ironically, multiple studies over the past few decades have repeatedly found that home care for chronically ill patients have lower costs and better health outcomes than hospitalizations or long term care (Hollander and Chappell 2002, Ramos, Ferraz, and Sesso 2004). Medicare covers home care services such as part-time or intermittent skilled nursing care, physical therapy, speech-language pathology services, and continued occupational services. Unlike Canada, however, home care services through Medicare does not provide tangible support. Specifically, meal delivery, homemaker services, personal care, and 24 hour home care are not included in home care services (U.S. Centers for Medicare & Medicaid Services).

According to survey respondents, tangible support, particularly support with meals, shopping, housekeeping, and home maintenance, is the type of home care that is most beneficial for older adults in terms of remaining in their homes and staving off hospitalization or institutionalization. A seemingly simple task for an able-bodied individual can seem insurmountable to someone with a disability, experiencing an illness or frailty, or for someone recently discharged from hospital. Circumstances such

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[20] Medicare is a federal health insurance program that is available for adults 65 and older or those of any age with certain disabilities, and anyone with end stage renal disease (U.S. Centers for Medicare & Medicaid Services).

as these are not necessarily criteria for institutionalization, although as two respondents point out:

> *"Patients are not hospitalized ju[s]t because they can't be cared for in the community. The lack of social support leads to poor nutrition, falls, lack of medical care which results in deterioration which may lead to hospitalization ultimately." (Respondent 82, Doctor)*

> *"Increased support for folks who are experiencing health issues and do not have a friend or family member to go to or to come and stay with them through the episode, i.e. someone with COPD [chronic obstructive pulmonary disease], CHF [congestive heart failure], etc. who have frequent exacerbations of symptoms. One big issue for many elderly is meal preparation or availablity [sic] of meals and groceries. If nutritional status is poor, hospitalization usually follows to assess and treat the multitude of health problems which can occur." (Respondent 748, Nursing Instructor)*

Tangible support in and of itself does not constitute medical procedures and are not deemed medically necessary in either a Canadian or U.S. context, as such these types of services are not guaranteed to be insured in Canada and are not available through Medicare. Yet survey respondents, medical professionals, considered tangible support to be the most useful form of home care as a strategy to reduce hospitalization or institutionalization among older patients who could otherwise be cared for in the community. This is particularly problematic for older adults with a low income:

> *"increased funding or programs that allow senior patients with limited family/friend supports to hire individuals to help with meals, cleaning, transportation (especially in rurual [sic] areas) etc as many seniors are on very fixed incomes and unable to pay for these services alone." (Respondent 235, Social Worker)*

Without tangible support from friends or family, or qualifying for home care assistance that includes tangible support, these older adults run a greater risk of having poor nutrition, falling, and having difficulty accessing medical care, as previously highlighted by respondent 82. These results suggest a disconnect between practicing medical professionals and policy makers who dictate health care services policy and funding, despite the fact that home and community care have been found to have better outcomes and lower costs than those associated within care facilities.

The disconnect between medical professionals on the frontlines and policy makers is further apparent as the second most common response among home care strategies called for improvements to home care services (33%). One of the biggest issues highlighted by respondents was the need for more time spent with patients in their homes:

> *"Without a doubt, better personal assistance programs. Longer hours for the workers. Ex: While still living at home, my mother had a fall and broke her arm. She had a PAW [personal assistance worker] for 1/2 an hour to help her bathe. The rest of her care, meals, laundry etc had to be from the family. Had we not been living close, I can't imagine what it would have been like for her" (Respondent 676, No position selected)*

> *"more home visits, and visits that last over a more prolonged period of time. Not a set amount of visits, and then d/c [discharge] services with a wing and a prayer..." (Respondent 142, Social Worker)*

Other suggested improvements to home care included better pay for home care workers in order to draw a more educated, experienced, and stable workforce, better funding and insurance coverage for home care, a reduction in wait times to receive care, and a reduction in eligibility requirements to qualify for home care:

> *"Home care workers needs to be paid more, to attract a stable, trained workforce. Also, families need more support (peer, financial and professional) to help fill the gaps in care that usually lead to a senior seeking alternate care. i.e. day programs, sufficient home care to cover a caregiver's work/recreational schedule, etc. A little bit of help often goes a long way to keeping seniors in their homes and families connected to their seniors." (Respondent 948, Social Worker)*

> *"more home support like meals on wheels, shopping volunteers, housecleaning and gardening support. Most seniors don't want to have someone give them a bedbath [sic] or assist them with bathing so often are not eligible for government support. Changing the creteria [sic] for home support is very important to keep seniors in their homes." (Respondent 629, No position selected)*

Medical housecalls, once commonplace with 40 percent of physician visits occurring in the home in the 1940s, is beginning to make a resurgence as home based primary care (HBPC) (Stall, Nowaczynski, and Sinha 2013). This trend is supported by survey respondents as the third most common response as a home care strategy (27.4%) to reduce hospitalization or institutionalization. HBPC involves doctors and nurses who are able to provide primary care in the home and treat acute medical problems that do not require emergency medicine or hospitalization. As opposed to traditional house calls, HBPC today provides comprehensive medical care to chronically ill or homebound patients (Stall, Nowaczynski, and Sinha 2013). Survey respondents in support of home based care argued that these types of home visits allow doctors or nurses to evaluate how a patient functions in their home environment, what kind of barriers they encounter, how they store their medications, and what kind of meals are available. Additionally, HBPC addresses the gap in access to care for homebound and limited mobility patients, reduces poor health outcomes for chronically ill patients, and reduces overall medical costs (Rosenberg 2012, Stall, Nowaczynski, and Sinha 2013). Some survey respondents suggested that HBPC should be conducted by physicians:

> *"We need more paid and unpaid resources available so that a person can stay at home where they feel more comfortable. We were doing better back when Doctors still made house calls."(Respondent 754, Nurse)*

But most suggested that nurses and nurse practitioners could be a key component in home based care:

> *"Clinician visits at home, NPs or nurse prescribers would be very appropriate for UTIs, Increase nursing and home supports during the acute phase to allow the caregivers to cope. Avoid ER visits, for example an ER visit for a senior with a UTI the stretchers are too high for patients to get off of independently, they have a catheter placed in and now they don't have to mobilize, they loose [sic] their mobility and guess what we have created a new patient for LTC. For every day in bed it takes three days to recover that strength so after three days on a stretcher for a senior with limited mobility mobilization may only be a dream." (Respondent 1, Nurse)*

Today, in Canada, most physicians do not make house calls (Eric De Jonge et al. 2014), and among those who do the number is declining, from 48.3 per cent in 2007 to 42.4 per cent in 2010 (Stall, Nowaczynski, and Sinha 2013). Some primary difficulties conducting housecalls that have been identified are time constraints, transportation issues, concerns for safety, and lack of payment (Stall, Nowaczynski, and Sinha 2013).

However, according to Stall, Nowaczynski, and Sinha (2013), Canadian policy makers having been looking at HBPC programs outside of Canada as a means to mitigate the healthcare needs of its rapidly aging population. The consideration for HBPC within Canadian policy is further prompted by successful housecall programs within Canada, with as much as a 39 per cent reduction in hospital admissions and a 20 per cent reduction in emergency department visits among older adults in one program in Victoria (Rosenberg 2012, Stall, Nowaczynski, and Sinha 2013). Additionally, the reduction of acute hospital care associated with home based medical care has been found to reduce overall medical costs (Rosenberg 2012).

In the U.S., the Independence at Home Demonstration, a three year initiative of HBPC targeting chronically ill patients, is being conducted at 14 different locations to determine the cost benefit for Medicare, the efficacy of reducing hospitalization, improvements to patient and caregiver satisfaction, and health outcomes (U.S. Centers for Medicare & Medicaid Services 2017). At the two year mark, Centers for Medicare & Medicaid Services analysis estimated a savings of more than ten million dollars and improved quality of care for patients through the mechanisms described in table 6.16 (U.S. Centers for Medicare & Medicaid Services 2016).

Table 6.16: Average mechanisms of improved care for Medicare beneficiaries following two years of home based primary care in the United States

Follow-up contact from provider within 48 hours of a hospital admission, hospital discharge, or emergency room visit
Fewer hospital readmissions within 30 days
Medication identified by provider within 48 hours of discharge from the hospital
Preferences documented by their provider
Inpatient hospital and emergency room services used less for conditions such as diabetes, high blood pressure, asthma, pneumonia, or urinary tract infection

(U.S. Centers for Medicare & Medicaid Services 2016)

The shift to HBPC is highly relevant with more than a million, and perhaps as high as 3.6 million, homebound older adults in the U.S. (Stall, Nowaczynski, and Sinha 2014). Older adults who are homebound have a higher likelihood of experiencing frailty, having multiple chronic conditions, including social comorbidities, and often rely on emergency departments during health crises that have escalated due to the lack of a primary physician (Stall, Nowaczynski, and Sinha 2014).

Within the home care strategy to reduce hospitalizations, a common theme among survey responses was the need for improved transportation services (22.51%). Whether for doctor visits, visits with friends or to day centers, or simply for shopping, the lack of transportation was a key component preventing access to activities outside the home:

> *"In this area one of the key issues is transportation which is available at low cost, but very unsatisfactory with long wait times, poor communication and generally unsupportive policies - e.g. if you are too frail to wait outside in the snow for your ride to come and you miss the connection (which is often late) more than twice, you lose access to the service for some months before you are allowed to re-enroll." (Respondent 258, Physician Assistant)*

Older adults without reliable transportation have higher incidences of missing medical appointments, delaying health care, and irregular medication usage that can exacerbate chronic illnesses and lead to negative health outcomes (Syed, Gerber, and Sharp 2013). As such, transportation has been identified as a major barrier to health care for as much as 67 per cent of the population in some areas, most commonly impoverished areas (Syed, Gerber, and Sharp 2013).

Older adults who are physically capable of utilizing public transportation can derive many benefits from walking between home and bus/train stops and then again between bus/train stops and their destination. However this is limited to older adults with increased mobility and urban areas. Many survey respondents noted the difficulties of caring for older adults in rural communities:

> *"I have considered mightily on this. In a rural area, there are very few capable of accepting care-taking duties - paid or otherwise. Transportation is a MAJOR factor in rural areas - many older folks do not drive or no longer are capable - so they cannot go to visit and their friends cannot come to visit them. Weather, high waters, and other catastrophes add to the isolation and drama. There are so many complex layers that interfere with the planning and ABSOLUTE ASSURANCE that someone can be there to care for, feed, or manage the older individual" (Respondent 427, Nurse)*

> *"So many program in community are set up for the "walking well" seniors, limited options for suppirts [sic] and services to come to the person. Friendly visitor program, transporation [sic] is a challenge in rural areas to access existing programs, increased home care, pooling of talents and resources in small communities and a program that links these" (Respondent 458, Social Worker)*

Using responses from the Home Care category and combining the terms 'Transportation' and 'Rural' in a word search, the following word tree depicts some concerns with transportation in rural regions (figure 6.2). Notably, from the word tree respondents highlighted the need for "*Easier access to ambulatory care sites that people can use in more rural…*", "*Improve public transportation options for seniors in rural…*", "*Friendly visitor program, transportation is a challenge in rural…*", "*There are much fewer resources available in the rural…*", "*…rural areas many older folks do not drive or no longer are capable.*", and "*…rural counties lack in multiple areas when it comes to older adults.*"

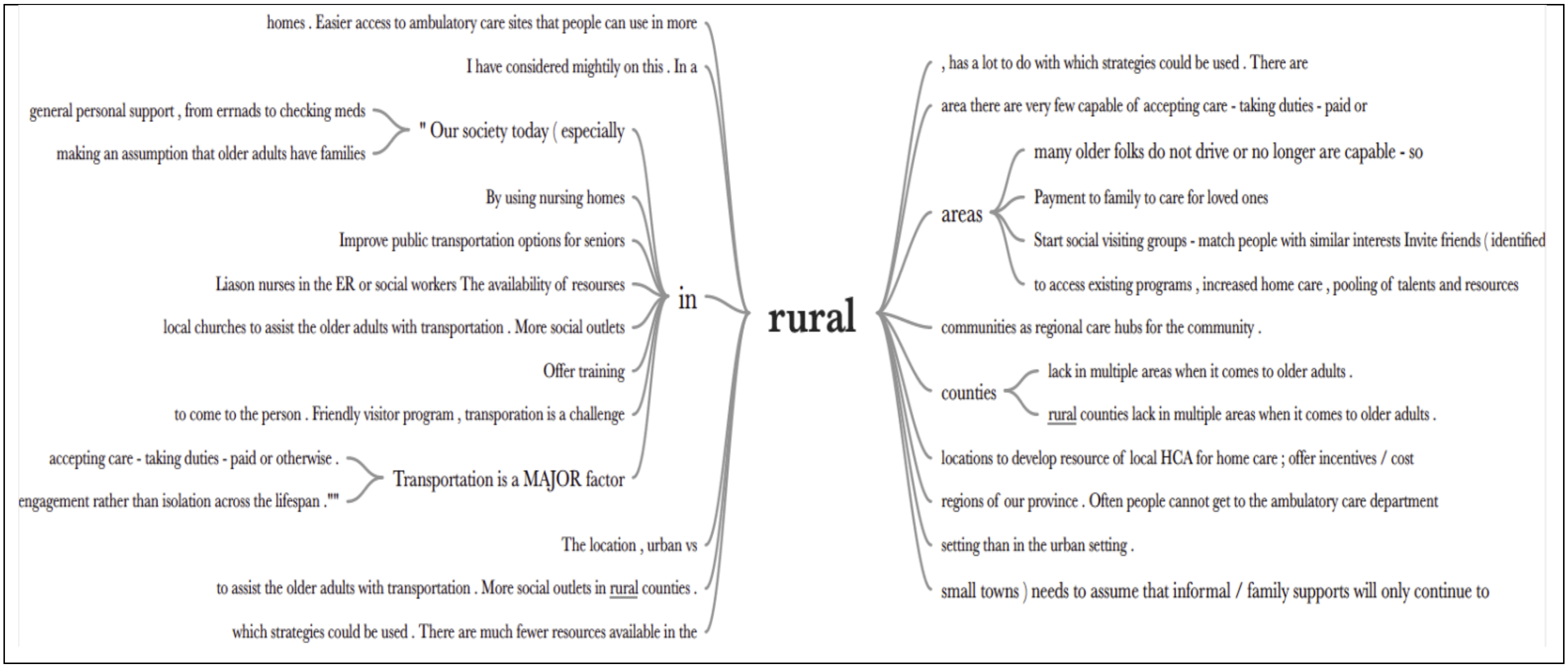

Figure 6.2: Word tree using 'Transportation' and 'Rural' within the 'Home Care' category (created in NVivo 11.4)

The 'transportation' and 'rural' word tree exemplifies barriers to health care in rural regions that is supported in the literature. Specifically access to public transportation, having to travel long distances to seek care, and limited medical resources (Goins et al. 2005). Furthermore, Laditka, Laditka, and Probst (2009) found that preventable hospitalizations increased as rurality increased, citing the relationship between limited access to care and preventable hospitalizations that may result from longer commutes and transportation difficulties. This is specifically true among older adults, in the most rural regions this segment of the population were found to have a 45 per cent increase of preventable hospitalizations as compared to those in the most urban areas (Laditka, Laditka, and Probst 2009).

Other strategies suggested by respondents in the home care category included check-ins and medical phone support, and social isolation (Table 6.15). Check-ins simply refer to in person visits or phone calls, even email check-ins have been noted by respondents, that regularly check to ensure that someone is doing well and there have been no health concerns or injuries. Check-ins are particularly beneficial for people who live alone to ensure patients are not suffering unusual or negative health effects.

> *"if my role was expanded to all discharges - many times I find problems at a home visit that should not have occurred if acute care nurses had done the medication reconciliation, if clients and families had done what they said they would. Even followup [sic] phone calls to ask specific questions can provide some support but a home visit is best." (Respondent 671, Nurse)*

Medical phone support is a form of check-ins where a patient has phone access to a health care provider. This type of phone support can reassure a patient that they do or do not need to seek medical attention, or perhaps even provide home health.

Reducing social isolation was noted by a small percentage of respondents, but their inclusion of this issue highlighted the awareness that socially isolated individuals, particularly older adults, have poorer health outcomes. This issue contributed to the driving force behind Klinenberg's work in the wake of the Chicago heat wave and the remarkable number of socially isolated older adults who died as a result of being alone.

2. Community Outreach

The second most common strategy suggested by survey respondents to reduce the hospitalization and institutionalization of older adults who could be cared for in the community was community outreach (37.24%). This is a broad category that can include social programs and services, community clinics, health prevention, and volunteer programs. According to survey respondents, two of the biggest issues with this type of strategy is transportation and funding. As with home care, this strategy can be further broken down into secondary categories, day programs (22.95%), community health (15.08%), and volunteer visitors (12.79%) were the most common sub-strategies (Table 6.15). As one respondent sums up:

> *"I think that increased contact with the health care system, such as community based outreach programs, would provide earlier opportunities for prevention and intervention short of hospitalization. I think that at a societal level, greater consideration should be given to community planning that facilitates social engagement rather than isolation across the lifespan. This could include increasing funding for community centres, developing innovative co-housing, and encouraging volunteerism." (Respondent 238, Nurse)*

Day programs were the most common strategy suggested by respondents within the community outreach category. Day programs generally refer to a form of elder care or ‘daycare’, although this term can often be demeaning to older adults who resent the stigma of childcare (Iecovich and Biderman 2013). More formally known as adult day service (ADS), these programs provide supervised care for ADLs, meals, exercise, and activities during the day while caregivers are unavailable (Fields, Anderson, and Dabelko-Schoeny 2014). ADS programs also provide older adults with socialization and a break from solitude, loneliness, and boredom (Iecovich and Biderman 2013, Gaugler 2014). There are three primary models of ADS programs, those designed to promote social interactions, medical care and rehabilitation, and those which address both (Iecovich and Biderman 2013). In the U.S., there are close to 5,000 adult day centers providing care for approximately 260,000 older adults (Dwyer, Harris-Kojetin, and Valverde 2014, Fields, Anderson, and Dabelko-Schoeny 2014, Gaugler 2014); 37 per cent utilize a social model, 21 per cent a medical model, and 42 per cent integrate both (Iecovich and Biderman 2013). Nearly 50 per cent of ADS participants are between 65 and 84, 37 per cent are under 65, and 17 per cent are over 85, with 32 per cent of participants experiencing some form of Alzheimer’s disease or dementia, 25 per cent having some form of a developmental disability, and 25 per cent experiencing depression (Dwyer, Harris-Kojetin, and Valverde 2014). Among ADS participants, nearly 50 per cent require assistance with mobility, 36 per cent need assistance with toileting, and 34 per cent require assistance with medication. However, hospital utilization is relatively low among participants with 17 per cent being readmitted within 30 days of a discharge, six per cent discharged from a hospital overnight within 90 days, and six per cent visiting the emergency department within 90 days (Dwyer, Harris-Kojetin, and Valverde 2014).

Caregivers have also been found to receive benefits from ADS programs, particularly those caring for loved ones with dementia. The difficulties associated with caring for dementia patients has been found to increase the risk of depression, poor health outcomes, morbidity, and mortality (Klein et al. 2014). Respite programs such as ADSs reduces stressors related to care. Studies have found a drop in cortisol levels in caregivers in anticipation of ADS days and following ADS use, even fewer sleep problems, decreased incidences of depression, and buffering feelings of anger (Klein et al. 2014).

Despite the benefits of ADS programs for both older adults and caregivers, they are often underutilized in both Canada and the U.S., primarily due to the childcare stigma, a negative association with group activities, lack of awareness of facilities, lack of transportation, and poor health (Iecovich and Biderman 2013). As noted by these respondents:

> *"Involve the clients in day center where the staff is trained to screen for eventual difficultis [sic], help them understand their rights and the services available to them, smooth the transition between homecare and the client. Day center also*

> *allows them to chat and exchange about their lives and make new acquaintances if not new friends. Even if informations [sic] is given at large to the clients and seniors will never have the impression it applies to them before they actually need to use the services or have to go to hospitals. Transportation is also often an issue for them to be able to go out and interact and not everyone know [sic] can access volonteers [sic] services or adapted transport. Find it sad when hear of very isolated senior who could have enjoyed life a bit longer if had knowed [sic] about certain activities and services offered by the community." (Respondent 886, Occupational Therapist)*

> *"CULTURALLY APPROPRIATE SERVICES. Day programs that are not tailed AT ALL to the ethnicity of the population will never draw people into it. System navigators to support those they [sic] don't have family members on [sic] where to go and how to get there. . . and affordable housing where people can live and have that community feeling at a cost that isn't astronomical!" (Respondent 41, Social Worker)*

The benefits of ADSs, however, were clearly understood by survey respondents who understood that there are both physical and emotional positive outcomes of day programs:

> *"An increase in homecare funding and availability to Day Programs that support and encourage seniors. These programs get people motivated mentally and physically. We see a great improvement in mood and participation when they continue to come. Sometimes they cannot afford to come any longer then return to us at a later date. There is usually significant deterioration noted and within a few days of being back in the program they have again significantly improved. I see them walk better, socialize, help one another and participate. Mostly we see them start to laugh again." (Respondent 592, Nurse)*

Respondents also highlighted the importance of socialization and social engagement in ADSs, particularly the link between physical and social health:

> *"Of course primary care is vital at all time. Providing care at home, close to home (in the community) will help seniors stay independent and in better shape in terms of health. I also think that providing social engagement and enhancing their social capital will add so much to enhance their health and keep them health [sic] and for longer. Good health means physical health and mental health. Physical health can deteriorate so quickly if you are mentally disturbed and feel lonely." (Respondent 50, No position selected)*

Within the community outreach category, community health was the second most common sub-strategy (15.08%). Community health broadly included responses from survey participants for more health resources such as community health centers, primary care practitioners, nurse practitioners, hospice, palliative care, physical therapy, occupational therapy, and dieticians. Survey respondents also pointed out the need for community programs that include fall clinics and self-management for chronic diseases. These community resources would provide the greatest support to vulnerable older adults who are underinsured, those with mobility and transportation issues, and/or those who lack social support.

> *"More health care resources in the community. Often older persons resort to Emergency rooms for care and end up being hospitalized as there is no care in between home and hospital." (Respondent 172, No position selected)*

> *"Have the patient followed in the community weekly by a community health nurse who can check for basic health information (blood sugar levels, changes in weight, blood pressure, medication compliance (just count the pills), etc). There could also be a team of care providers (nurse, PT, OT, SW) who each provide services to the individual on different days so the patient is more closely watched in the community." (Respondent 802, No position selected)*

The third most common strategy within the community outreach category were volunteer visitors (12.79%). These primarily included home visits from community members to provide social engagement with older adults who lived alone or spent a great deal of time alone. Survey respondents also suggested ‘friendly visits’ from health care workers in order to provide social engagement as well as health checks. Volunteer visitor programs can include tangible support programs such as Meals on Wheels that provide food as well as conversation, to student visitors interested in engaging in community service. Specifically, student visitors was suggested by a small number of respondents as a creative strategy that can benefit both young and old alike: community service or part time jobs for young people, and social support for older adults.

> *“Increase high school program "community service" opportunities for students visiting the elderly in homes; simple social interaction and acceptance makes people mentally and physically healthier. Plus, regular visits from someone means that someone will notice if grandma isn't getting all her meds, etc.” (Respondent 253, Physician Assistant)*

> *“Older patients (with an assessed need) could be given a base amount of money for year (if their income requires) to hire a private care giver to meet their needs (driving to get groceries, companionship, housecleaning, personal care, etc). University students would be ideal, as most seniors require help through the winter and spring months the most. We need to create more of a community network for older people to meet their social and emotional needs. This in itself would prevent a lot of hospitalization.” (Respondent 796, Assessor/Coordinator/Case Manager)*

On the opposite end of the spectrum, seniors supporting seniors was also suggested by a small number of respondents as a creative strategy for newly retired seniors with greater functionality supporting those with more limited mobility and poorer health:

> *"There is a whole generation of untapped volunteer resources out there in the community of retired professionals like myself .....a retired social worker who could be helping to support these seniors living in the community if the infrastructure was in place to support them. Retired professionals such as Nurses, Social Workers and Teachers could offer a lot of support to supplement family support so that no one has carry the whole load......a win win situation" (Respondent 38, No position selected)*

> *"Stronger community based programs - outside of health care. Intersectoral [sic] work to promote connection between neighbours, volunteer groups of home visiting for older adults, especially using newly retired baby boomers." (Respondent 595, Nurse)*

In addition to a lot of general comments about increasing community supports, faith based community support was suggested by a small number of respondents (2.3%). Suggestions for this type of support included support with transportation, community outreach, and the use of churches as a hub for community resources.

3. Insurance and Funding

The need for better insurance and funding for programs was the third most common strategy to reduce the hospitalization or institutionalization of older adults who could otherwise be cared for in the community (18.8%). The strategies in this category did not have a secondary coding, rather all the comments revolved around a similar theme - better funding and insurance to keep people in their homes:

> *"I don't think that strategies are lacking . It comes down to funding. Everyone seems to agree that it is ultimately less costly to care for the aged in the community but not enough funding is going to support the many strategies that exist." (Respondent 562, Physician Assistant)*

Specific suggestions within this strategy included better reimbursement and insurance coverage for outpatient services, hospice and palliative care, more affordable medications, insurance for home health, including nurse and doctor visits, and especially post discharge. According to survey respondents many insurance plans deny home care claims. Survey respondents also pointed out that insurance/funding for home support programs need to include tangible support and social services such as personal care worker or aides, meals, transportation, chores, errands, equipment, and home maintenance, and that there needs to be an ease in restrictions for qualifying for home care benefits. Suggestions also included better pay for home care workers and social program employees. As one respondent argued, often these employees are underpaid, undereducated, and do not realize the impact they have on patients, these issues can result in intentional or accidental/ignorant abuse:

> *"They need 24/7 home care with people who do not neglect, abuse or steal from them. In NYC, home attendants are poorly educated and poorly paid. The horror stories are in the news all the time. What is the solution-" (Respondent 341, Physician Assistant)*

Several respondents highlighted the use of direct client funding in Toronto, which provides monthly funding to approved clients with physical disabilities, this allows clients to hire home care attendants of their choosing rather than being assigned home care workers.

Within the insurance and funding strategy general comments also included funding for volunteer organizations and day programs, including community centers, and funding for caregiver respite programs. Affordable housing that can include either assisted living or long term facilities was also a common suggestion, particularly as this segment of the population does not always have the financial means to afford support.

> *"better funding for social services to support our seniors. many of these agencies exist, however insurance does not cover their services and the patient / family cannot affort [sic] to pay the fees out of pocket" (Respondent 189, Physician Assistant)*

4. Increase Awareness and Education

The fourth most common strategy to reduce the hospitalization or institutionalization of older adults who could otherwise be cared for in the community was to increase awareness and education (13.06%). This strategy most commonly addressed increasing awareness and education for families on aging and support (33.64%), medical professionals on aging (17.76%), available resources (16.82%), and community education (16.82%) (Table 6.15). Less common sub-strategies included increasing awareness and education for patients (9.35%), outcomes and end of life discussions (4.67%), social isolation (1.87%), and cultural awareness (0.93%) (Table 6.15).

The sub-strategy to increase awareness and education for families on aging and support primarily referred to respondent suggestions to learn how to better support older adults when they fall ill or have reduced functionality. Many families have limited experience being a skilled caregiver, particularly following a discharge, medication management, meal planning for patients with dietary restrictions, and identifying the signs and symptoms of an illness or a progression of an illness, as well as being made aware of available resources:

> *"Public education with informal workshops for caregivers, family members etc. signs and symptoms of sickness. Strategies to promote good nutrition, wellness check ups [sic]. Making an awareness of what resources ARE available in each community." (Respondent 700, Nurse)*

> *"As our population ages, the pressure for families to be caregivers is tremendous. Many do not have the capacity, skills, or abilities to be caregivers." (Respondent 224, Nurse)*

Families and patients also need support preparing for the mental and emotional repercussions of caring for an aging loved one, particularly when caring for a patient suffering from physically or cognitively debilitating diseases:

> *"The medical community can do a better job getting pts [patients] and families to think about the affects [sic] that aging and illness have on people's ability to care for themselves, and how their loss of complete independence will affect them as much as any illness. We need to be in a more "preventative medicine" mindset to help pts establish potential plans for what we will all be facing (with luck) at some point." (Respondent 320, Physician Assistant)*

The difficulties families face when tasked with caring for an aging loved one who has lost their independence can be daunting and challenging even for the most knowledgeable and experienced caregiver. Being a caregiver can be a great hardship, particularly when working full time, caring for children of their own, and navigating the basic hurdles of life. It is for these reasons that caregiver burnout has overwhelmed many families. Educating family members and including them in patient care is one step in reducing the stress associated with being a caregiver and preventing families from becoming overwhelmed:

> *"We have seen great success with the use of outpatient and inpatient family meetings. Often, even if family members are geographically separated or divided by interpersonal conflict, we are able to unite them in the task of caring for their loved one and assess directly what "manpower" resources are available for one-time & ongoing needs. Frequently, family members are unaware of the extent of the need until that point & are happy to help, even in the face of relocation or employment changes. We hold follow-up meetings periodically to reassess. The promise of this follow-up tends to help prevent friend & family from becoming overwhelmed with the extent of their commitment & to be more likely to "try" helping in the first place." (Respondent 349, Physician Assistant)*

While many families are happy to help, there are also those who are unable or unwilling to take on the role of caregiver. As a result family members and patients commonly use social admissions at hospitals when older adults lack the support they need. Social admissions occur when there is no acute medical problem and a lack of social support is believed to be the primary cause of the admission and no safe discharge arrangements can be made (Andrew and Powell 2016).

> *"More social work involvement and family education - we seem to have quite a few of 'social admissions'" (Respondent 369, Physician Assistant)*

Hospital staff can be critical of patients with social admissions, referring to them verbally or in medical charts with derogatory terms such as 'bed-blocker', 'cabbages', 'crumblies' or 'GOMER' (Get Out of My Emergency Room) (Oliver 2008). Oliver (2008) argues that these are ageist attitudes that lead to incorrect diagnoses and reduced diagnostic testing. Andrew and Powell (2016) suggest that in fact, social admissions are an indication of larger problems that could ultimately lead to poor health outcomes and require investigation into a patient's nested social structure - the individual, family and friends, peer groups, institutions, and society and policy (Table 6.17). Furthermore, social admissions research has found high rates of poor outcomes that include mortality and institutionalization among patients hospitalized with a diagnosis of acopia, or difficulty coping with psychosocial stressors, and in one study 51 per cent of patients were later identified with acute medical problems, and 26 per cent were under-triaged or vital signs were not taken (Andrew and Powell 2016).

Table 6.17: Contributing factors of social admissions among older adults based on position in a nested social structure

Position in social structure	Contributing factors
Individual	Progression of illness, disability, poor pain management, psychiatric conditions, cognitive decline, symptoms of dementia, and polypharmacy and adverse effects
Family and friends caregivers	Lack of training, demand on time and resources, physical demands, progression of illness, caregiver stress and burnout, lack of back-up plans when unavailable, and home accessibility, suitability, and safety for older adults
Peer groups	Observing when socially active older adults stop attending social activities, this can be an indication of a more serious health problem
Institutions and services	Long wait times to access services, financial barriers, limited awareness of available resources, and a pervasive medical paradigm of 'one ill, one pill' rather than a holistic approach to patients needs
Society and policy	Government policies for caregivers to help alleviate burden, degree of age-friendly attributes in the built environment or building design, and age-friendly accessibility and availability of resources and services

(Andrew and Powell 2016)

Increasing the awareness and education of medical professionals on aging was the second most common sub-strategy within the awareness and education category (17.76%). Respondents highlighted the need for medical professionals such as nursing facility staff, medical social workers, and especially home care workers to be more knowledgeable about caring for older adults. This includes warning signs and recognizing mental disorders, psychosocial determinants, and the impact of home life:

> *"There is a need for a social service network to assist patients following discharge who have the necessary INFORMATION, skills, training, education and resources to provide appropriate support, tailored for the individual based on level of cognitive function, mobility (or lack thereof), social and family network (if any exists at all) and realistic assessment of the potential for self-reliance carefully determined by the circumstances, diagnosis and extent of required treatment." (Respondent 294, Physician Assistant)*

> *"Better training and wages for home care workers. People who are best able to assist in care are not willing to take these jobs due to poor pay. As a result, those who are in the positions often have little or no training. Patients with chronic conditions are often not receiving optimal care. Increased oversight by community-based clinicians - community health nurses and dietitians in particular - might decrease risk of malnutrition and risk of minor ailments becoming acute incidents." (Respondent 742, Dietician)*

Although the majority of respondent highlighted better education among home care workers and social work, there were a number who felt physicians need more education, awareness, and knowledge when treating older adults:

> *"Wider use of home and community nursing services in the public realm. GPs [general practitioners] with better training in the management of their geriatric patients, and sufficiently long appointment slots to check understanding of*

> *instructions by patients by having him repeat back and checking if they know when they should seek medical attention and again." (Respondent 579, Nurse)*

> *"Training for physicians re: effort required for ADL. Training for hospital administrators of what needs to be done before an elderly patient can be released" (Respondent 727, Health Promotion)*

> *"admitting physicians need to be educated about what can be provided in the community, so they can make a more informed decision about whether to admit or not. Better collaboration and communication between hospital and community is needed." (Respondent 693, Nurse)*

The call for physicians to be more knowledgeable in geriatrics does not come as a surprise considering that only five out of 17 medical schools in Canada and 3 out of 145 medical schools in the U.S. require geriatric rotations, with only 3 per cent of medical students taking at least one course in geriatrics (Denton and Spencer 2010, Kovner, Mezey, and Harrington 2002, Pon and Lai 2011). This lack of specialization in geriatrics has resulted in a shortage of physicians for the growing number of elderly. Currently there is less than one geriatrician per 2000 elderly patients in the U.S. with an estimated shortage of 28,000 geriatricians by 2030 (Bragg and Hansen 2010, Institute of Medicine 2008, Kovner, Mezey, and Harrington 2002). Other health care professionals in the U.S. are not much better equipped for the demands of an aging population than medical schools, with less than one percent of pharmacists, physical therapists, and registered nurses certified in geriatrics (Institute of Medicine 2008, Kovner, Mezey, and Harrington 2002) and four per cent of social workers specialize in geriatrics (Institute of Medicine 2008). The difference in patient care with health professionals trained in geriatrics is significant - reductions in functional decline, improved mental health, decreased use of physical restraints, and fewer hospital readmissions (Kovner, Mezey, and Harrington 2002). The shortage of health care workers is expected to be further compounded as large numbers of health care professionals in the population are themselves aging and beginning to retire (Institute of Medicine 2008, Nie et al. 2008).

Better education about available resources for caregivers, patients, medical professionals, and community education tied for third as the most common suggestion within the awareness and education category (16.82%). A common theme from respondents was the lack of awareness of resources, particularly following a discharge, to assist and support older adults suffering from physical and/or cognitive difficulties:

> *"Increased awareness of NGO support available, by all health care professionals and the public. For example in PEI there is services available for Alzheimers [sic] through the ALZ Society yet only 164 referrals to this NGO with a confirmed 2361 people on PEI that have a confirmed diagnosis." (Respondent 42, Family Caregiver)*

Respondents also pointed out that the awareness of resources extends to the general public and the need for better education in general on aging and active participation in supporting the needs of the elderly:

> *"This is a tough question. Ideally, it would be not only educating the general community about the special needs/care of older patients but the willingness and agreement of people in the community to do so. Even just to be a companion and listen." (Respondent 334, Physician Assistant)*

> *"Better distribution of resources as well as providing more education to the public and communicate what is available so that people are aware and know how to access services when needed." (Respondent 710, No position selected)*

Other sub-strategies in the awareness and education category included better education for patients (9.35%), outcomes and end of life discussion (4.67%), and social isolation (1.87%) (Table 6.15). Increasing awareness and education of patients primarily refers to those who are discharged from hospital on the progression of their disease, palliative care, and hospice, but also to generally educate older adults on the progression of aging, what their needs and risks will be:

> *"Frequent follow ups with Health Care Providers and or home care. Also many times older patients have chronic end-stage illnesses and the providers do not discuss about having palliative care or possibly hospice. This leads patients to think they will eventually get better, but in almost all cases they get worse and ultimately die because of the illness. If the conversation about palliative home care takes place more frequently then we might see those patients be treated at home rather than frequently getting admitted to the hospitals." (Respondent 510, Physician Assistant)*
>
> *"Education around aging being a requirement before reciving [sic] a pension. Working in the health care field it is amazing the ignorance around aging. The decline of mobility could be prevented if people were just made aware of homw [sic] vital it is to keep moving." (Respondent 265, Social Worker)*

Very few respondents highlighted disease outcomes and end of life discussions specifically, but many eluded to these issues within other responses. As noted by respondent 510, without these discussions patients may believe they will recover and are more likely to have more hospital admissions. This is also applicable for family members who do not fully understand the severity of a loved one's illness:

> *"more community based programs, along with better end of life discussions and ensuring family members are aware of how fragile so[me] of these people are. many times family members out of ignorance, embarrassment, or other unclear reasons even fiscal, force care on elders that may be not consistent with the patients [sic] wishes nor does it change outcomes, only painfully for the patient" (Respondent 257, Physician Assistant)*

Two respondents suggested increasing awareness about the impact of social isolation on older adults, however, as discussed in chapter three, social isolation and 'being alone', particularly among frail older adults, can have serious consequences during times of illness or loss of functionality. Awareness of older adults in these situations by family or community members can support a patients recovery during illness and help prevent or decrease poor health outcomes:

> *"It starts with caregivers who are not too careless to understand the effects of isolation on a patients recovery." (Respondent 332, Physician Assistant)*

5. Integrated and Improved Medical Care

Suggestions for integrated and improved medical care ranked fifth as a strategy to reduce the hospitalization or institutionalization of older patients who could otherwise be cared for in the community (11.84%). The most common sub-strategies within this category included collaborative and multidisciplinary teams (26.8%), continuity and coordination of care (12.37%), geriatric care (10.31%), and improved communications with medical personnel (10.31%) (Table 6.15).

Collaborative and multidisciplinary teams refers to support for patients by a team of medical and social professionals. These support teams can include collaborations between physicians, nurses, social workers, occupational therapists, physical therapists, and community resources. Multiple respondents suggested that this is particularly useful during discharge or in community settings in order to prevent hospital admissions:

> *"Our teams: Home First and the INTENSIVE INTEGRATED CARE MANAGEMENT TEAM - are multidisciplinary teams through home and community care that provide ENHANCED and intensive supports in the community for clients who have had frequent presentations to hospital - Social work; NP [nurse practioner]; nursing; OT [occupational therapist]; rehab assistant; mental health/ behavioural health clinician ; pharmacist - we work Closly [sic] with the family physician; these clients get enhanced services in the community based on client goals and client need."* (Respondent 856, Social Worker)

> *"Daily discussion with a multidisciplinary team is a must in order to prevent hospitalization. Each team member can contribute their expertise and therefore a clear communication to the team, patient and family members can help make the discharge planning successful." (Respondent 805, Nurse)*

Continuity and coordination of care, while in the same vein as collaborative teams, refers to the integration and coordination of medical care and information between a patients providers. This is particularly important for patients with comorbidities who see multiple specialists in addition to a primary physician, a very common scenario among older adults. A common theme among respondents was concern for fragmentation in medical care in which older adults can fall through the cracks:

> *"Investing in community support services will reduce hospitalization. It is important to collaborate and integrate services across the continuum of care. More often than not, our health system is fragmented, adding burden on the patient/client to figure out how to access care." (Respondent 408, Health Planner)*

Geriatric care and improved communications with medical personnel are sub-strategies that tied for third within the integrated and improved medical care category. As discussed previously, geriatric rotations and physicians who specialize in geriatrics are lacking in both Canada and the U.S. This dearth of medical expertise in geriatrics is reflected by survey respondents:

> *"An integrated system approach, that is multi-tiered, involves multiple geriatric professionals and focuses on prevention of age associated diseases/accidents" (Respondent 441, Researcher)*

> *"1. Geriatric sensitive education which meets the needs of the older patient. 2. Proper assessment of sensory deficiencies of patient. 3. Psychosocial evaluation of older patients" (Respondent 690, Hospice Nurse/Home Health Provider)*

Improved communications with medical personnel refers to communications between patients, as well as families, and hospitals, doctors, nurses, long term care facilities, and even community resources. A common theme within this sub-strategy were patient liaisons to better coordinate care and communication between all parties:

> *"A nurse or nurse practitioner as well as a physiotherapist as indicated, could assess the pt [patient] in their home, call the family physician for orders and connect with family members, case manager, home support supervisor and social*

> *worker as needed. The important part is not having the elder have to go to the emergency dept which is not senior friendly." (Respondent 761, Senior Nurse Consultant in Hospital)*

Other sub-strategies within the integrated and improved medical care category included more community and specialty clinics (8.25%), person centered care (6.19), pharmacare and reducing polypharmacy (5.15%), and universal electronic medical records (3.09%). Respondents suggested that community and specialty clinics could include nurse practitioner led clinics, community stroke clinics, cognitive enhancement clinics, chronic disease self-management programs, and a 'Friday' clinic to provide support going into a weekend. Person centered care refers to care tailored for each patient's needs, including social circumstances and importantly, the patient's wishes. A small number of respondents highlighted the growing concern of older adults who are over-medicated and called for a better system for managing medications:

> *"See Primary care provider within 7 days of discharge. Medications cause Mayhem, be sure they are correct and the minimum necessary for the minimum time. Polypharmacy is a huge problem in the group." (Respondent 392, Physician Assistant)*

Lastly, several respondents suggested using universal electronic medical records. This system would allow doctors to remotely access files when they are not available and it would allow for better coordination and continuity of care, and issue highlighted as the second most important sub-strategy within the integrated and improved medical care category.

6. Caregiver Support

Caregiver support is a serious issue when caring for older adults. As discussed previously, many caregivers do not have the training or skills to provide care for older adults and need better education/training and more available resources to provide support. Today in Canada there are more than eight million caregivers, the majority of whom are women between the ages of 45 and 64 and are providing care to their parents (Statistics Canada 2015c). More than a quarter of Canadian caregivers are 'sandwiched' between caregiving and raising their children, subsequently, many of these caregivers spend less time with their children and spouses and more time in their role of caregiver (Statistics Canada 2015c). In the U.S., there are approximately 34 million caregivers for adults 50 and older, of these, 8.9 million care for someone with dementia and up to 7 million care for someone 65 and older who needs daily support (Family Caregiver Alliance 2012). As in Canada, more women fill the role of caregiver, and the average age of a caregiver for an adult 50 and older is 47, while the average age of a caregiver for an adult 65 and older is 63, with a third of these suffering from health issues of their own (Family Caregiver Alliance 2012).

Many caregivers have found the experience to be rewarding, however, it can also take a physical and emotional toll (Roth, Fredman, and Haley 2015). Caregivers, particularly spousal caregivers, have an increased risk of depression, cardiovascular disease, lower immune systems, high blood pressure, and overall poor health outcomes, including mortality (Family Caregiver Alliance 2012, Roth, Fredman, and Haley 2015).

Subsequently, there is often a great need to support caregivers - this is highlighted by respondents as an important strategy to reduce the hospitalization of patients with low social support (11.36%). Survey respondents highlighted available support and respite (55.91%) and funding and paid leave (23.66%) as the top sub-strategies in the caregiver support category (Table 6.15). Providing resources such as respite and educating families about available resources can provide relief and support for many caregivers, making it easier for them to provide care for a loved one. Respite in particular can provide support for caregivers experiencing 'burnout' that provides them with a break from care for a period of time, most commonly a short stay at an assisted living facility:

> *"You should be asking caregivers what they think! We have a ton of caregivers trying to give care while they are ill prepared or supported. This is a very important part of the aging at home equation" (Respondent 209, Child of Aging Parent)*
>
> *"Families can do care, but THEY must have the appropriate community support, ie VNA [Visiting Nurses Association], hospice, access to respite, and an action plan in place if the PRIMARY plan does not work. THAT IS, don't make the ER be the backup plan for care issues. The ER is a poor substitute for cohesive, thpughtful [sic], honest planning." (Respondent 416, Nurse Practitioner)*

Caregivers who work, particularly those who work full-time, are highly susceptible to caregiver burnout and financial stress associated with taking time off work to provide care. Providing funding and paid leave provides these caregivers with an opportunity to ease their financial burden and time constraints:

> *"Government funded financial incentives for family members to afford to stay at home to care for loved ones would be a great help" (Respondent 514, Occupational Therapist)*

> *"More community supports from all disciplines, increased financial support, higher wages for care givers and financial support for all family members who are willing to provide care." (Respondent 526, Physiotherapist)*

> *"Increased funding for caregivers, change ruling that Medicaid can take patient's home after their death, allow home health to remain with patient longer to monitor" (Respondent 712, Nurse/Home Health Consultant)*

Other sub-strategies in the caregiver support category included more family support (12.9%) and involvement in planning and discharge (2.15%). A reoccurring theme throughout survey responses suggested that many older adults do not have family involvement in their care and increasing the level of family support would be beneficial for older adults. The discrepancy here is of course that a lot of older adults do not have available family members to provide support. Based on overall survey responses, most of the time when family are available they step in to help, but as noted previously, many family members are not knowledgeable about caregiving, many do not understand the severity of a loved one's disease, and quite a few experience caregiver burnout and lack coping strategies to provide care. Greater involvement in planning and discharge suggests that family members and caregivers need to be more involved in decisions about care and discharge planning.

7. Discharge Planning and Follow-Up

Survey respondents highlighted discharge planning and follow-up as an important strategy to reduce the hospitalization or institutionalization of older patients who could otherwise be cared for in the community (11.23%). The most common sub-strategies among discharge planning included discharge follow-up (42.39%), improved discharge planning (33.7%), and restorative care and assessment (11.96%) (Table 6.15).

Discharge follow-up refers to any kind of check-in following a discharge by a nurse, home care worker, personal support worker, social worker, or case manager, and can occur in person, at a doctor appointment, or by phone. As multiple respondents pointed out, many discharge patients are unfamiliar with how to care for their dressings, manage their medications, or patients may have post discharge issues they do not necessarily associate with their hospitalization:

> *"Improved follow up after discharge. Especially if sent home with drains, dressings, multiple meds. Devices in the home, grab bars, elevated seats, etc. Better resources with non nursing [sic] care, like house keeping [sic], transportation, food preparation." (Respondent 74, No position selected)*

> *"Follow up from a nurse or NP within 48 hours of discharge to ensure they have their prescription/med rec, ensure that there are no ill effects after discharge (constipation, sleep hygiene, pain control etc). Services that can provide meal preparation or cuing or med administration (more than a five minute visit to ensure they have taken their pills) and/or driving services so that they can get to follow up physician appointments. Thanks for making this your thesis!" (Respondent 815, Nurse)*

Many respondents called for improvements made to discharge planning, including increasing staff and staff involvement, particularly on weekends, better coordination between staff, and the inclusion of medical social workers and nurses in discharge planning. Other suggestions included looking carefully at the home environment and available resources prior to discharge and during discharge planning, avoiding premature discharges, and more coordination with support such as family, community, and home care workers:

> *"Care transitions/ care navigator programs; increase staffing levels of discharge planners (their case load is huge); increase availability and funding for home health care; increase availability for non-clinical supports, such as means [meals] on wheels," (Respondent 184, Administrator/Caregiver)*

> *"Not enough education for the staff based on the services that are available. We also need more social workers in a hospital setting and more nurse liaison to assist with proper discharge planning. Also, due to the shortage in acute care beds there's a rush to discharge these frail elderly for the bed. They often are repeat ER visits and admits." (Respondent 227, Nurse)*

> *"Earlier evaluation of home situation and number of available caregivers. Involve all those available, encourage them to care for patient in the hospital to provide education. Improve caregiver support, make arrangements for supplies needed at home. Keep close contact after discharge to identify issues before they become a problem. Identify caregiver burnout, encourage a team effort. More home health visits by RNs to evaluate" (Respondent 411, Nurse)*

As highlighted by respondent 227, there is often a rush to discharge older patients in order to free a bed. Other respondents have identified that it is common in hospitals to have a shortage of beds and that there is often a push to discharge patients.

In response to these issues respondents suggested using restorative care and assessment to ensure older patients have sufficient time in hospital to recover before discharge, as well as functioning after discharge:

> *"Ensuring that patients are sufficiently recovered prior to discharge in the first place. Community resources are limited and providers can only do so much." (Respondent 721, Occupational Therapist)*

> *"allow an extra 24 hours in the hospital to make sure everyone understands illness, plans, all the bugs worked out. Have home health verify before leaving hospital. Help patients and family know it's OK to ask for help, better sooner than later. Better explanation and use of care managers - hospital and private." (Respondent 679, No position listed)*

> *"development of assessment shortly after discharge home and better assessment of functioning while in the hospital that is more global and related to daily living skills instead of just disease management." (Respondent 225, Social Worker/Home Health Provider/Administrator/Hospice Provider))*

Other sub-strategies in the discharge planning and follow-up category included person centered discharge planning (7.61%), in home support following discharge (5.43%), and increased communication and collaboration (5.43%) (Table 6.15). Person centered discharge planning refers to tailoring discharge planning to a patients specific needs, the inclusion of a home and caregiver assessment, and including their personal contacts in the community:

> *"Conducting an actual assessment of the home environment that client is being discharged home to, as well as having conversations with the persons who [the] client identifies as their support or caregivers. I have noted that clients make assumptions about who the caregivers are and what they are able to do. EG. A 92*

> *year old Mom expecting to give care to her physically impaired son with a stroke." (Respondent 659, Nurse)*

In home short term support following a discharge is highlighted by a few respondents and simply refers to home care immediately following a discharge. Increased communication and collaboration during discharge primarily refers to better communication between discharge teams and family, caregivers, and/or home care providers:

> *"better coordination between the dc [discharge] planners and homecare and family. Often I see that the goal is to get the pt [patient] out as quickly as possible, instead of ensuring all bases are covered before the pt goes home." (Respondent 198, Nurse/Home Health Provider)*

8. Remaining Strategies

Less common responses for strategies that could be employed to reduce the hospitalization or institutionalization of older patients who could otherwise be cared for in the community included socialization, social support and networks, medical social worker and social services, connect with patients, occupational and physical therapy, residential and congregate living, early intervention and planning, family limited or fragmented, transitional and convalescent care, personal support worker, social isolation and loneliness, on call support, affordable housing, electronic monitoring, dementia care, patient advocate, hospice and palliative care, avoid emergency department visits, and societal risk (Table 6.14). The following are respondent quotes highlighting each strategy:

Socialization: *"Obviously being observed that they are eating properly, resting, not in pain, attending follow up visits etc... Will help, but social interactions are necessary for the most over populous of the great apes" (Respondent 266, Physician Assistant)*

Social support and networks: *"In home visitation by nurse or PCA [personal care assistant] would help. Just having churches be more involved with home visits might really help. What these people need are friends. Many of them have lost their friends and have not made new ones so they are very alone." (Respondent 103, Physician Assistant)*

Medical social worker and social services: *study at UofT [University of Toronto] many years ago - assignment of social worker to elderly when they are admitted to ER reduces time in hospital AND frequency of re-admission (Respondent 850, Retired Social Worker/Caregiver)*

Connect with patients: *"Where social supports are lacking, providing better home care service which looks at the client's holistic need beyond the task based focus that is currently employed. A few minutes of extra time spent in this way could greatly assist in filling this need." (Respondent 75, Nurse)*

Occupational and physical therapy: *"More OTs [occupational therapists] working in the community setting. We assess and provide intevention [sic] for not only physical disabilites [sic] but also for cognitive and perceptual as well. We are trained to properly assess for the correct amount of home care so that each patient gets the right amount of support. In many cases, if the eldery [sic] have the correct set up (i.e. equip for bathroom, transfer equip, home modifications to make the home safer - which is OT role), they actually need LESS home care which is then more financially feasible for gov't programs. The fact that OTs working in community have very large geographical areas to cover with long wait lists makes it difficult for OTs to provide the full scope of our practice to the patients who need it in a timely manner." (Respondent 518, Occupational Therapist)*

Residential and congregate living: *"Taxpayer-supported co-housing, in the style of Gudmand-Hoyer[21], would provide structure for geriatric citizens. An architectural intention, without the slum quality of co-op housing, is crucial." (Respondent 375, Physician Assistant)*

Early intervention and planning: *"Sceduled [sic] routine visits by a health care professional or visits to an ambulatory care type clinic for visits to review all aspects of health i.e., physical, mental, social, declining ability of ADLs, nutrition, improved control of chronic conditions, etc. Frequent reviews could lead to preventative measures prior to a crisis and hospitalization. This type of service could also allow an older individual to remain home longer with an improved quality of life." (Respondent 58, Nurse)*

Family limited or fragmented: *"Difficult to answer. Often, these clients have families but are estranged, live in other parts of the country or world and it is difficult to foster social support when clients' are isolated due to difficult relationships/behaviours. Options: Increase supports in the communities for seniors programs, have a national housing strategy, better mental health programs for geriatrics, increase funding for home health and the community and have a national strategy for community care (which is not protected)." (Respondent 794, Home Health Provider)*

Transitional and convalescent care: *"Some sort of transition process that promotes self management [sic] (e.g. making their own bed, meal preparation...). This will take a culture change both with staff and patients. If you believe you can't it becomes a self fullfilling [sic] prophecy" (Respondent 26, Planner)*

Personal support worker: *"I have witnessed first hand [sic] how beneficial personal care support is to this population. If organizations were able to provide a greater amount of assistance with activities of daily living, I am certain that the number of preventable incidences requiring hospitalizations or recurrent hospitalizations (falls, shortness of breath) would be dramatically reduced." (Respondent 839, Administrator)*

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[21] Jan Gudmand-Hoyer was a Danish architect many consider to be the father of cohousing. Gudmand-Hoyer argued that cities and urban housing foster isolation and alienation (Jenkins 2017). He, along with other cohousing pioneers in the 1960s, developed an ideology based on the kibbutz for collective housing that utilized shared facilities and encouraged more social interactions (Hara 2014).

Social isolation and loneliness: *"Greater effort to find social settings to improve isolation many older patients feel. Peers are often more valuable-talking to someone who is alone and frightened may give strength to all." (Respondent 436, Physician Assistant)*

On call support: *"What if you were short of breath and called 911 - what if the paramedics could just give a little oxygen and call a home care nurse or aide to stay with the patient until they calmed down and relaxed enough to go back to sleep" (Respondent 501, No position selected)*

Affordable housing: *"Increased Home Care support- round the clock. Affordable assisted living (under 1000.00$ a month). People stay living at risk sometimes because of finances- can't afford anything else. other factors are alchohol [sic] abuse and choosing to live at risk, but are informed about better living options. Other factors are families that no longer talk to each other--and so don't support the elderly." (Respondent 285, Case Manager)*

Electronic monitoring: *"Use technology such as RFIDs [Radio frequency identification] that can transfer real time data such as blood pressure readings, pulse rate etc, to physician's office. This way physicians can monitor these readings on a regular basis and come up with health improvement plan such as change medication, dosages etc. to support patients' health and well being [sic] in a timely manner. This can certainly reduce emergency visits for elderly patients." (Respondent 849, Nurse)*

Dementia care: *"We have a lot of dementia patients and they need to have a secure place to go and have care but a place that has physical activities, because they are often quite fit. We need dementia care. This also means that we need a greater recognition of dementia care needs. We need appropriate buildings, and programing. Also, our system qualifies you for services based on their physical needs. It doesn't take into account their mental needs. So, if someone can do all ADLs alone, but needs 24 hour supervision because of their moderate dementia, you can't get funding." (Respondent 252, Nurse)*

> <u>Patient advocate</u>: *"Elderly patient needs a liaison who closely follow their outpatient needs and communications with different healthcare providers, such as elderly patient advocate or care taker who organize their appointments, follow ups, medication refills, rx needs transportation needs, This does not mean a social worker who works for a particular institution." (Respondent 267, Physician Assistant/Caregiver)*
>
> <u>Hospice and palliative care</u>: *"Higher societal acceptance of risk combined with an organized system of neighborhood nurses for care supervision and coordination. Greater use of palliative care might end the re-hospitalization cycle." (Respondent 64, Doctor)*
>
> <u>Avoid emergency department visits</u>: *"A willingness for patients and or caregivers to accept home supports or be receptive to needing a higher level of care when their functional ability suggests a need. Instead, it seems their is a crisis, and coping fails and the ER is the first stop. This is an issue we are dealing with currently in the ER where I work as a geriatric ER nurse.." (Respondent 793, Nurse)*
>
> <u>Societal risk</u>: *"High risk threshold by Healthcare providers and policy makes in organizations like provincial home care programs and hospitals. There is so much fear of legal responsibility for older adults making poor decisions that the alternative is over protecting them and assuming placement in a long term care facility is the best decision usually for the professionals not the individual." (Respondent 813, Social Worker)*

6.3 Alternative Living Models

Nursing homes, assisted living facilities, and retirement communities are traditional models of care for older adults when they are no longer able to live fully independent lives. On the opposite end of the spectrum, more older adults are seeking a model of aging in place, in the homes and communities where they spent their lives. However, aging in place requires forethought about proximity and access to services and amenities, methods of transportation, opportunities for social engagement, and the availability of support in the community (Kennedy 2010). Kennedy (2010) suggests that a community best supports aging in place when it is intergenerational and provides the environment, resources, services, and housing for every age group. However, Thomas and Blanchard (2009) argue that even when varying methods of resources, support, and home care are available, aging in place and living traditionally in a single-family home can lead to segregation, social isolation, and loneliness as friends and loved ones die and functional decline makes mobility and transportation difficult (Thomas and Blanchard 2009).

A new approach that has been gaining a great deal of traction is senior cohousing. Based on the work of Jan Gudmand-Hoyer, cohousing got its start as a modern approach to alternative living in Denmark in the 1960s that promoted private housing, shared resources and utilities, communal areas, and social interactions and objectives (Glass 2009, Jenkins 2017). Today, this approach of communal living is being focused toward older adults. One of the hallmarks of senior cohousing that stands out from traditional cohousing is the choice to provide mutual support to fellow residents by building community and social capital (Brenton 2013, Glass 2009, Thomas and Blanchard 2009). This idea of mutual support among seniors was highlighted by a number of survey respondents as a strategy to reduce hospitalizations for older adults with low social support:

> *"I think encouraging the formation of extended (non-related) families would be beneficial. My children do not live close by, but I know my extended family will always be here for me as I am for them." (Respondent 79, Administrator)*

According to Glass (2009), a common reason that older adults are hospitalized is due to failure to plan ahead for illnesses or functional decline. Many older adults can become dependent on hospitals and LTC facilities when a health crisis arises and provision for support has not been made. Living in a cohousing communities with the intent to provide mutual support can mitigate the need for care during a health crisis. Additionally, Senior cohousing differs from traditional cohousing in that options are available for added home care when necessary (Brenton 2013).

Senior cohousing is most common in Europe, with nearly 3,000 units in Sweden and more than 2,000 in the Netherlands (Glass 2009). However, it is growing quickly in the U.S., two examples are Elderspirit Community in Virginia and Hope Meadows in Illinois. (Thomas and Blanchard 2009). Elderspirit is one of the first senior cohousing communities established in the U.S. for low to moderate income levels and is restricted to adults 55 and older (Glass 2009, Thomas and Blanchard 2009) This community was developed by older adults and is differentiated not only by the age requirement, but also because it is not targeted to middle or high income groups and it is self-managed by community members (Glass 2009).

Hope Meadows is an intergenerational and mixed income community that encourages older adults to act as 'community grandparents' who then receive lowered housing costs by providing childcare six hours per week (Thomas and Blanchard 2009). This volunteer format has been found to be mutually beneficial for all residents, including maintaining social connections and support for the older residents (Thomas and Blanchard 2009).

Canada has a fledgling cohousing movement with the first senior cohousing community opening in 2012 (Canadian Cohousing Network 2016). Senior cohousing in Canada promotes multigenerational communities, and, as with other senior cohousing communities, they have as one of their basic tenets mutual support or co-care (Canadian Cohousing Network 2016).

The Green House model is an expanded version of cohousing that provides additional care for frail residents. The Green House is a cross between cohousing and assisted living where residents are clustered in small group homes in a communal village and receive support in the form of home health and tangible support (Abraham, Delagrange, and Ragland 2006, Kennedy 2010). Green Houses fit in with traditional neighborhood homes architecturally, but are capable of providing multiple levels of care, even for residents with dementia (Abraham, Delagrange, and Ragland 2006).

Other alternative living models include home sharing and clustered living communities. Home sharing programs use organizations to match home seekers with home providers. Older adults can act as a home provider and remain in their own homes while the home seeker lives at reduced or no cost but provides services and support for the home provider (Kennedy 2010). Home sharing can also consist of multiple older adults sharing a home with private rooms and communal living areas (Kennedy 2010, Thomas and Blanchard 2009):

> *"An almost "halfway house" approach, where multiple single elders who have no social support could live under the same roof" (Respondent 434, Physician Assistant)*

A clustered living community resembles campus living with shared spaces and amenities such as a dining room, office/library space, and laundry facilities (Thomas and Blanchard 2009).

Cooperative urban villages, a fourth alternative, have developed in many towns and cities in the U.S. and is closely related to a traditional neighborhood, but residents come together with shared values and ideas and choose to support one another in life and aging (Thomas and Blanchard 2009). One example that has been replicated nationwide is the Beacon Hill Village in Boston. In this model residents, in addition to supporting each other, have shared annual fees paid to a non-profit organization that coordinates services and programs that provide social interactions and support that allows residents to stay in their homes (Thomas and Blanchard 2009).

A less common alternative living model is the LTC facility that provides rooms for college students. In the Netherlands the Residential and Care Center Humanitas allows students free rooms in exchange for 30 hours of volunteer work with the older residents (Jansen 2015). Volunteer work often consists of teaching skills ubiquitous among younger generations, participate on resident committees, assists therapists, or simply integrate their lives and visit with older residents. This model was established in response to funding cuts to LTC facilities and a shortage of student housing and has since been replicated in other parts of the Netherlands, Europe, and the U.S. (Jansen 2015).

6.4 Discussion

In every generation older adults have a different aging experience. At the beginning of the 20th century most people in Canada and the U.S. aged, were cared for, and passed at home amidst large families. As the century progressed people began to live longer, family size started to decrease, and women were primarily homemakers, allowing them to fill the role of primary caretaker. Older adults continued to age and be cared for at home, but many spent their last days and weeks in hospital. Toward the end of the 20th century people continued living longer, families were small, and women became a large part of the work force, diminishing their role as caretakers. Family support for older adults dwindled, and aging was biomedicalized; older adults often spent years in nursing facilities until their death. Most recently, assisted living facilities and retirement communities are replacing nursing homes, but many older adults are also choosing to age in place.

Aging in place is a favorable alternative to LTC, it allows people to remain in their own homes, it has better health outcomes, and it has been found to be more cost effective. However, for older adults experiencing frailty, functional decline, and the loss of a spouse and close friends, it can lead to social isolation and loneliness, particularly among people who are unable to drive or easily access transportation. Additionally, family support is in decline as adult children raise their own families, work full-time, or are themselves aging and experiencing health problems. Caregiver burnout is high among many families and caretakers and often results in older adults being hospitalized or placed into LTC.

Survey respondents who work with and care for older adults recognized these social changes in the form of decreasing visits from family and friends, the increasing number of institutionalized older adults who could be cared for in the community, and the high rates of readmission among patients with low social support. While not all respondents held these opinions, respondents who traditionally spend more time in a caregiving role with patients - nurses, nursing assistants, and home health providers - were more likely to hold these views. These professional differences were found to be statistically significant, with the exception of the opinion that low social support leads to greater readmission. This view was held by most respondents from all professional positions.

Problems with hospital discharges and discharge planning was generally agreed upon by respondents when patients lack social support. Low support in the form of home and community care, either formal or informal, contributed to longer hospital stays or admission to LTC facilities, both costly alternatives to a home discharge, as well as unsuccessful discharges that resulted in medical errors, poor health outcomes, and increased readmissions. Several respondents pointed out that unsuccessful discharges were also a result of weak discharge planning or hospitals not considering social support at all:

> *"Hospitals need to be less medical model and more social determinants of health. Provide affordable medical transportation, so that people can access the care when they need it, before getting too ill." (Respondent 457, Social Worker)*

Additionally, many survey respondents argued that patients need a proper assessment and attention at both admission and discharge, as well as discharge follow-up in order to reduce the negative effects of low social support. These views are supported in the literature, Kripalani et al. (2014) argue that "proper discharge planning that includes a needs assessment, medication reconciliation, patient education, outpatient appointments, and telephone follow-up can mitigate medical errors and reduce hospital readmission."

Respondent strategies to mitigate readmissions primarily included improved home care and community outreach. While home care is helping many older adults today, staff are often undertrained and underpaid, and the time spent with patients is brief and infrequent. Furthermore, when formal home care is not covered by insurance or government supported funding, low income seniors, who are more likely to be without social support, are unable to pay for these services and more likely to suffer poor health outcomes as compared to their wealthier counterparts. For home care to be most effective today, it needs to be affordable and home health providers need to be better trained, well compensated, and able to provide full-time care when necessary. But even when home care is provided, many respondents pointed out that without supplemental family support, formal home care is not as effective in maintaining independence and positive health outcomes. In that vein, respondents also pointed out that many family caretakers do not always have the skill or understanding of aging or caring for long term illnesses.

A reoccurring theme throughout the survey was the isolation and loneliness that can occur among older adults, and can result in a lack of belonging or will to live, high rates of depression, and a low quality of life. A number of respondents were quick to point out that these psychosocial effects translate into poor health outcomes and increased hospital admissions. A number of respondents suggested alternative living models such as senior cohousing and home sharing can provide community support, increased access to resources, and greater opportunities for social engagement:

> *"building seniors indep [independent] living communities but with some shared areas to facilitate natural interaction. close to community centers. with meaningful volunteer jobs avail to make people feel useful and needed. with book clubs, travel clubs, shopping groups, happy hour, etc. everyone needs a friend." (Respondent 570, Nurse/Care Coordinator)*

This idea is reflected in the growing trend of older adults who seek out and create such alternative living models. Cohousing and home sharing are excellent alternatives for older adults who lack family support but need other forms of social support to live independently. Unfortunately, in many places aging is still seen from a biomedical perspective and the idea of pursuing senior cohousing or home sharing from a policy standpoint is slow to follow. Considering that funding for home care has been a struggle in both Canada and the U.S., funding to provide alternative living models for low income seniors will likely be one of the biggest hurdles as we continue forward. Although there are those in the medical community that appear to be proponents of cohousing and home sharing, there is little research on health outcomes. This should be the next step in informing policy makers in order for lower income seniors to reap the benefits of mutual support within their communities. There are, however, communities cropping up organically, such as Elderspirit, that are geared toward low and moderate incomes, it may be that this is the future of aging for generations to come.

This chapter has presented the results of an online survey that was designed to better understand the challenges of working with older adults with little or no social support in a care context. The majority of respondents (48.59%) did not perceive a difference when asked how the number of patients with very infrequent visitors had changed over time, but among those who had noticed a difference, most (33.84%) suggested that very infrequent visitors are more common now. Respondents (39.87%) estimated that about a quarter of older adults in their institution could have been cared for in the community had there been available social support. The vast majority of respondents (84.33%) claimed that older patients without social support are re-hospitalized more often following a discharge than older adults with support.

Open-ended survey responses suggested that the lack of home or community care negatively affects discharge planning, and that older adults without this type of support are more likely to have a delayed discharge by days or weeks, or they are discharged to a long term care facility. Additionally, respondents perceived that older adults who lack social support are more likely to have an unsuccessful discharge, including medical and pharmacology errors, and suggested that they are more likely to be readmitted to hospital, often through the emergency department. Survey respondents suggested that home care (including improving the conditions under which it is provided) and creating affordable options for care outside of institutional settings, is the best way to avoid hospitalizations for those with low social support. Additionally, respondents offered that community outreach in the form of senior day programs, as well as support for caregivers and better discharge planning could serve to improve health outcomes and provide better options for older adults to live independently in the community. The next and final chapter (Chapter Seven) details the substantive, methodological, and practical/policy contributions of the thesis, while also alerting readers to the limitations of the thesis.

7. CONCLUSIONS

Changing social conditions that include increased divorce rates, decreased fertility rates, and a geographic separation of families have contributed to an increasing number of older adults living alone and with less social support than previous generations. The 1995 Chicago heat wave illuminated, in a very stark way, the influence of living alone and low social support on mortality. Although, as this research concluded, living alone does not inherently confer risk. Nevertheless, segments of the population vulnerable to isolation and loneliness, such as older adults with limited functionality, disability, or chronic illness, can be found at an increased risk of poorer health outcomes. This issue has come to the forefront in places like the U.K. where Prime Minister Teresa May appointed a Minister of Loneliness for the first time, and in the U.S., Dr. Vivek H. Murthy, during his tenure as the Surgeon General, included social isolation and loneliness on his list of public health priorities, going so far as to compare the risk of mortality from loneliness to smoking 15 cigarettes a day (Klinenberg 2018). Due to the preponderance of research outlining the risks of both social support and living alone, the focus of this research was to understand, in a Canadian context, how these changing social conditions influence mortality and hospital utilization outcomes among older adults, the segment of the population that may be most vulnerable. Analyses of linked survey and hospital and mortality administrative databases, as well as an online survey distributed to health care professionals, were used to meet three primary objectives:

1. To understand the influence of low social support and living alone on mortality risk in Canada;
2. To understand the influence of low social support and living alone on hospital utilization (any admission, number of admissions, and length of stay) in Canada; and
3. To understand the degree to which older adults without social support are recognized within hospital settings, how discharge decisions are made for these patients, and what strategies can be implemented to better care for older adults lacking social support.

7.1 Substantive Contributions

Survival analyses found significant increases in mortality risk among Canadian Community Health Survey (CCHS) respondents 65 and older (n=8,966) who had low levels of affection, low positive social interactions, and low emotional/informational support while controlling for age, sex, income, and smoking, and a weak sense of belonging while controlling for age, sex, income, smoking, and frailty. These results support findings from the longitudinal social support studies reviewed (Chapter Two) that emotional support and social integration are highly protective forms of support among older adults. This research also suggests that a sense of belonging is so profoundly important that it exerts a force on mortality even when accounting for frailty. Neither low tangible support nor living alone were associated with mortality risk in analyses that accounted for income. A social network, a ubiquitous structural support measure in social support research over the last five decades, was not significantly associated with mortality in any of the five models. This gives credence to the suggestion that functional measures may be more meaningful among older adults, but without more structural support variables in this analysis little conjecture can be made.

Survival analyses among the 55 – 64 age group (n=6,822) found significant associations with low levels of affection and low emotional/informational support while controlling for age, sex, income, and smoking, much like the 65 and older age group. Mortality was also significantly associated with low positive social interactions, but unlike the older age group, these results were significant when controlling through frailty. The biggest difference from the older cohort was that a weak sense of belonging lost power with the addition of income. Perhaps a sense of belonging may become more important to people as we age, possibly as we begin to retire, experience the loss of a spouse, or children become less reliant on us, we begin to face the loss of our place in the world and a sense of belonging or purpose becomes one of our most valuable assets.

Urban and rural differences in mortality analyses proved to have some of the most unexpected results in both age groups. In the 55 – 64 cohort low tangible support (when controlled through smoking) and living alone (when controlled through frailty), both of which did not have significant findings in the overall sample in either age group, were found to be significant among the urban population (n=4,621). This suggests that pre-retirement urban dwellers may be much more reliant on, or have greater expectations for tangible support and living with others than any other group in this sample. Urban dwellers 55 – 64 also had significant associations with mortality and low levels of affection and low emotional/informational support through smoking, and low positive social interactions through frailty, much like the overall sample. Remarkably, the rural 55 – 64 age group (n=2,201) had no significant associations with mortality in any models. Although, previous research has asserted that social support has less of an influence in rural communities and fewer significant associations were expected, an utter lack of meaningful measures of support was unexpected.

The associations between mortality and predictor variables stratified by urban and rural differences among the 65 and older age group also proved unexpected. While both groups did not have significant associations with low tangible support and living alone, results for the remaining models were found opposing each other. Urban dwellers 65 and older (n=6,417) had significant associations with low levels of affection (when controlled through smoking) and a weak sense of belonging (when controlled through frailty), while rural dwellers 65 and older (n=2,549) had significant associations with low positive social interactions (when controlled through frailty) and low emotional/informational support (when controlled through smoking). These results suggest that not only do different age groups need different types of support for improved health outcomes, even within age groups regional differences require different approaches of support. These results could also point to a strengthening effect of social support among older adults. Understanding the urban and rural differences within social support requires further research in order to better tease out the mechanisms at work.

The hospital utilization results found few significant associations between whether a hospitalization occurred or with the number of admissions, but quite a few meaningful results were found with length of stay. Whether a hospitalization occurred was only significant with a weak sense of belonging (when controlling through frailty) and only among the older cohort (n=6,658). Once again highlighting the importance of this measure in this age group. The number of admissions within the 55 – 64 year old cohort (n=1,080) had significant associations with low positive social interactions and living alone, both when controlling through smoking. The 65 and older age group (n=2,742) had a significant association between number of admissions and a weak sense of belonging when controlling through smoking, but not with living alone or low positive social interactions, much like the younger cohort.

Length of stay was the only hospital utilization outcome to be widely influenced by social support variables. The 65 and older age group (n=2,718) had significant associations with low levels of affection, low positive social interactions, low emotional/informational support, and a weak sense of belonging through all five models. These results suggest that among older adults it is length of stay that is the type of hospital utilization that is most influenced by social support. Subsequently, it is this area that needs further research in understanding and mitigating strategies to reduce hospital burden. The results for the length of stay outcomes are very much in keeping with mortality analyses results. Among the 55 – 64 age group (n=1,060), length of stay had significant associations with low positive social interactions when controlling through smoking, and low emotional/informational support and living alone, both when controlling through frailty. Hospital utilization analyses was not stratified by region due to the small sample sizes.

The results of the online survey (n=1,017) administered to health care professionals as well as social workers, found that while fewer than half their patients had very infrequent visitors, it is a phenomenon that is more common now. Many felt that quite a few of their patients could be cared for in the community had there been better social support available, and the overwhelming majority agreed that patients without social support are readmitted into institutions more frequently. Some of the biggest problems respondents highlighted was the need for home and community care and delays in discharge when social support or home care needed to be arranged. Those who did not have the option for care in the community were often admitted to long term care, had an adverse medical event, or were readmitted to hospital. It was clear from survey responses that delays in discharge were one of the primary difficulties patients faced when they lacked social support. Considering that in the hospital utilization analysis it was length of stay that was most influenced by social support, the sentiments of survey respondents substantiate the findings of the quantitative analyses.

The most common strategy suggested by survey respondents to reduce hospitalizations when lacking social support was home care. Older adults generally prefer to be in their own homes – it is substantially cheaper to provide in home care than long term care and it has better health outcomes (Hollander and Chappell 2002, Ramos, Ferraz, and Sesso 2004). This is not new information: the benefits of home care have been touted for years by health professionals, yet widely available and affordable home care is not mainstream health and public policy in most jurisdictions. Resounding agreement by health care professionals, however, constitute a segment of the population respected for their authority, knowledge, and experience in the medical field that present a unified perspective that may hold sway over policy makers.

The second most common response as a mitigating strategy when patients lack social support was community outreach that included day programs, community centers, and volunteer visitors. Home care will certainly benefit many older adults, but it does not strike at the heart of emotional support or social integration, and it is doubtful that it would provide a will to live amongst those who find it missing. Certainly older adults may develop relationships with their home care providers, but for most it likely would not provide a sense of belonging. Opportunities to socialize and integrate into the community, such as day programs and community centers, particularly those geared toward diverse segments of the population, may provide a place where people can identify with and feel as though they belong.

7.2 Methodological Contributions

This research utilized two novel data linkages between the CCHS and both the Canadian Mortality Database (CMDB) and Discharge Abstract Database (DAD). Prior to this linkage there has been a dearth of data sources that has allowed for the examination of social risk factors, mortality, and hospital utilization in a Canadian context. Both health survey and administrative data provide robust and detailed information regarding the Canadian population, but these data are cross-sectional. The CCHS is a comprehensive survey that includes the characteristics and behaviors of Canadians, the CMDB includes mortality rates for every Canadian, and the DAD provides a thorough history of hospital usage, but it is the linkage that is paramount in connecting behaviors with health. Without this linkage a longitudinal understanding of health in conjunction with social risk factors remained unclear.

The linkage was first made available to a small group of researchers late 2014 and has since been validated, finding similar results in mortality rates among the linked data as reported in national estimates (Sanmartin et al. 2016). The linkages have now been made available to a wider net of researchers and can be expected to provide a wealth of information about the contribution of risk factors and demographic characteristics to mortality and hospital utilization and access outcomes in Canada. A better understanding of the influence of behaviors and characteristics on health will support better public and health policy in both legislation and health care, ultimately influencing the overall health of the population.

The internet survey among health professionals and social workers was novel in its high response rate and quite unexpected among these types of surveys. Although becoming increasingly common in academic research, internet surveys administered through email typically have low response rates, which are often exacerbated with the use of spam filters and inactive email addresses. To compound matters, health care professionals have notoriously demanding jobs that occupy much of their time, the response rate for this survey was expected to be quite low. Surprisingly, responses flooded in, including personal emails commending this research and requests to publish the survey in organization newsletters. The importance of the subject matter was clearly indicated as a primary reason for the high response rates, but due diligence in finding the necessary contacts with which to initiate the survey, pilot testing, and a carefully worded invitation may also have contributed to the survey's success. Internet surveys are an excellent method of acquiring data from distant or difficult to reach populations, they are considerably cheaper than other survey methods, and software platforms allow for ease of use and automated data collection that can be easily exported into analytical software.

7.3 Limitations

Some limitations of the research should be noted for the reader. First, the data linkages between the CCHS and both the CMDB and the DAD relied on probabilistic linkages due to the lack of unique identifiers between datasets. Probabilistic linkages use common identifiers and rely on the likelihood that linked records belong to the same person. Subsequently, it is anticipated that errors will occur. Conflicts within the linkages were resolved by mapping a one-to-multiple records relationship for the DAD and a one-to-one record relationship for the CMDB. Despite the mapping to resolve conflicts, most data linkages can be expected to have either false positive (an incorrect link) or false negative (not linking records that should have been linked) errors. Among the eligible respondents for the CCHS linkages, 0.04 per cent were found to have false positive and 2.43 per cent were found to have false negative linkages. The numbers we had for the analysis probably meant that conclusions were not overstated.

Second, this research utilized existing data from cycle 1.1 of the CCHS and it was necessary to rely on pre-existing measures of social support. The survey questions in the CCHS emphasized functional support measures (emotional/informational support, affection, tangible support, and positive social interactions) with only one question directed toward structural support (size of a social network). Measures of support in social support research are not standardized and due to the different approaches in social support research I would have preferred to use survey questions that placed equal emphasis on both functional and structural measures in order to better determine which measures exert a stronger force on premature mortality and hospital utilization among older adults. Nevertheless, the CCHS does provide strong measures of social support for Canadians, particularly older adults. Based on the review of 15 longitudinal studies discussed in Chapter Two, emotional support, tangible support, and social integration were the measures of support that appeared to be most meaningful for mortality outcomes among older adults; these are well represented on the CCHS.

Third, the inclusion of the social support module on the CCHS was made optional and left up to the discretion of provinces and health regions. Manitoba, most of Ontario, and three regions in Saskatchewan opted out of the module reducing the original sample of CCHS respondents by n=49,013. However, the sample of respondents used in both the mortality and hospital utilization analyses remained large despite these regions opting out. Additionally, Québec, although they opted to include the social support module, does not provide data to the DAD, reducing the original sample of CCHS respondents by n=22,667 for hospital utilization models.

Fourth, the online survey failed to differentiate between respondents in Canada and in the United States. In an effort to encourage greater response rates, questions involving personal information were deliberately excluded. In hindsight, given the unexpectedly large response rate of n=1,017, it is unlikely a question regarding geographic location would have precluded too many respondents from the survey and could have provided interesting results from the standpoints of health care workers from these two countries. This was a lost opportunity to make comparisons between care situations in the two countries. Having said this, Canada has many health care systems when we consider that constitutionally, health care falls under provincial jurisdiction. This makes Canada-US comparisons on health care difficult.

7.4 Practical and Policy Contributions

The influence of low social support on mortality has been found to be comparable to the effects of high blood pressure, obesity, sedentarism, and smoking, making low social support a significant risk factor (Holt-Lunstad, Smith, and Layton 2010, House, Umberson, and Landis 1988). Mitigating strategies for behavioral risk factors, however, tend to be more straightforward than for low social support; from a policy perspective improving social support will likely prove to be difficult. Creating social support, particularly emotional support and affection, and a sense of belonging requires time and effort; these relationships are often constructed over a lifetime. Finding ways to provide these types of support will be challenging.

Although home care was the most common strategy recommended to reduce the hospitalization of patients who could otherwise be cared for in the community, it is unlikely that it would provide the protective benefits of social support in the same manner as close family or friends. However, home care, specifically tangible support, is an important service which can be instrumental in allowing older adults to remain in their homes, and, as previously discussed, home care improves health outcomes, reduces the number of emergency department visits, and is a more affordable alternative to long term care. While home care is included as an extended service in Canada, it does not cover long term or chronic illnesses, factors commonly found among older adults. Furthermore, it is not considered medically necessary and not federally mandated in the Canada Health Act (CHA) to be insured, there are no restrictions on extra billing or user-fees, and coverage is up to the discretion of the provinces, resulting in inequities developing across the region. The U.S. Medicare system for older adults includes home care in a limited capacity. It does not cover services for the chronically ill, much like the Canadian health care system, and it does not provide tangible support services such as meal delivery, homemaker services, and personal care, unlike the Canadian system.

Because tangible support is not available for chronically ill or frail older adults through health care policies, it becomes necessary to pay for these services when lacking social support. This creates a great inequity, older adults with the financial resources to pay for care allows them to remain in their homes, have better health outcomes and fewer hospitalizations, and greater opportunities for a better quality of life in the final stages of their lives. Older adults without financial resources have more constrained options for care and are already at an increased risk of poor health, including long term disabilities and frailty (Huisman, Kunst, and Mackenbach 2003, Schöllgen, Huxhold, and Tesch-Römer 2010, Szanton et al. 2010). From a policy perspective, this research points to the inclusion of home care, including tangible support services, as medically necessary for the chronically ill and frail, and to be mandated within both the CHA and the U.S. Medicare system. The Canadian Medical Association has recommended medically necessary services be expanded to include services in the home and community since 2009 and respondents from the online survey identified tangible support as the type of home care most recommended to reduce hospitalizations.

Among respondents who suggested home care as a mitigating strategy for older adults with low or lacking social support, the second most common suggestion was improving existing home care systems: respondents cited more time spent with home care clients, better pay for home care workers in order to draw from a more educated, experienced, and stable work force, better funding and insurance coverage, a reduction in wait times, and the expansion of eligibility for home services.

As previously discussed, increasing social support, particularly from a policy perspective, presents a number of challenges. Providing access to support systems and the means for social integrations through transportation would likely strengthen a social support initiative. The use of day programs, another strategy proposed by survey respondents, may also serve to provide opportunities for increased social support and integration. Community outreach that included day programs, or adult day services (ADS), and community centers, was the second most common strategy suggested by survey respondents. ADSs provide supervised care for ADLs, meals, exercise, and activities during the day while caregivers are unavailable. These programs give respite to caregivers but also provide socialization opportunities for older adults. ADSs are designed to either provide social interactions or medical care and rehabilitation, and some provide both. ADS utilization is low in both Canada and the U.S. due primarily to the child care stigma, a negative association with group activities, a lack of awareness of facilities, lack of transportation, and poor health. However, survey respondents cite positive outcomes among their patients who utilize these services. Incorporating ADSs into health policy, increasing the awareness of facilities, making them more appealing to older adults, and providing transportation may increase usage and provide an outlet for older adults to make connections and bolster their social support system. Community centers, particularly those geared to diverse cultural interests, could also provide these connections; it is likely that having a place within the community may also increase a sense of belonging. Creating or revitalizing community centers as part of city and town initiatives, and providing accommodating transportation, could prove to support the health of the aging community.

Living alone did not have significant associations with mortality or hospital utilization among the 65 and older age group and thus may not appear to be an imperative from a policy perspective. Most studies suggest, however, that living alone is not without consequences. When older adults experiencing frailty and functional decline live alone they can be expected to have poorer health outcomes, a greater number of chronic conditions, a greater risk of disabilities, and premature mortality (Kandler et al. 2007, Kharicha et al. 2007, McCann, Donnelly, and O'Reilly 2011, Sun et al. 2007). But the literature also tells us that living alone is the preferred living arrangement for older adults. Our society encourages independence, having one’s own space and one's own home. The loss of independence and becoming dependent on others can be so powerful a force that even among frail seniors, nearly half in the general population who were living alone were found to have a greater sense of well-being and a better functional status than frail elderly living with others. The inability to live alone or have control over one's own care, despite health status, can contribute to depression, distress, and anxiety (Gustavson and Lee 2004, Hellström, Persson, and Hallberg 2004). Given these circumstances, it is not surprising to find that living alone did not have a significant association with mortality. And despite the risks - isolation, poorer health outcomes, institutionalization, premature mortality - many older adults find the alternatives to living alone a disturbing prospect.

An alternative to both long term care and living alone that may provide the benefits of both is senior cohousing, an arrangement suggested by a small number of respondents as an alternative to living alone yet maintaining independence. This type of housing incorporates the ability to live at home while also integrating into a network of people who have a shared agreement to provide each other with support. The appeal with senior cohousing is that older adults are not reliant on relatives or children which can create dependency issues and caregiver burnout, but rather they would be supporting each other and have the opportunity to build emotional bonds and connections. Older adults would find themselves in a community of people with many of the same life stages and goals, and likely find a sense of belonging within this social network.

The biggest drawbacks to senior cohousing are cost and availability. The most vulnerable segments of the population are those with a low socioeconomic status, making it challenging to find an affordable senior cohousing community. There are also very few established senior cohousing communities for the number of older adults who could benefit from them. Additionally, it is highly unlikely that most older adults could find a community within their geographic region, requiring them to relocate to a new area. However, senior cohousing is rapidly gaining attention and communities are being established in a wide range of areas. From a policy perspective, subsidizing senior co-housing communities for low income adults could provide an alternative to state run long term care facilities, particularly communities that provide tangible support services as part of the community resources. The benefits of senior cohousing also extend to improving social support and providing a will to live. This may be particularly true among multi-generational cohousing communities where seniors can provide child care or other services tailored to their skillsets that allows them to fill a role in the community.

A sense of belonging and a will to live may be the force behind the protective nature of social support. Further research is necessary to fully understand these intangible concepts, but most people are able to recognize them when they feel them, or conversely, know when they are missing. Senior cohousing and communities of belonging may be one answer for older adults who are losing this basic need. And these communities which provide home care may be a holistic approach to aging where social support, sense of belonging, and home care, both tangible and medical, converge in one living model. It can be expected that research will evolve to incorporate these ideas and hopefully develop standardized techniques.

We in North America may strive for independence and to live in our own homes, but ultimately we are social creatures, we have a basic need to belong. Many people likely have and will continue to find the happy medium between living alone and integrating into a community, but the real difficulties will come for people who are physically challenged either by functional disability, poor health, or a lack of transportation to make contact with the community or a social network. It will not be enough to provide day programs or community centers: those who are eager to seek out those resources are the ones who are already doing comparatively well. The most vulnerable segments of the population are the people who are 'found down' or die during a heat wave in their own home. The real challenge will likely be identifying those who are in the greatest need of emotional support and social integration, and finding practical ways to give it to them.

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9. APPENDICES

Appendix 1: Provinces and Territories that Include Social Support in the CCHS 1.1

Health Regions	Includes Social Support	Select Municipalities	Number of Total Respondents
Alberta	Yes	All	14,456
British Colombia	Yes	All	18,302
Manitoba	No	None	8,470
New Brunswick	Yes	All	4,996
Newfoundland	Yes	All	3,870
Northwest Territories	Yes	All	1,001
Nova Scotia	Yes	All	5,319
Nunavut	Yes	All	707
Ontario	No	Includes: Brant (n=756)	39,278
Prince Edward Island	Yes	All	3,651
Quebec	Yes	All	22,667
Saskatchewan	Yes	Excludes: Weyburn (n=605) Moose Jaw (n=758) Prince Albert (n=658)	8,009
Yukon	Yes	All	809

Appendix 2: Frailty Index Based on 29 Health Deficits Represented by Six Variable Groups from the Canadian Community Health Survey (CCHS)

Frailty index derived from the Canadian Community Health Survey

Concept/Variable (Variable Group)	**Description**	**FI value**
Self-perceived health (General health)	Excellent/Very good	0.00
	Good	0.50
	Fair/Poor	1.00
Change in health status in the past year (General health)	Much better/Somewhat better/About the same	0.00
	Somewhat worse	0.50
	Much worse	1.00
Body mass index (Height and weight)	Normal/Overweight	0.00
	Obese	0.50
	Underweight	1.00
Participation and activity limitations (Restriction of activities)	Never	0.00
	Sometimes	0.50
	Often	1.00
Speech (Health utility index)	Understood by everyone or only those who know them	0.00
	Partially understood by everyone	0.50
	Not understood by anyone or partially understood by those who know them	1.00
Pain (Health utility index)	None	0.00
	Pain does not prevent activity	0.25
	Pain prevents a few activities	0.50
	Pain prevents some activities	0.75
	Pain prevents most activities	1.00
Vision (Health utility index)	Sees with/without glasses	0.00
	Reads newsprint with/without glasses; cannot see person across street with glasses	0.25
	Sees person across street with/without glasses; cannot read newsprint with glasses	0.50
	Cannot read newsprint or see person across street with glasses	0.75
	Cannot see	1.00
Hearing (Health utility index)	Hears in group without hearing aid (HA)	0.00
	Hears one-on-one without HA; needs HA for group	0.20
	Can hear with HA	0.40
	Hears one-on-one without HA; cannot hear with HA in group	0.60
	Hears one-on-one with HA; cannot hear with HA in group	0.80
	Cannot hear	1.00
Mobility (Health utility index)	Walks without difficulty and without aids	0.00
	Walks outside with difficulty; no help/aids needed	0.20
	Walks outside with aids; no help of another person	0.40
	Walks short distances unaided; needs wheelchair for longer distances	0.60
	Walks short distances with help; needs wheelchair for longer distances	0.80
	Cannot walk	1.00
Cognition (Health utility index)	Can remember most things, think clearly, solve problems	0.00
	Remembers most things; some difficulty to think, solve problems	0.20

	Somewhat forgetful, but thinks, solves problems	0.40
	Somewhat forgetful; some difficulty to think, solve problems	0.60
	Very forgetful; great difficulty to think, solve problems	0.80
	Unable to remember anything, think, solve problems	1.00
Dexterity (Health utility index)	Full use of two hands and 10 fingers	0.00
	Limited use of hands, no help needed	0.20
	Limited use of hands, uses special tools	0.40
	Limited use of hands, needs help for some tasks	0.60
	Limited use of hands, needs help for most tasks	0.80
	Limited use of hands, needs help for all tasks	1.00
Chronic conditions (Chronic conditions)	Absence of a condition	0.00
	Arthritis or rheumatism; back problems other than arthritis; high blood pressure; chronic bronchitis or emphysema; heart disease; diabetes; cancer; effects of stroke; urinary incontinence; Alzheimer's disease/dementia	1.00
Limited in activities of daily living (Restriction of activities)	Able to perform activities of daily living	0.00
	Preparing meals; getting to appointments and running errands; doing everyday housework; personal care such as washing, dressing; moving inside the house	1.00
Walking (Activities in the last three months)	Walked for exercise (past 3 months)	0.00
	No walking for exercise (past 3 months)	1.00

Appendix 3: Professional Health and Medical Organizations Invited to Participate in the Online Survey

- American Geriatric Society
- Canadian Geriatric Society
- American Osteopathic Association
- Canadian Medical Association
  - Alberta Medical Association
  - British Columbia Medical Association
  - Doctors Nova Scotia
  - Manitoba Medical Association
  - Medical Society of Prince Edward Island
  - New Brunswick Medical Society
  - Newfoundland and Labrador Medical Association
  - Northwest Territories Medical Association
  - Ontario Medical Association
  - Quebec Medical Association (english)
  - Saskatchewan Medical Association
  - Yukon Medical Association
- Ontario Long Term Care Physicians
- Ontario Gerontology Association
- Royal College of Physicians and Surgeons of Canada
- College of Family Physicians of Canada
- Canadian Association of Internes and Residents
- Society of Rural Physicians of Canada
- American Medical Association
  - Medical Association of the State of Alabama
  - Alaska State Medical Association
  - Arizona Medical Association
  - Arkansas Medical Society
  - California Medical Association
    - Alameda-Contra Costa Medical Association
    - Butte-Glenn Medical Society
    - Fresno-Madera Medical Society
    - Humboldt-Del Norte County Medical Society
    - Imperial County Medical Society
    - Inyo-Mono County Medical Society
    - Kern County Medical Society
    - Kings County Medical Society
    - Lassen-Plumas-Modoc-Sierra County Medical Society
    - Los Angeles County Medical Association
    - Marin/Sonoma Medical Society
    - Mendocino-Lake County Medical Society
    - Merced-Mariposa County Medical Society
    - Monterey/Santa Clara County Medical Society
    - Napa/Solano County Medical Society
    - North Valley/Siskiyou/Tehama Medical Association
    - Orange County Medical Association
    - Placer-Nevada/Yuba Sutter Colusa County Medical Society
    - Riverside County Medical Association
    - San Benito County Medical Society
    - San Bernardino County Medical Society
    - San Diego County Medical Society
    - San Francisco Medical Society
    - San Joaquin Medical Society
    - San Luis Obispo County Medical Association
    - San Mateo County Medical Association
    - Santa Barbara County Medical Society
    - Santa Cruz County Medical Society
    - Sierra Sacramento Valley Medical Society
    - Stanislaus Medical Society
    - Tulare County Medical Society
    - Tuolumne County Medical Society
    - Ventura County Medical Association
  - Colorado Medical Society
    - Arapahoe-Douglas-Elbert Medical Society
    - Aurora-Adams County Medical Society
    - Boulder County Medical Society
    - Clear Creek Valley Medical Society
    - Curecanti Medical Society
    - Denver Medical Society
    - El Paso County Medical Society
    - Mesa County Medical Society
    - Northern Colorado Medical Society
    - Pueblo County Medical Society
  - Connecticut State Medical Society
  - Connecticut
    - Hartford County Medical Association
    - Litchfield County Medical Association
  - Medical Society of Delaware
  - Florida Medical Association Online
  - Medical Association of Georgia
  - Hawaii Medical Association
  - Idaho Medical Association
  - Illinois State Medical Society
    - Chicago Medical Society
    - DuPage County Medical Society
    - Jefferson County Medical Society
    - Lake County Medical Society
    - Marion-Polk County Medical Society
    - Peoria Medical Society
    - Rock Island County Medical Society
    - Sangamon County Medical Society
    - St. Clair County Medical Society
    - Winnebago County Medical Society
    - Illinois Association of Orthopaedic Surgeons
  - Indiana State Medical Association
  - Iowa Medical Society
    - Clinton County Medical Society
    - Cerro Gordo County Medical Society
    - Johnson County Medical Society
    - Linn County Medical Society

- Polk County Medical Society
  - Scott County Medical Society
  - Wapello County Medical Society
  - Woodbury Medical Society
- Kansas Medical Society
- Kentucky Medical Association
- Louisiana State Medical Society
  - Acadia
  - Ascension
  - Avoyelles
  - Bossier
  - Calcasieu
  - Capital Area Medical Society
  - Delta
  - Desoto
  - East & West Feliciana
  - Evangeline
  - Iberia
  - Iberville
  - Jefferson
  - Lafayette
  - Lafourche
  - Morehouse
  - Natchitoches
  - Orleans
  - Ouachita
  - Pointe Coupee
  - Rapides
  - River Parish
  - Shreveport
  - St. Bernard
  - St. Landry
  - St. Mary
  - St. Tammany
  - Tangipahoa
  - Terrebonne
  - Tri-Parish
  - Vermilion
  - Washington
  - Webster
- Maine Medical Association
- Maryland State Medical Society
- Massachusetts Medical Society
- Michigan State Medical Society
- Minnesota Medical Association
- Mississippi State Medical Association
- Missouri State Medical Association
  - St. Louis Metropolitan Medical Society
  - Kansas City Medical Society
  - Greene County Medical Society
- Montana Medical Association
- Nebraska Medical Association
- New Hampshire Medical Society
- Medical Society of New Jersey
- New Jersey
  - Atlantic and Cape May
  - Bergen
  - Burlington
  - Camden
  - Cumberland
  - Essex
  - Mercer and Middlesex
  - Monmouth-Ocean
  - Morris and Sussex
  - Passaic
  - Salem
  - Somerset
  - Union
  - Warren
- New Mexico Medical Society
  - Greater Albuquerque Medical Association
- Medical Society of the State of New York
- North Carolina Medical Society
  - Cabarrus County Medical Society
  - Catawba County Medical Society
  - Durham-Orange County Medical Society
  - Forsyth-Stokes-Davie County Medical Society
  - Greater Greensboro Society of Medicine
  - Mecklenburg County Medical Society
  - Wake County Medical Society
  - Western Carolina Medical Society
- North Dakota Medical Association
- Ohio State Medical Association
- Oklahoma State Medical Association
  - Tulsa County Medical Society
- Oregon Medical Association
  - Baker County Medical Society
  - Central Oregon Medical Society
  - Clatsop County Medical Society
  - Josephine County Medical Society
  - Klamath County Medical Society
  - Lane County Medical Society
  - Marion-Polk County Medical Society
  - Medical Society of Metropolitan Portland
  - Southwestern Oregon Medical Society
  - Washington County Medical Society
- Pennsylvania Medical Society
  - Allegheny County Medical Society
  - Beaver County Medical Society
  - Berks County Medical Society
  - Blair/Clarion County Medical Society
  - Bucks County Medical Society
  - Cambria County Medical Society
  - Chester County Medical Society
  - Clinton County Medical Society
  - Dauphin County Medical Society
  - Delaware County Medical Society
  - Erie County Medical Society
  - Fayette County Medical Society
  - Lackawanna County Medical Society
  - Lancaster City and County Medical Society
  - Lehigh County Medical Society
  - Luzerne County Medical Society
  - Montgomery County Medical Society
  - Montour County Medical Society

- Northampton County Medical Society
    - Philadelphia County Medical Society
    - Somerset County Medical Society
    - Union County Medical Society
    - Washington County Medical Society
    - Wayne/Pike County Medical Society
    - York County Medical Society
- Rhode Island Medical Society
- South Carolina Medical Association
    - Charleston County Medical Society
    - Columbia Medical Society
    - Spartanburg County Medical Society
- South Dakota State Medical Association
- Tennessee Medical Association
    - Chattanooga & Hamilton County Medical Society
    - Nashville Academy of Medicine
    - TMA Alliance
- Texas Medical Association
    - Bell County Medical Society
    - Bexar County Medical Society
    - Brazoria County Medical Society
    - Brazos-Robertson County Medical Society
    - Burnet Lampasas County Medical Society
    - Cameron Willacy County Medical Society
    - Comal County Medical Society
    - Concho Valley County Medical Society
    - Denton County Medical Society
    - Ector County Medical Society
    - El Paso County Medical Society
    - Fort Bend Medical Society
    - Galveston County Medical Society
    - Gregg-Upshur County Medical Society
    - Harris County Medical Society
    - Lubbock-Crosby-Garza County Medical Society
    - Maverick County Medical Society
    - Midland County Medical Society
    - Montgomery County Medical Society
    - Potter-Randall County Medical Society
    - Tarrant County Medical Society
    - Travis County Medical Society
    - Tri-County Medical Society (Serving physicians in Hays, Blanco, and Caldwell Counties)
    - Wichita County Medical Society
- Utah Medical Association
- Vermont Medical Society
- Medical Society of Virginia
    - Albemarle County Medical Society
    - Arlington County Medical Society
    - Fauquier County Medical Society
    - Lynchburg Academy of Medicine
    - Medical Society of Northern Virginia
    - Norfolk Academy of Medicine
    - Roanoke Valley Academy of Medicine
- Washington State Medical Association
    - Benton-Franklin County Medical Society
    - Chelan-Douglas County Medical Society
    - Clark/Yakima County Medical Society
    - Grant-Adams County Medical Society
    - Grays Harbor
    - Jefferson County Medical Society
    - King County Medical Society
    - Kitsap County Medical Society
    - Kittitas County Medical Society
    - Pierce County Medical Society
    - Skagit-Island Counties Medical Society
    - Snohomish County Medical Society
    - Spokane County Medical Society
    - Thurston-Mason County Medical Society
    - Walla Walla Valley Medical Society
    - Whatcom County Medical Society
- Medical Society of the District of Columbia
- West Virginia State Medical Association
- State Medical Society of Wisconsin
    - Brown
    - Dane
    - Waukesha
    - Wood
- Wyoming Medical Society

American Medical Directors Association

- Alabama
- Arizona
- Arkansas
- California
- Colorado
- Connecticut
- Florida
- Georgia
- Hawaii
- Idaho
- Illinois
- Indiana
- Iowa
- Kansas
- Kentucky
- Louisiana
- Maine
- Maryland
- Massachusetts
- Michigan
- Minnesota
- Mississippi
- Missouri
- Montana
- Nebraska
- Nevada/New Mexico/Utah
- New Hampshire
- New Jersey
- New York
- North Carolina
- North Dakota
- Ohio
- Oklahoma
- Oregon

  - Pennsylvania
  - Rhode Island
  - South Carolina
  - South Dakota
  - Tennessee
  - Texas
  - Virginia
  - Washington
  - Wisconsin
- Long term care medical directors association of Canada
- Canadian Nurses Association
- Association of Registered Nurses of British Columbia
- College and Association of Registered Nurses of Alberta
- Saskatchewan Registered Nurses’ Association
- College of Registered Nurses of Manitoba
- Registered Nurses' Association of Ontario
- Nurses Association of New Brunswick
- College of Registered Nurses of Nova Scotia
- Association of Registered Nurses of Prince Edward Island
- Association of Registered Nurses of Newfoundland and Labrador
- Registered Nurses Association of the Northwest Territories and Nunavut
- Ordre des infirmières et infirmiers du Québec
- Ordre des infirmières et infirmiers du Québec cont.
- Ordre des infirmières et infirmiers du Québec cont.
- Ordre des infirmières et infirmiers du Québec cont.
- Réseau de soins palliatifs du Québec
- Palli-Science
- Yukon Registered Nurses Association
- Canadian Association for Parish Nursing Ministry
- Canadian Association for Rural and Remote Nursing
- Canadian Association of Critical Care Nurses
- Canadian Association of Medical and Surgical Nurses
- Canadian Association of Neuroscience Nurses
- Canadian Association of Rehabilitation Nurses
- Canadian Gerontological Nursing Association
- Canadian Hospice Palliative Care Nurses Group
- Community Health Nurses of Canada
- NB Association of Nursing Homes
- Ontario Long Term Care Association
- Ontario Retirement Communities Association
- Canadian Alliance for Long Term Care
- Alberta Continuing Care Association
- BC Care Providers Association
- Denominational Health Association
- Long Term & Continuing Care Association of Manitoba
- Health Association Nova Scotia
- Canadian Home Care Association
- Provincial Health & Home Care - Newfoundland
- Home Care Ontario
- New Brunswick Home Support Association
- Saskatchewan Hospice Palliative Care Association
- Saskatchewan Hospice Palliative Care Association cont.
- British Columbia Hospice Palliative Care Association
- Alberta Hospice Palliative Care Association
- Palliative Manitoba
- New Brunswick Hospice Palliative Care Association
- New Foundland and Labrador Palliative Care Association
- Nova Scotia Palliative Care Association
- Hospice Palliative Care of Northwest Territories
- Hospice Palliative Care Ontario
- Hospice Palliative Care Association of PEI
- British Columbia
  - Northern Health
  - Interior Health
  - Vancouver Island Health Authority
  - Vancouver Coastal Health
  - Fraser Health
  - First Nations Health Authority
  - Provincial Health Services Authority
- Manitoba
  - Interlake-Eastern Regional Health Authority
  - Northern Regional Health Authority
  - Southern Health-Santé Sud
- New Brunswick
  - Vitalité Health Network
  - Horizon Health Network
- Newfoundland and Labrador
  - Central Health
  - Eastern Health
- Nova Scotia
  - South Shore District Health Authority
  - South West District Health Authority
  - Annapolis Valley District Health Authority
  - Cumberland Health Authority
  - Pictou County Health Authority
  - Guysborough Antigonish Strait Health Authority
  - Cape Breton District Health Authority
  - Capital District Health Authority
- Northwest Territories
  - Beaufort-Delta HSS Authority
  - Sahtu HSS Authority
  - Dehcho HSS Authority
  - Tlicho HSS Authority
  - Yellowknife HSS Authority
- Nunavut Health Region
- Ontario
  - Erie St. Clair LHIN
  - South West LHIN
  - Waterloo Wellington LHIN
  - Hamilton Niagara Haldimand Brant LHIN
  - Central West LHIN
  - Mississauga Halton LHIN
  - Toronto Central LHIN
  - Central LHIN
  - Central East LHIN
  - South East LHIN
  - Champlain LHIN
  - North Simcoe Muskoka LHIN
  - North East LHIN
  - North East LHIN cont.
  - North West LHIN
- Health PEI
  - Health PEI, cont.
- Saskatchewan
  - Athabasca Health Authority
  - Cypress Regional Health Authority
  - Five Hills Regional Health Authority
  - Heartland Regional Health Authority

- Keewatin Yatthé Regional Health Authority
- Kelsey Trail Regional Health Authority
- Mamawetan Churchill River Regional Health Authority
- Prince Albert Parkland Regional Health Authority
- Regina Qu'Appelle Health Region
- Saskatoon Regional Health Authority
- Sun Country Regional Health Authority

Quebec
- Région de l'Abitibi-Témiscamingue
- Région de l'Outaouais
- Région de la Côte-Nord
- Région de la Mauricie et du Centre-du-Québec
- Région de Lanaudière
- Région de Laval
- Région des Laurentides
- Région des Terres-Cries-de-la-Baie-James
- Région du Saguenay - Lac-Saint-Jean

Yukon Territory Health Region

American Nurses Association
- Alabama State Nurses Association
- Arizona Nurses Association
- Arkansas Nurses Association
- ANA\California
- Colorado Nurses Association
- Connecticut Nurses Association
- Delaware Nurses Association
- District of Columbia
- Florida Nurses Association
- Georgia Nurses Association
  - Central Region
  - East Central Region
  - North Region
  - North Central Region
  - Southeast Region
  - Southwest Region
  - Shared Interest Chapters
- Idaho Nurses Association
- ANA-Illinois
- Indiana State Nurses Association
- Iowa Nurses Association
  - IA01 - NW
  - IA03 - SW
  - IA04- Central
  - IA05 - SE
- Kansas State Nurses Association
- Kentucky Nurses Association
  - River City Chapter (Formerly District 1)
  - Bluegrass Chapter (Formerly District 2)
  - Northern Kentucky Chapter (Formerly District 3)
  - Heartland Chapter (Formerly District 4)
  - West Kentucky Chapter (Formerly District 5)
  - Kentucky Nurses REACH (REACH: Research, Educate, Advocate, Care, Help) (Formerly District 7)
  - Green River Chapter (Formerly District 8)
  - Nightingale Chapter (Formerly District 9)
  - Northeast Chapter
- Louisiana State Nurses Association
- ANA-Maine
- Maryland Nurses Association
- ANA Massachusetts
- ANA-Michigan
- Minnesota Organization of Registered Nurses
- Mississippi Nurses Association
  - District 1
  - District 2
  - District 5
  - District 6
  - District 7
  - District 8
  - District 11
  - District 12
  - District 13
  - District 15
  - District 16
  - District 18
  - District 21
  - District 23
  - District 25
  - District 28
  - District 31
  - District 32
- Missouri Nurses Association
- Montana Nurses Association
- Nebraska Nurses Association
- Nevada Nurses Association
- New Hampshire Nurses Association
- New Jersey State Nurses Association
- New Mexico Nurses Association
- ANA-New York
- North Carolina Nurses Association
  - Mountain
  - Northeast
  - Northwest
  - South Central
  - Southeast
  - Southwest
  - Triad
  - Triangle
- North Dakota Nurses Association
- Ohio Nurses Association
- Oklahoma Nurses Association
- Oregon Nurses Association
  - CA 1
  - CA 5
  - CA 51
  - CA 52
  - CA 24
  - At-Large CA
- Pennsylvania State Nurses Association
- Rhode Island State Nurses Association
- South Carolina Nurses Association
- South Dakota Nurses Association
- Tennessee Nurses Association

    - District 1
    - District 2
    - District 3
    - District 5
    - District 6
    - District 8
    - District 9
    - District 10
    - District 15
  - Texas Nurses Association
  - Utah Nurses Association
  - Vermont State Nurses Association
  - Virginia Nurses Association
    - New River Valley
    - Roanoke Valley
    - Hill City Chapter
    - Hampton Roads
    - Central Virginia
    - Advocates for Nursing Excellence
    - Piedmont Area
    - Northern Virginia
    - Augusta Advocacy
    - Northern Shenandoah Valley
  - Washington State Nurses Association
    - Kings County Nurses Association
    - Pierce County Nurses Association
    - Inland Empire Nurses Association
  - West Virginia Nurses Association
  - Wisconsin Nurses Association
  - Wyoming Nurses Association
- American Association for Long Term Care Nursing
  - Alabama Nursing Home Association
  - Arizona Health Care Association
  - California Association of Health Facilities
  - Connecticut Association Of Health Care Facilities
  - D.C. Health Care Association
  - Georgia Health Care Association
  - Idaho Health Care Association
  - Indiana Health Care Association
  - Kansas Health Care Association/Kansas Center for Assisted Living Association
  - Maine Health Care Association
  - Massachusetts Senior Care Association
  - Care Providers of Minnesota
  - Missouri Health Care Association
  - Missouri Health Care Association cont.
  - Nevada Health Care Association
  - Health Care Association of New Jersey
  - Health Care Association of New Jersey cont.
  - New York State Health Facilities Association
  - New York State Health Facilities Association cont.
  - North Dakota Long Term Care Association
  - Pennsylvania Health Care Association / Center for Assisted Living Management
  - South Carolina Health Care Association
  - Tennessee Health Care Association
  - Virginia Health Care Association / Virginia Center for Assisted Living
  - West Virginia Health Care Association
  - Alaska State Hospital & Nursing Home Association
  - Arkansas Health Care Association
  - Colorado Health Care Association
  - Florida Health Care Association
  - Healthcare Association of Hawaii
  - Illinois Health Care Association
  - Iowa Health Care Association / Iowa Center for Assisted Living
  - Iowa Health Care Association / Iowa Center for Assisted Living cont.
  - Kentucky Association of Health Care Facilities
  - Health Facilities Association of Maryland
  - Mississippi Health Care Association
  - Nebraska Health Care Association / Nebraska Assisted Living Association
  - New Hampshire Health Care Association
  - New Mexico Health Care Association / New Mexico Ctr for Assisted Living
  - Ohio Health Care Association / Ohio Centers for Assisted Living
  - Oregon Health Care Association / Oregon Center for Assisted Living
  - Rhode Island Health Care Association
  - South Dakota Health Care Association
  - Texas Health Care Association
  - Vermont Health Care Association
  - Washington Health Care Association (WHCA)
  - Wisconsin Health Care Association
  - Wisconsin Health Care Association cont.
- American Association for Homecare
- National Association for Home Care & Hospice
  - Alabama
  - Alaska
  - Arizona
  - Arkansas
  - California
  - Colorado
  - Connecticut
  - Delaware
  - Florida
  - Georgia
  - Hawaii
  - Idaho
  - Illinois
  - Indiana
  - Iowa
  - Kansas
  - Kentucky
  - Louisiana
  - Maine
  - Maryland-DC
  - Massachusetts
  - Michigan
  - Minnesota
  - Mississippi
  - Missouri
  - Montana
  - Nebraska
  - Nevada

  - New Hampshire
  - New Jersey
  - New Mexico
  - New York
  - North Carolina
  - North Dakota
  - Ohio
  - Oklahoma
  - Oregon
  - Pennsylvania
  - Rhode Island
  - South Carolina
  - South Dakota
  - Tennessee
  - Texas
  - Utah
  - Vermont
  - Virginia
  - Washington
  - West Virginia
  - Wisconsin
  - Wyoming
- Canadian Association of Social Workers
- British Columbia Association of Social Workers
- Saskatchewan Association of Social Workers
- Manitoba College of Social Workers
- New Brunswick Association of Social Workers
- Nova Scotia Association of Social Workers
- Newfoundland and Labrador Association of Social Workers
- Prince Edward Island Association of Social Workers
- The Association of Social Workers of Northern Canada (ASWNC)
  - National Association of Social Workers
  - http://www.socialworkers.org/chapters/default.asp
  - Alabama
  - Alaska
  - Arizona
  - Arkansas
  - California
  - Colorado
  - Connecticut
  - Delaware
  - Florida
  - Georgia
  - Hawaii
  - Idaho
  - Illinois
  - Indiana
  - Iowa
  - Kansas
  - Kentucky
  - Louisiana
  - Maine
  - Maryland
  - Massachusetts
  - Massachusetts cont.
  - Michigan
  - Minnesota
  - Mississippi
  - Missouri
  - Montana
  - Nebraska
  - Nevada
  - New Hampshire
  - New Jersey
  - New Mexico
  - New York
  - New York City
  - North Carolina
  - North Dakota
  - Ohio
  - Oklahoma
  - Oregon
  - Pennsylvania
  - Rhode Island
  - South Carolina
  - South Dakota
  - Tennessee
  - Texas
  - Utah
  - Vermont
  - Virginia
  - Washington
  - Metro-Washington , DC
  - West Virginia
  - Wisconsin
  - Wyoming
- Canadian Association of Physician Assistants
- American Academy of Physician Assistants
  - Alabama Society of Physician Assistants
  - Alaska Academy of Physician Assistants
  - Arizona State Association of Physician Assistants
  - Arkansas Academy of Physician Assistants
  - California Academy of Physician Assistants
  - Colorado Academy of Physician Assistants
  - Connecticut Academy of Physician Assistants
  - Delaware Academy of Physician Assistants
  - District of Columbia Academy of Physician Assistants
  - Florida Academy of Physician Assistants
  - Georgia Association of Physician Assistants
  - Georgia Association of Physician Assistants cont.
  - Georgia Association of Physician Assistants cont.
  - Hawaii Academy of Physician Assistants
  - Idaho Academy of Physician Assistants
  - Illinois Academy of Physician Assistants
  - Indiana Academy of Physician Assistants
  - Iowa Physician Assistant Society
  - Kansas Academy of Physician Assistants
  - Kentucky Academy of Physician Assistants
  - Louisiana Academy of Physician Assistants
  - Maine Association of Physician Assistants
  - Maryland Academy of Physician Assistants
  - Massachusetts Association of Physician Assistants
  - Michigan Academy of Physician Assistants
  - Minnesota Academy of Physician Assistants
  - Mississippi Academy of Physician Assistants
  - Missouri Academy of Physician Assistants
  - Montana Academy of Physician Assistants

  - Nebraska Academy of Physician Assistants
  - Nevada Academy of Physician Assistants
  - New Hampshire Society of Physician Assistants
  - New Jersey State Society of Physician Assistants
  - New Mexico Academy of Physician Assistants
  - New York State Society of Physician Assistants
  - North Carolina Academy of Physician Assistants
  - North Dakota Academy of Physician Assistants
  - Ohio Association of Physician Assistants
  - Oklahoma Academy of Physician Assistants
  - Oregon Society of Physician Assistants
  - Pennsylvania Society of Physician Assistants
  - Physician Assistant Academy of Vermont
  - Public Health Service Academy of Physician Assistants
  - Rhode Island Academy of Physician Assistants
  - South Carolina Academy of Physician Assistants
  - South Dakota Academy of Physician Assistants
  - Tennessee Academy of Physician Assistants
  - Texas Academy of Physician Assistants
  - Utah Academy of Physician Assistants
  - Veterans Affairs Physician Assistant Association
  - Virginia Academy of Physician Assistants
  - Washington Academy of Physician Assistants
  - West Virginia Association of Physician Assistants
  - Wisconsin Academy of Physician Assistants
  - Wyoming Association of Physician Assistants
- National Association of Health Care Assistants
  - LeadingAge California
  - LeadingAge Iowa
- National Network of Career Nursing Assistants
- Alabama Primary Care Association
- Hospice Organization of Georgia
- Florida Department of Elder Affairs
- Nevada Department of Health and Human Services Division of Welfare and Supportive Services
- Agency for Healthcare Research and Quality (AHRQ)
- Department of Health and Human Services of Maine
- Idaho Department of Health and Welfare
- Hospice of Mat-Su, Alaska
- Louisiana Department of Health and Hospital
- Montana Primary Care Association
- West Virginia Department of Health & Human Resources
- Board of Aging and Long Term Care of Wisconsin
- North Carolina Department of Health and Human Services
- Department of Human Services of Arkansas - Office of Long Term Care
- Commission On Aging of Idaho
- Hospice Network of Maryland
- Colorado Department of Public Health and Environment
- Association for the Medically Underserved of Kansas
- Maryland Department of Health and Mental Hygiene
- Montana Department of Public Health & Human Services-Division of Child and Adult Health Resources
- Department of Medical Assistance Services
- Department of Human Services on Aging of Arkansas - Division of Aging and Adult Services
- Department of Human Services of Iowa
- Aging and Disability Services Divison (formerly Division for Aging Services of Nevada)
- Department of Community Health
- Primary Care Association of Washington, D.C.
- Department of Health and Human Resources
- Nebraska Department of Health and Human Services System
- Dept of Health and Human Services of Nebraska - Division of Medicaid & Long Term Care
- Department of Health and Mental Hygiene
- Oregon Health Authority
- Delaware Health and Social Services
- Wisconsin Department of Health Services
- Hospice and Palliative Care Council of Vermont
- Oregon Health Authority
- South Dakota Department of Health
- Department of Health - District of Columbia
- Montana Department of Public Health & Human Services-Division of Child and Adult Health Resources
- Montana Department of Public Health & Human Services-Division of Child and Adult Health Resources
- Idaho Department of Health and Welfare
- Long Term Care Ombudsman of Louisiana
- Executive Office of Health and Human Services
- Department On Aging of AS, GU, HI, and MP
- Long Term Care Ombudsman of Oklahoma
- Association of Community Health Centers of Florida
- Idaho Department of Health and Welfare
- Ohio Department of Health Community Health Care Facilities & Services
- Colorado Department of Public Health and Environment
- Department of Health and Mental Hygiene
- Illinois Department of Healthcare and Family Services
- Utah Hospice and Palliative Care
- Hospice and Palliative Care Association of Kentucky
- Medical Assistance Division
- Department of Health and Hospitals
- Department of Aging of Illinois
- American Association for Accreditation of Ambulatory Surgical Facilities
- Accreditation Association for Ambulatory Health Care
- Association of Community Health Centers, Inc. of Arizona
- Arizona Hospice and Palliative Care Organization
- Carolinas Center for Hospice & End-of-Life Care
- South Carolina Department of Health and Human Services
- Missouri Department of Health & Senior Services
- Florida Hospice & Palliative Care Association
- Hospice and Palliative Care Federation of Massachusetts
- Hospice Minnesota
- Hospice and Palliative Care Association of New York State
- Primary Care Association of Idaho
- Illinois Hospice and Palliative Care Org.
- Indiana Primary Health Care Association
- Illinois Primary Health Care Association
- Kokua Mau, Hawaii Hospice and Palliative Care Organization
- Hospice Council of Maine
- Primary Care Association of Michigan
- Hospice and Palliative Care Association of Nebraska
- New Hampshire Hospice and Palliative Care Organization
- Hospice and Palliative Care Organization of New Jersey
- Hospice Association of Oklahoma

Hospice Association of Oregon
Health Center Association of Rhode Island
Primary Health Care Association of South Carolina
Texas and New Mexico Hospice Organization
Virginia Primary Care Association
Virginia Association for Hospices & Palliative
Primary Care Association of West Virginia
Florida Agency for Health Care Administration
California Department of Health Services
Division of Health Improvement of New Mexico
The Georgia Association for Primary Health Care, Inc
Louisiana and Mississippi Hospice Organization
Department of Elder Affairs of Iowa
Aging Services Division of North Dakota
Department of Aging and Independent living
Department for Aging and Rehabilitation Services
Medicare Information Office
Hospice Association of Kansas
Division of Aging and Adult Services
NH SHIP - ServiceLink Aging and Disability Resource Center
Department of Health of Indiana - Long Term Care Division
Commission on Aging and Disability of Tennessee
DC longterm care Ombudsman program
Primary Care Association of Ohio
Bureau of Long Term Care of Ohio - Quality Assurance
Bureau of Home Care & Rehabilitative Standards within the Missouri Department of Health
Louisiana Primary Care Association
Alabama Hospice and Pallative Care Organization (formerly - Alabama Hospice Organization)
Oklahoma State Department of Health
Long Term Care Ombudsman of Oregon
Long Term Care Ombudsman of Kansas
Long Term Care Ombudsman of Missouri
Long Term Care Ombudsman of Washington
Department of Human Services of New Jersey
Department of Aging and Disability Services
Office of Health and Human Services of Massachusetts
Office for the Aging of New York State
League of Community Health Centers of Massachusetts
Health and Human Services Commission of Texas
Department of Social Services of South Dakota
Associated Hospital Services
West Virginia Department of Health & Human Resources
Hospice Organization and Palliative Experts of Wisconsin
Department of Health and Human Services of Maine
Hospice and Palliative Care Organization of Michigan
Department of Health
Maine Long Term Care Ombudsman program
Great Basin Primary Care Association
National Institute on Aging Information Center
New Mexico Department of Health
Health and Human Services Commission
Long Term Care Ombudsman of New Hampshire
Long Term Care Ombudsman of New Jersey
Ohio Senior Health Insurance Information Program (OSHIIP)
Texas Department of Aging and Disability Services (HICAP)
Arizona State Health Insurance Assistance Program
Department of Social Services of Connecticut
State Health Division of Nevada
Pennsylvania Hospice Network
West Virginia State Health Insurance Assistance Program (WV SHIP)
Virginia Department of Health
Oklahoma Medicare Assistance Program (MAP)
Family and Social Services Administration
Washington Association of Community and Migrant Health Centers (WACMHC)
Long Term Care Ombudsman of California
The Alliance for Better Long Term Care
North Carolina Department of Health and Human Services
North Dakota Department of Health
Vermont Long Term Care Ombudsman Project
Bureau of TennCare
Tennessee Hospital Association (formerly Alive Hospice)
Tennessee Department of Health
Division of Services for Aging and Adults with Physical Disabilities of Delaware
Wyoming Department of Health
Wyoming Department of Health
Mississippi Department of Health
Connecticut Department of Public Health
Oklahoma State Department of Health
Alaska Department of Health and Social Services
Rhode Island Department of Health
Department of Healthcare and Family Services
Department of Aging and Disability Services
Primary Care Association of Wyoming

Appendix 4: Invitation Email (English)

Doctoral Research: Aging Alone and the Care Older Patients

Hello, my name is Kelly Renwick, I am a doctoral student at McGill University in Montréal, Québec.

I would like to invite you and the members of your organization to participate in a **10 minute research survey** exploring aging alone and the care of older patients. I would ask if you could ***please*** forward this invitation to the members of your organization.

To participate please click the link below:
Survey: Aging Alone and the Care of Older Patients

It has been said that the rise of living alone is one of the **greatest social changes we know the least about**. Higher divorce rates and smaller, more geographically separated families mean that **many older adults today are aging alone with few social resources**. What this means for the care of older adults is poorly understood. This survey forms part of my doctoral research which includes studies of health survey data linked to health care utilization records of older adults.

The survey will take approximately 10 minutes and your participation will be anonymous. If you have any questions about this research, please feel free to contact me (kelly.renwick@mail.mcgill.ca) or my supervisor, Professor Nancy Ross (nancy.ross@mcgill.ca). If you have any questions about your rights or treatment as a survey respondent in this study, please contact McGill University's Research Ethics Board through email at lynda.mcneil@mcgill.ca or by phone at 514-398-2267, reference REB #67-0715.

Thank you so much for taking time out of your busy schedule to support my doctoral research. To participate, please click on the link below.
Survey: Aging Alone and the Care of Older Patients

With warmest regards,
Kelly Renwick

Invitation Email (French)

Vieillir dans la solitude et soins aux patients âgés

Bonjour, Je m'appelle Kelly Renwick et je suis étudiante au doctorat à l'Université McGill, à Montréal, au Québec.

J'aimerais vous inviter, ainsi que les membres de votre organisation, à répondre à un **sondage de 10 minutes** sur le vieillissement dans la solitude et les soins aux patients âgés. Je vous serais également reconnaissante de faire suivre cette invitation aux membres de votre organisation.

Pour participer au sondage, cliquez sur le lien suivant :
Sondage : Vieillir dans la solitude et soins aux patients âgés

Il est estimé que l'augmentation du nombre de personnes vivant seules est **l'un des plus grands changements sociaux sur lequel nous en savons le moins**. Le taux élevé de divorces et le fait que les familles sont de moins en moins nombreuses et de plus en plus dispersées géographiquement font en sorte que **de nombreuses personnes âgées vieillissent seules et disposent de peu de ressources sociales**. Nous en savons peu sur l'impact de ces changements sur les soins aux personnes âgées. Ce sondage constitue l'un des éléments de ma recherche doctorale, portant sur l'étude de données d'enquêtes sur la santé reliées à l'utilisation des soins de santé par les aînés.

Il vous faudra environ 10 minutes pour répondre au sondage, et votre participation sera anonyme. Si vous avez des questions au sujet de cette étude, n'hésitez pas à communiquer avec moi par courriel, à kelly.renwick@mail.mcgill.ca, ou avec ma superviseure, la professeure Nancy Ross, à nancy.ross@mcgill.ca. Pour toute question sur vos droits à titre de répondant à ce sondage, veuillez communiquer, par courriel, avec le Comité d'éthique de la recherche de l'Université McGill, à lynda.mcneil@mcgill.ca, ou par téléphone, au 514 398-2267 (référence Comité d'éthique de la recherche numéro 67-0715).

Je vous remercie de prendre le temps de m'aider dans la préparation de ma thèse de doctorat. Pour participer au sondage, cliquez sur le lien suivant:
Sondage : Vieillir dans la solitude et soins aux patients âgés

Cordialement,
Kelly Renwick

Appendix 5: Consent Agreement (English)

Consent to Participate in a Research Survey
Aging Alone and the Care of Older Patients
Research Ethics Board #67-0715

My name is Kelly Renwick, I am a doctoral student at McGill University in Montréal, Québec. I would like to thank you for participating in my research survey which explores aging alone and the care of older adults. This survey forms part of my doctoral research which includes studies of health survey data linked to health care utilization records of older adults.

Your participation in this research study is voluntary and you can decline to answer any questions. The procedure involves taking part in an online survey that will take approximately 10 minutes. Your responses will automatically be made anonymous by the survey software and an alphanumeric identification will be assigned to each survey response. Data will be password protected on a computer database.

The results from this research will be published in my doctoral thesis, peer-reviewed journals, presentations at academic conferences, and health care policy briefs. If you have any questions about this research please feel free to contact me or my supervisor. I can be reached by email at kelly.renwick@mail.mcgill.ca. Dr. Nancy Ross can be reached by email at nancy.ross@mcgill.ca. If you have any questions about your rights or treatment as a research participant in this study, please contact McGill University's Research Ethics Board through email at lynda.mcneil@mcgill.ca or by phone at 514-398-2267. A printable version of the survey with your responses, including this consent form, is available following survey submission.

Electronic Consent:
By clicking on the 'agree' button below you indicate that:

1. You have read the above consent information
2. You voluntarily agree to participate in this research survey

○ Agree
○ Do not agree

Consent Agreement (French)

Formulaire de consentement – participants à l'étude
« Vieillir dans la solitude et soins aux patients âgés »
Comité d'éthique de la recherche de l'Université McGill, numéro 67-0715

Je m'appelle Kelly Renwick et je suis étudiante au doctorat à l'Université McGill, à Montréal, au Québec. Je vous remercie de bien vouloir participer à mon sondage sur le vieillissement dans la solitude et les soins aux patients âgés. Ce sondage constitue l'un des éléments de ma recherche doctorale, qui porte notamment sur l'étude de données d'enquêtes sur la santé axées sur l'utilisation des soins de santé par les personnes âgées.

Votre participation à cette étude de recherche est volontaire, et vous pouvez refuser de répondre à l'une ou l'autre des questions qui y sont posées. À titre de participant, vous serez appelé à répondre à un sondage électronique auquel vous devrez consacrer environ 10 minutes. Grâce au logiciel utilisé, vos réponses seront automatiquement anonymes, et une identification alphanumérique sera assignée à chacune des réponses fournies. Les données seront accessibles protégées par mot de passe sur une base de données.

Si vous avez des questions au sujet de cette étude, n'hésitez pas à communiquer par courriel avec moi, à kelly.renwick@mail.mcgill.ca, ou avec ma superviseure, la professeure Nancy Ross, à nancy.ross@mcgill.ca. Pour toute question sur vos droits à titre de répondant à ce sondage, veuillez communiquer, par courriel, avec le Comité d'éthique de la recherche de l'Université McGill, à lynda.mcneil@mcgill.ca, ou par téléphone, au 514 398-2267

Formulaire de consentement électronique : En cliquant sur le bouton « J'accepte » ci-dessous, vous confirmez que

1. Vous avez lu les renseignements associés au consentement qui apparaissent ci-dessus
2. Vous acceptez volontairement de participer à cette étude

○ J'accepte
○ Je n'accepte pas

Appendix 6: End Of Survey Message (English)

Thank you so much for taking time out of your busy schedule to complete this survey. Your participation will help me to complete my doctoral thesis and the results will contribute to a larger study of social support and its impact on mortality and hospital utilization.

If you have any questions about this research, please feel free to contact me or my supervisor. I can be reached by email at kelly.renwick@mail.mcgill.ca. Dr. Nancy Ross can be reached by email at nancy.ross@mcgill.ca. If you have any questions about your rights or treatment as a survey respondent in this study, please contact McGill University's Research Ethics Board through email at lynda.mcneil@mcgill.ca or by phone at 514-398-2267, reference REB #67-0715.

With warmest regards,
Kelly Renwick

End of Survey Message (French)
Je vous remercie d'avoir pris le temps de répondre à ce sondage malgré votre emploi du temps très chargé. Votre participation m'aidera à terminer ma thèse de doctorat, et les résultats seront intégrés à une étude de plus grande envergure sur le soutien social et son incidence à l'égard de la mortalité et l'utilisation des services hospitaliers.

Si vous avez des questions au sujet de cette étude, n'hésitez pas à communiquer par courriel avec moi, à kelly.renwick@mail.mcgill.ca, ou avec ma superviseure, la professeure Nancy Ross, à nancy.ross@mcgill.ca. Pour toute question sur vos droits à titre de répondant à ce sondage, veuillez communiquer, par courriel, avec le Comité d'éthique de la recherche de l'Université McGill, à lynda.mcneil@mcgill.ca, ou par téléphone, au 514 398-2267 (référence Comité d'éthique de la recherche numéro 67-0715).

Cordialement,
Kelly Renwick

*Appendix 7: **Survey Questions*** *(French)*

1. Quel est votre rôle dans la prestation de soins de santé aux patients âgés (65 ans et plus)?
   Aucun rôle
   Médecin
   Adjoint au médecin
   Infirmier
   Infirmier auxiliaire
   Travailleur social
   Fournisseur de soins à domicile
   Administrateur
   Autre

2. Depuis combien de temps travaillez-vous auprès des patients âgés?
   N'hésitez pas à ajouter des commentaires dans l'espace réservé à cette fin
   1 an ou moins
   De 2 à 5 ans
   De 6 à 10 ans
   De 11 à 15 ans
   Plus de 15 ans
   Je ne travaille pas avec les patients âgés

3. Selon vous, quel est le pourcentage de patients âgés de votre établissement qui reçoivent très peu de visiteurs (amis et membres de leur famille)?
   N'hésitez pas à ajouter des commentaires dans l'espace réservé à cette fin
   Environ 25 % ou moins
   Environ 50 %
   Environ 75 % ou plus
   Je ne sais pas

4. Selon vous, le nombre de patients âgés qui reçoivent très peu de visiteurs a-t-il changé depuis que vous avez commencé à travailler auprès de cette clientèle?
   N'hésitez pas à ajouter des commentaires dans l'espace réservé à cette fin
   Les patients âgés qui reçoivent très peu de visiteurs sont plus nombreux qu'avant
   Les patients âgés qui reçoivent très peu de visiteurs sont moins nombreux qu'avant
   Je n'ai observé aucune différence

Je travaille auprès de cette clientèle depuis trop peu de temps pour être en mesure de tirer une conclusion

5. Selon vous, quel pourcentage des patients âgés de votre établissement aurait pu être pris en charge dans la communauté (plutôt que dans une institution) si le soutien social nécessaire avait été disponible?
   On entend par soutien social la présence de membres de la famille ou d'amis proches sur qui la personne âgée peut compter pour la préparation des repas, les tâches domestiques, les courses, ou simplement pour être à l'écoute des problèmes et partager l'information.
   N'hésitez pas à ajouter des commentaires dans l'espace réservé à cette fin
   Environ 25 % ou moins
   Environ 50 %
   Environ 75 % ou plus
   0 %
   Je ne sais pas

6. Selon votre expérience, croyez-vous que les patients âgés sans soutien social sont réhospitalisés plus souvent ou moins souvent après avoir reçu leur congé comparativement aux patients qui bénéficient d'un tel soutien?
   N'hésitez pas à ajouter des commentaires dans l'espace réservé à cette fin
   Plus souvent
   Moins souvent
   Je n'ai observé aucune différence
   Je ne sais pas

7. Dans quelle mesure l'absence de soutien social influe-t-elle sur la planification des sorties d'hôpital chez les patients âgés?
   Zone de commentaires

8. Selon vous, à quelles stratégies pourrait-on avoir recours afin de réduire l'hospitalisation ou le placement en établissement des patients âgés qui pourraient être pris en charge dans la communauté?
   Zone de commentaires

Appendix 8: Research Ethics Board Certificate of Approval

Research Ethics Board Office Tel: (514) 398-6831
James Administration Bldg. Fax: (514) 398-4644
845 Sherbrooke Street West. Rm 429 Website:
ww.mcgill.ca/research/researchers/compliance/human/
Montreal, QC H3A 0G4

Research Ethics Board I
Certificate of Ethical Acceptability of Research Involving Humans

REB File #: 67-0715

Project Title: Low social support and low socioeconomic status as determinants of premature mortality and hospital utilization in Canada

Principal Investigator: Kelly Ann Renwick **Department:** Geography

Status: Ph.D. Student **Supervisor:** Prof. Nancy Ross

Funding: CIHR CHL Catalyst Grant « The Health System Burden of Aging Alone » (PI Nancy Ross)
Fonds de recherche du Québec – Santé (FRQS) – Doctoral Training Award

Approval Period: _____July 22, 2015 to July 21, 2016_____

The REB-I reviewed and approved this project by delegated review in accordance with the requirements of the McGill University Policy on the Ethical Conduct of Research Involving Human Participants and the Tri-Council Policy Statement: Ethical Conduct For Research Involving Humans.

Deanna Collin
Ethics Review Administrator, REB I & II

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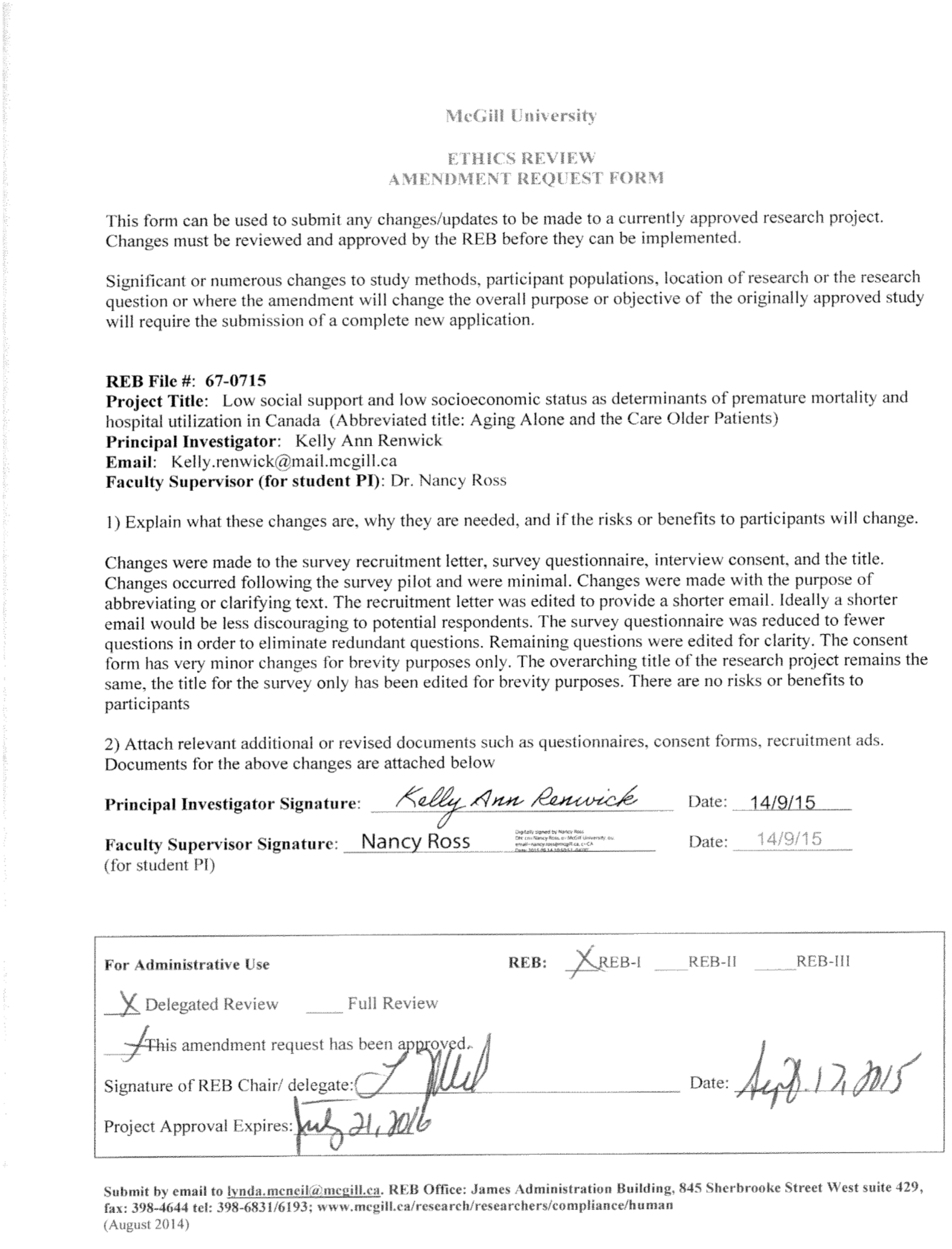
* All research involving human participants requires review on at least an annual basis. A Request for Renewal form should be submitted 2-3 weeks before the above expiry date. Research cannot be conducted without a current ethics approval.
* When a project has been completed or terminated, a Study Closure form must be submitted.
* Unanticipated issues that may increase the risk level to participants or that may have other ethical implications must be promptly reported to the REB. Serious adverse events experienced by a participant in conjunction with the research must be reported to the REB without delay.
* Modifications must be reviewed and approved by the REB before they can be implemented.

* The REB must be promptly notified of any new information that may affect the welfare or consent of participants.
* The REB must be notified of any suspension or cancellation imposed by a funding agency or regulatory body that is related to this project.
* The REB must be notified of any findings that may have ethical implications or may affect the decision of the REB

Appendix 9: Amendment Approval



McGill University

ETHICS REVIEW
AMENDMENT REQUEST FORM

This form can be used to submit any changes/updates to be made to a currently approved research project. Changes must be reviewed and approved by the REB before they can be implemented.

Significant or numerous changes to study methods, participant populations, location of research or the research question or where the amendment will change the overall purpose or objective of the originally approved study will require the submission of a complete new application.

REB File #: 67-0715
Project Title: Low social support and low socioeconomic status as determinants of premature mortality and hospital utilization in Canada (Abbreviated title: Aging Alone and the Care Older Patients)
Principal Investigator: Kelly Ann Renwick
Email: Kelly.renwick@mail.mcgill.ca
Faculty Supervisor (for student PI): Dr. Nancy Ross

1) Explain what these changes are, why they are needed, and if the risks or benefits to participants will change.

Changes were made to the survey recruitment letter, survey questionnaire, interview consent, and the title. Changes occurred following the survey pilot and were minimal. Changes were made with the purpose of abbreviating or clarifying text. The recruitment letter was edited to provide a shorter email. Ideally a shorter email would be less discouraging to potential respondents. The survey questionnaire was reduced to fewer questions in order to eliminate redundant questions. Remaining questions were edited for clarity. The consent form has very minor changes for brevity purposes only. The overarching title of the research project remains the same, the title for the survey only has been edited for brevity purposes. There are no risks or benefits to participants

2) Attach relevant additional or revised documents such as questionnaires, consent forms, recruitment ads.
Documents for the above changes are attached below

Principal Investigator Signature: Kelly Ann Renwick Date: 14/9/15

Faculty Supervisor Signature: Nancy Ross
Digitally signed by Nancy Ross
DN: cn=Nancy Ross, o=McGill University, ou,
email=nancy.ross@mcgill.ca, c=CA
Date: 2015.09.14 10:50:51 -04'00'
Date: 14/9/15
(for student PI)

For Administrative Use **REB:** X REB-I ____REB-II ____REB-III

X Delegated Review ____ Full Review

✓ This amendment request has been approved.

Signature of REB Chair/ delegate: Date: Sept. 17, 2015

Project Approval Expires: July 21, 2016

Submit by email to lynda.mcneil@mcgill.ca. REB Office: James Administration Building, 845 Sherbrooke Street West suite 429, fax: 398-4644 tel: 398-6831/6193; www.mcgill.ca/research/researchers/compliance/human
(August 2014)

Appendix 10: 'Other' Responses from Online Survey Respondents Regarding Their Role in Health Care Provision for Older Adults (Adults 65 Years Or Older)

Accountant in a Long Term Care Facility
acheteur approvisionneemnt
Administer non-medical programs to help seniors stay independent in the community.
Advanced Practice Registered Nurse
Advocacy/Policy
agente administrative
Agente de relations humaines
aidant naturel
Allied health professional
Assessor/Coordinator/Case Manager
Care coordinator
Care in the Right Place Co-ordinator
caregiver
caregiver instructor
caring for my parents (me=retired social worker)
Case Manager
CEO
Chef d'unité
Child of Aging Parent
Client Care Coordinator (background in Social Work)
Clinical Nurse Educator
Clinical nurse specialist
clinical supervisor
Community
community development specializing in seniors-age friendly communityinitiative coordinator
Community Health Nurse
Community Health Program and Service Provider
Community Organizer
Community support services coordinator
comptable
Continuing Care Coordinator
Daughter & spouse & co-worker in an auxiliary
Dietitian
Director of Care
Director of Care nursing home

Director of Community Services
Director of Nursing
directrice des soins
DOC
Éducateur spécialisé
Educator
Elder Life Coordinator for Hospital Elder Life Program
Enseignante soins infirmiers
Ergothérapeute
Facilities Manager
faculty
family care giver
Family member of an older adult
finance
Finance/ back up to Administrator
firefighter/medic
FNP
Former Recreation Director
Foyer de soins
Funder
funding and accountability
geriatric ER clinician
Government Planner
Grief Support Coordinator Hospice
Health Care Planner, Integrator and Funder
health planner
Hospice
I am a retired PA & over 65
I am in regional position - this age group is in my portfolio i.e. long term care, home care
I cared for both of my parents, now deceased and my husband, now deceased
I work in Health Promotion to ensure older adults maintain their health for as long as possible
I'm 65 & long distance support family member over 65
Imaging Technologist
inf clinicienne chef en hébergement
Infection Prevention and Control Nurse
INTERVENANTE SOCIALE
involved in an Elder college called Learning in Retirement, with a membership of almost 300 members over 50 years old. We offer a comprehensive program of courses,

presentations and field trips all based on 3 pillars - the intellectual, the physical and the social. Every day our members tell us that LIR "saved their life" by providing a relevant connection into a community. don't forget the clear social component in the parameters around health.
IPSPL
leisure technicien
Licensed Clinical Mental Health Counselor
Looking after aging parents
LTC Nurse Educator
Manager
manager in LTC
MDS Coordinator
Mental Health Therapist
NP
nurse educator
Nurse Manager
Nurse Practitioner
Nurse Practitioner Family All Ages
Nurse Practitioner, Geriatrics
Nursing Administrator
nursing instructor
Nursing professor
Nursing Regulation
O&M/ILS instructor for blind adults
Occupational Therapist
office admin
Older adults represent a portion of universal target for health promotion/social media campaign
OT
OTA/PTA
pharmacist/geriatric assessor
Physical Therapist
Physiotherapist
Planner
Policy
policy and planning
Policy and Program Specialsit at Family Caregiver Alliance/National Center on Caregiving
President of a homecare and hospice company
présidente CA d'un Foyer de soins

Primary Care Nurse
Primary caregiver (non-medical) for my 90 year old father who lives in a long term care facility
proche aidant
promotion de la santé
provider association
psychologist
Public Health Nurse
Public Health Nurse-federal government
Recently retired Nurse Coordinator of Adult Day Centre
Recreation
Recreation Coordinator
Recreation Therapist
Regional VP of Operations for a large post-acute provider
Registered dental Hygienist
Relative of one who receives home health care
resident care manager
Retired Aging Dot. Director
Retired physician
Retired social worker
Seniors Nurse Consultant in hospital
special care counsellor
Spiritual Care
Spiritual Care / Palliative Care
support services
technicienne en éducation spécialisée
thérapeute en réadaptation physique
Therapeutic Recreation Specialist
Therapy Dog Team Member
Vice President of Integrated Health Services - Community portfolio
Volunteer
volunteer Home and Community Support; Day Away and Friendly Visiting; Retired Registered Nurse
WARD CLERK