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Utilization of Mental Health Care Services Among Older Adults with Depression
in Canada

Rebecca Crabb

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Faculty of Graduate and Postdoctoral Studies
In partial fulfillment of the requirements
For the PhD degree in Clinical Psychology

School of Psychology
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Abstract

Previous studies have indicated a tendency for older adults to under-utilize available services and medications for depression. Three studies were undertaken to provide representative Canadian data on rates of mental health service use by older Canadian adults with depression, in three domains:(1) mental health consultations with health care professionals, (2) utilization of psychoactive medications commonly used in treatment of late-life depression, and (3) mental health-related utilization of alternative or complementary services and products. An additional objective was to examine the relative effect of age on service utilization after accounting for other potentially relevant sociodemographic and clinical characteristics. Data for the studies was obtained from Statistics Canada's Canadian Community Health Survey, Cycles 1.1 (Study 1) and 1.2 (Studies 2 and 3). Older adults were less likely than middle-aged adults to seek mental health care services from any health care professionals, and especially from specialty mental health professionals (psychologists or psychiatrists). Compared to middle-aged adults, older adults used antidepressant medications at a lower rate and benzodiazepines at a higher rate. Age-related patterns in mental health-related use of CAM did not directly correspond to age-related patterns in conventional mental health care utilization. The results of the three dissertation studies clearly indicate that mental health utilization patterns continue to differ significantly among middle-aged, younger- and older-older adults with depression. These findings have significant implications in terms of initiatives to improve the recognition and treatment of late-life depression.

Statement of Co-Authorship

The three manuscripts included in this dissertation were prepared in collaboration with my dissertation advisor. I was the primary author and Dr. John Hunsley was the secondary author for the manuscripts, entitled “Utilization of mental health care services among older adults with depression” (Chapter Two), “Utilization of antidepressants and benzodiazepines among older adults in Canada” (Chapter Three), and “Utilization of conventional and complementary mental health treatments among older adults with depression and anxiety disorders” (Chapter Four). As the primary author, I was responsible for conceptualization of the research question and methods, planning and execution of statistical analyses, and preparation of manuscripts. Dr. Hunsley provided guidance and assistance in all aspects of the project, especially in the refinement of study hypotheses, selection of statistical methods, and edition of manuscripts.

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CHAPTER 1

General Introduction

Despite the availability of efficacious psychosocial and pharmacological treatments for late life depression (Mottram, Wilson, & Strobl, 2006; Pinquart, Duberstein, & Lyness, 2007), only a small minority of older adults (i.e., individuals who are 65 years of age or older) with depression receive any kind of treatment for their condition (Cole, McCusker, Sewitch, Ciampi, & Dyachenko, 2008; Klap, Unroe, & Unützer, 2003; Young, Klap, Sherbourne, & Wells, 2001). Untreated or undertreated depression in late life is associated with numerous grave consequences, including increased rates of disability (Beekman, Braam, Smit & van Tilburg, 1997; Ormel, Kempen, Deeg, Brilman, van Sonderen & Relyveld, 1998), greater use of medical care services (Rowan, Davidson, Campbell, Dobrez & MacLean, 2002), increased medical costs (Katon, Lin, Russo, & Unützer, 2003) and increased rates of mortality (Black & Markides, 1999; Penninx, Geerlings, Deeg, van Eijk, van Tilburg & Beekman, 1999). The primary objective of this dissertation is to determine rates of mental health service use by older Canadian adults with depression, in three domains: 1) Consultations with mental health care professionals, 2) Utilization of psychoactive medications, and 3) Utilization of alternative health services and products. An additional objective is to examine the relative effect of age on service utilization after accounting for other potentially relevant sociodemographic and clinical characteristics.

Prevalence, Features and Treatment of Late-Life Depression

In community samples, the prevalence of major depression among adults aged 65 and older is estimated to be 1-4% (Cole & Yaffe, 1996; Mojtabai & Olfson, 2004;

Steffens, Skoog, Norton, Hart, Tschanz, Plassman, et al., 1999), with rates of subsyndromal, clinically significant depressive symptoms ranging from 13-27% (Lebowitz et al., 1997; Stek, Vinkers, Gussekloo, van der Mast, Beekman, & Westendorp, 2006). Prevalence estimates for cases of major depression leap to 10-20% among older adults hospitalized for medical illness and institutionalized in long-term care facilities (Blazer, 2003). Although it is often assumed that depression is a normal and even expectable reaction to aging, in fact the prevalence of major depression is consistently found to be lower among adults aged 65 and older compared to younger and middle-aged adults across numerous studies using different samples and methods of measurement (Henderson, Jorm, Korten, Jacomb, Christensen & Rodgers, 1998; Mojtabai & Olfson, 2004). The prevalence of depression appears to be rising over time across all age groups, yet so far the discrepancy in prevalence rates between older and younger age groups has remained constant (Blazer, 2002).

Although the overall prevalence of major depression is lower among adults aged 65 years and older compared to middle-aged adults, there is evidence to suggest higher rates of depression among the oldest-old (those aged 85 years and older) compared to older adults aged 65-84. The prevalence of major depression in the community-dwelling oldest-old is estimated at 2-5%, although representative data on this population are relatively scarce (Blazer, 2000). Clinically significant depressive symptoms are estimated to occur in 15% of the oldest-old (Stek et al., 2006), and increasing age has been shown to be associated with the presence of persistent significant depressive symptoms in a longitudinal study of adults aged 50 and older (Mojtabai & Olfson, 2004).

The lower prevalence of depression among older compared to middle-aged adults appears to be a cohort effect rather than an age effect, and various authors have speculated on the societal and historical factors that contribute to this new “age of melancholy” (Klerman, 1978; as cited by Blazer, 2002, p.22). Lifetime rates of many mental disorders, including depression, are projected to be higher in cohorts that are currently young or middle-aged adults compared to current older cohorts (Jeste et al., 1999; Wittchen, Knauper & Kessler, 1994). Coupled with the demographic shift that will see the proportion of older adults in the North American population grow from 13% at present to 23% over the next three decades (Desjardins & Dumas, 1993; Kinsella & Velkoff, 2001), the increased lifetime risk of depression among younger generations means the individual and societal burden of late-life depression might continue to grow as younger adults reach their later years.

Late-life depression differs from depression that occurs at earlier stages of life in numerous ways that can complicate the task of accurately recognizing, diagnosing and treating the problem in older adults (Alexopoulos & Apfeldorf, 2004; Beekman et al., 1997; Gallo, Rabins, Lyketsos, Tien, & Anthony, 1997; Kim, Braun & Kunik, 2001; O’Hara, Coman, & Butters, 2006; Ormel et al., 1998; Penninx et al., 1997).

Approximately half of older adults with depression have experienced their first episode after the age of 65, making it more difficult to establish a diagnosis based primarily on prior history. In addition, depression that begins in late life is more likely to have a chronic or recurrent course than depression that begins at an earlier age. Among respondents of the 1996 Health and Retirement Study who met caseness criteria for depression at baseline assessment, the prevalence of significant depressive symptoms at

2- and 4-year follow-up was 14.9% among those aged 50-54 years compared to 37.8% among those aged 65 years and older (Mojtabai & Olfson, 2004).

The preponderance of somatic symptoms in late-life depression has been well-documented (Gallo et al., 1997; Kim et al., 2001; O'Hara et al., 2006; Penninx et al., 1997). Older adults with depression are less likely to report subjective sadness or depressed mood and more likely to report physical symptoms such as anhedonia, appetite and sleep disturbance, psychomotor slowing, and lack of energy. Furthermore, the higher prevalence of chronic medical conditions among older adults compared to younger adults means that physical and mental health issues are more likely to interact in older age groups. Several medical conditions, including stroke and cardiovascular disease, have been shown to directly and indirectly lead to depressive symptoms in older adults. In turn, depression makes older adults more vulnerable to physical illness and contributes to increased rates of disability and mortality. Further complicating the diagnostic picture is the fact that late-life depression often involves cognitive disturbances such as disruptions in memory, planning and concentration that can mimic the symptoms of dementia. Additionally, dementing disorders such as Dementia of the Alzheimer's type can produce depressive symptoms in their early stages and, in some cases, late-life depression stems from an underlying neurological disorder such as ventricle enlargement or vascular depression.

Although treatments for depression in older adults have not received as much attention in the research literature as depression in other age groups, a number of controlled clinical trials support the efficacy of various types of psychotherapy and antidepressants for improving depressive symptoms in older adults. Generally, the forms

of psychotherapy that are effective for the treatment of depression in younger adults are also effective for older adults. Using the evidence-based criteria established by the Committee on Science and Practice of the Society for Clinical Psychology (Division 12) of the American Psychological Association, several forms of psychotherapy for late-life depression have been judged to be beneficial according to two comprehensive literature reviews (Mackin & Areán, 2005; Scogin et al., 2005): behavioral therapy (BT), cognitive behavioral therapy (CBT), cognitive bibliotherapy, problem-solving therapy (PST), brief psychodynamic therapy (BDT), reminiscence therapy (RT), and interpersonal therapy (IPT) in combination with antidepressant medication. A recent meta-analysis of the effects of 57 controlled psychotherapy intervention trials for depressed older adults indicated large effect sizes for CBT and reminiscence therapy and medium effect sizes for psychodynamic therapy, psychoeducation, physical exercise and supportive therapy (Pinquart et al., 2007). Recent research initiatives in psychotherapy for late-life depression have focused on evaluating the effectiveness of therapies among ethnic minorities and medically ill populations (Areán et al., 2005; Lin et al., 2003) and integrating psychotherapeutic treatment for late-life depression into primary care settings (Unützer et al., 2002).

Tricyclic antidepressant medications (TCAs) are very effective for alleviating depressive symptoms in older adults, but their risky side effect profile and high likelihood of interaction with other medications has precluded their widespread use in elderly populations (Roose & Sackeim, 2004). The newer selective serotonin reuptake inhibitors (SSRIs) have a much better side effect profile than TCAs and have a large body of empirical evidence supporting their efficacy compared to placebo and other types of

antidepressant medications in treating late-life depression (Mottram et al., 2006; Wilson, Mottram, Sivananthan, & Nightingale, 2001). SSRIs are recommended as first-line treatments for depression in older adults according to Canadian Psychiatric Association (2001) and American Psychiatric Association (2004) guidelines. Results from one randomized controlled trial examining the combined use of psycho- and pharmacotherapy for the treatment of depression in older adults, found that CBT paired with a tricyclic antidepressant was more effective than the use of either treatment alone for the long-term relief of depressive symptoms (Thompson, Coon, Gallagher-Thompson, Sommer, & Koin, 2001). In summary, depression in late life is a highly treatable condition as long as its sufferers have the opportunity to access treatments with demonstrated effectiveness.

Despite the existence of empirically supported interventions for the treatment of late-life depression, numerous surveys published since the early 1980s consistently indicate that older adults use mental health care services at a much lower rate than do middle-aged adults. The dissertation will focus on three aspects of this phenomenon. First, older adults with depression are less likely than younger adults to consult with any health care provider for mental health care, and are especially unlikely to consult with mental health specialists (i.e., psychologists and psychiatrists; Cole & Yaffe, 1996; Klap et al., 2003). This trend means that older adults with depression have limited opportunities to benefit from specialists' expertise in diagnosing and treating depression. Second, older adults are more likely to be prescribed benzodiazepine medications for the treatment of depression (Colenda et al., 2003; Metge et al., 2005), a practice that is problematic because benzodiazepines do not effectively treat depressive symptoms and are associated with a high risk of adverse drug reactions in older individuals. The third

issue, utilization of complementary or alternative products and services for the treatment of late life depression, has received relatively little attention in the research literature to date. Survey data indicates that, similar to their low use of conventional therapies for mental health problems, older adults are less likely than younger adults to utilize alternative products or services as a means of ameliorating depressive symptoms (Foster, Phillips, Hamel, & Eisenberg, 2000; Simon, Cherkin, Sherman, Eisenberg, Deyo, & Davis, 2004). Given that most alternative treatments for depression have not yet accumulated adequate research support to be considered empirically supported, it is yet not clear whether older adults' low use of these therapies represents a problem. However, these findings do indicate that older adults are less likely to access and receive a broad range of resources available for the care and treatment of depression.

Consultations with Mental Health Care Professionals

Numerous studies from the United States indicate that, compared to younger adults, older adults are less likely to consult with specialty mental health providers (e.g., psychiatrists, psychologists) and more likely to rely exclusively on general medical providers for mental health care (e.g., primary care physicians; Cooper-Patrick, Crum & Ford, 1994; Cole & Yaffe, 1996; Unützer et al., 1999). Using Epidemiological Catchment Area (ECA) survey data collected in 1980 ($n = 3,479$), German, Shapiro, and Skinner (1985) found that the rate of self-reported consultations with specialist mental health professionals in the six months preceding the survey was 4.1% among adults aged 18-64 years, 0.3% among adults aged 65-74 years, and approximately 0% among adults aged 75 years and older. In contrast, the rate of self-reported consultations with a general medical provider for a mental health problem was 4.0% among adults 18-64, 3.5% among those

aged 65-74 years, and 1.2% among those aged 75 years and older. In a later analysis of ECA data that specifically examined mental health service utilization among respondents who met criteria for major depression according to the third edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-III; American Psychiatric Association, 1981), Cooper-Patrick et al. (1994; $n = 508$) found that adults in all age groups were more likely to use general medical (67%) than specialty mental health services (31%).

Studies using more recent data from samples of Health Management Organization (HMO) patients with diagnosed or recognized depression indicate that compared to middle-aged adults, older adults make fewer visits to mental health specialists (Bartels et al., 1997) and are less likely to have at least one specialty mental health visit in the six months after starting antidepressant medication (Unützer et al., 1999). Low use of specialty mental health services among older adults has also been reported in studies that use more recent (1987-1996) nationally representative community data from the United States (Zuvekas, 2001), studies that sample directly from specialty mental health organizations (Demmler, 1998), and in a large nationally representative study conducted in Australia (Parslow & Jorm, 2000).

Low use of specialty mental health services among older adults with depression is a problematic issue. Of particular note, by receiving care primarily in the general medical sector, older adults do not have the opportunity to benefit from psychosocial treatments with demonstrated efficacy for the treatment of depression in older adults (such as CBT; Mackin & Areán, 2005; Scogin et al., 2005) that are only likely to be available in the specialty care sector. Indeed, out of 2,025 late-life depression treatment episodes identified in a Medicare claims analysis, psychotherapy was used in only 25% of

episodes (Wei, Sambamoorthi, Olfson, Walkup, & Crystal, 2005). Furthermore, use of psychotherapy was significantly associated with availability of specialty mental health services (living in the same county as a psychiatrist or mental health care centre).

Although much of the treatment for late-life depression has been found to fall short of clinical practice guidelines in both specialty mental health and general medical settings (Callahan, 2001), specialty mental health providers are more knowledgeable about treatment options and thus are more likely to provide appropriate treatment for late life depression.

Barriers to optimal care for depression in late life are likely to be both patient- and professional-related. First, as noted earlier, older adults with depression are less likely to experience subjective symptoms of sadness (Gallo et al., 1997) and are also less likely to perceive a need for mental health care even when experiencing significant depressive symptoms (Black, Rabins, German, McGuire & Roca, 1997; Klap et al., 2003). Older adults are more susceptible than younger adults to viewing mental health problems as a stigma (Areán, Alvidrez, Barrera, Robinson, & Hicks, 2002) and, as such, are less likely to seek any kind of care for recognized mental health problems. Perceived stigma has also been found to predict mental health treatment discontinuation among older adults with depression (Sirey et al., 2001). Older adults also have less experience with the specialty mental health sector and thus often prefer to seek care from their general medical provider (German et al., 1985). Although this preference is understandable given the greater familiarity that most older people have with family physicians, this can be a problem because of the demonstrated difficulties of appropriately diagnosing and treating

depression in primary care (Unützer, 2002; Wells, Schoenbaum, Unützer, Lagomarino, & Rubenstein, 1999).

Chronic illness appears to have a complex influence on older adults' likelihood of accessing and receiving professional services for depression. Late-life depression is often characterized by somatic symptoms such as fatigue, insomnia and body pain and is not always accompanied by reported sadness (Gallo et al., 1997). Furthermore, older adults are more likely to experience depression in the context of medical illness, making it a challenge for health care professionals to accurately differentiate the effects of depression from those of chronic medical illness (Kim et al., 2001). On the other hand, there is evidence to suggest that the presence of chronic conditions is associated with greater likelihood of consulting a professional about mental health problems (Young et al., 2001; Hunsley, Lee & Aubry, 2001). Across all adult age groups, socio-demographic characteristics associated with receiving treatment for depression include being female, being unmarried, having more years of education, and being part of the ethnic majority (Diversity & Beaudet, 1997; Klap et al., 2003; Young et al., 2001).

Numerous barriers in primary care settings prevent accurate recognition and diagnosis of depression in older adults, including limited time, heavy caseloads, a tendency for physical concerns to take priority over mental health or emotional concerns, and lack of financial compensation and insurance coverage for the additional time and skills required to adequately assess, treat and monitor depression (Unützer, 2002). In a study of 510 primary care patients in the United Kingdom, general practitioners recognized depressive symptomatology in only 51% of older patients identified as having 'probable pervasive depression' according to assessment with a validated structured

interview (Crawford, Prince, Menezes & Mann, 1998). Furthermore, community-dwelling older adults meeting depression caseness criteria are less likely than younger adults to be referred to specialty mental health services by their primary care physician (Collins, Katona & Orrell, 1997). Finally, there are relatively few specialty mental health professionals who are appropriately trained in the delivery of services to older adults (Qualls, Segal, Norman, Niederehe, & Gallagher-Thompson, 2002).

A model proposed by Andersen (1968) will be used to formulate hypotheses to be tested in Study 1 of my dissertation research. The model identifies three types of factors that predict health service utilization: predisposing, enabling and signaling. Predisposing patient characteristics correlate with but are not a direct cause of greater health service use (e.g., age, gender), whereas enabling factors directly promote utilization (e.g., service accessibility, insurance coverage). Signaling factors propel the patient to seek care, and are the most immediate determinants of utilization. Both depression and chronic medical conditions have been recognized as signaling characteristics (Diverly & Beaudet, 1997) because they increase patients' perceived need for care. Because perceived need for mental health services tends to be low among older adults with mental disorders, it follows that signaling characteristics may need to be especially salient in order to induce older adults to seek care.

Utilization of Antidepressant Medications

Antidepressant medications are highly efficacious for the treatment of late-life depression (Wilson et al., 2001) and are recommended as a first-line treatment for depression in older adults according to professional guidelines (American Psychiatric Association, 2004; Baldwin & Burns, 1998; Canadian Coalition for Seniors' Mental

Health, 2006). Although marked underutilization of antidepressant medications among depressed older adults was common prior to the advent of the selective serotonin reuptake inhibitors (SSRIs; Ancill, Embury, MacEwan & Kennedy, 1988; Heston et al., 1992; Young et al., 1997), the availability of the more easily-tolerated SSRIs appears to have led to a substantial increase in the rate of antidepressant treatment in older adults in many countries (Blazer, Hybels, Fillenbaum, & Pieper, 2005; Mamdani, Parikh, Austin, & Upshur, 2000; Montagnier et al., 2006; Percudani, Barbui, Fortino, & Petrovich, 2005). These results potentially indicate an improvement in the pharmacological treatment of late-life depression, but there are considerable limitations to the available data. The extent to which those in documented need of antidepressant treatment receive these services is difficult to gauge, as there are limited community-based data on the extent to which depressed older adults actually receive treatment and very few studies of antidepressant use among older adults include independent assessments of respondents' current diagnostic status. Finally, it is rare for studies to directly compare antidepressant utilization in older adults to utilization in younger age groups.

A common and serious problem with the pharmacological treatment of late-life depression is the excessively high rate of benzodiazepine (BZD) utilization among older adults with depression. In addition to being an ineffective treatment for depressive symptoms (Flint, 1997), use of benzodiazepines in older adults is associated with an increased risk of adverse drug reactions (McLeod, Huang, Tamblyn, & Gayton, 1997) and cognitive decline (Paterniti, Dufouil, & Alperovitch, 2002), and falls (Ray, Thapa, & Gideon, 2000). Despite the known risks associated with these medications, high rates of benzodiazepine use among older adults have been found in numerous surveys (Berg &

Dellasega, 1996; Blalock et al., 2005; Colenda, Wagenaar, Mickus, Marcus, Tanielian, & Pincus, 2003; Conn, Ferguson, Mandelman, & Ward, 1999; van Dijk, ter Huurne, van den Berg, Brouwers, & de Jong-an den Berg, 2002; Metge, Grymonpre, Dahl, & Yogendran, 2005; Vinkers, Gussekloo, van der Mast, Zitman, & Westendorp, 2003). Furthermore, concomitant use of antidepressants and BZDs has been estimated to occur in over half of all antidepressant users aged 65 and older (van Dijk *et al.*, 2002).

Many of the same barriers that prevent the adequate recognition and diagnosis of late-life depression likely interfere with physicians' ability to prescribe the most effective pharmacologic intervention for the disorder. If depression is not accurately diagnosed in the first place, then it is difficult to provide appropriate pharmacotherapy. As well, it is possible that the challenges involved in prescribing antidepressants may dissuade physicians from implementing this potentially beneficial treatment (Flint, 1997). Finally, the substitution of benzodiazepines for antidepressant treatment may arise from inadequate recognition of depressive symptoms, or from failing to discriminate depression from an anxiety disorder. Comorbidity between depression and anxiety disorders is common among older adults (Flint, 1994), and it can be especially difficult to distinguish between anxiety and depression when both types of symptoms are present. Study 2 will provide current estimates of antidepressant and benzodiazepine use among older Canadian adults with independently assessed depression and examine age-related differences in the rates and predictors of pharmacotherapy for depression.

Utilization of Alternative Products and Services

Complementary and alternative medicine (CAM) is a term referring to a broad range of practitioner-delivered services such as acupuncture and massage therapy and to a

variety of non-prescription health products such as herbal remedies. CAM services and products are increasingly conceptualized as a complement to orthodox health services rather than being defined strictly in relation to their situation outside mainstream health services and products. An estimated 40-50% of American adults of all ages use at least one CAM modality for any reason (Eisenberg et al., 1998); in comparison, an estimated 30-40% of adults aged 65 years and older utilize CAM (Astin, Pelletier, Marie, & Haskell, 2000; Foster et al., 2000). Several studies that directly compared older adults to younger age groups have shown that older age is associated with decreased likelihood of using CAM (Foster et al., 2000; Simon, Cherkin, Sherman, Eisenberg, Deyo, & Davis, 2004; Unützer et al., 2000), although others have found the effect of age to be nonsignificant after accounting for other sociodemographic and health-related factors (Astin, 1998; Kessler et al., 2001; Ness, Cirillo, Weir, Nisly, & Wallace, 2005).

Similar age-related patterns of CAM utilization have been found using Canadian data, although the overall prevalence of utilization tends to be lower in relation to American estimates. Nationally representative data from the 1998/1999 National Population Health Survey indicated that 11% of adults aged 65 years and older had consulted with an alternative health provider in the year preceding the survey, compared with 19% of adults aged 25-44 and 45-64 years (Millar, 2001). It is likely that the substantial differences in the structure and accessibility of health care between Canada and the U.S. account for differential rates of alternative health service use. In another Canadian study, researchers studied the demographic composition of patients of several randomly sampled alternative health practitioners (chiropractors, acupuncturists, naturopaths and Reiki therapists) in the Toronto area and found that 42 of 240 patients

(18%) were aged 55 years and older. In contrast, 35 of 60 patients (58%) of family physicians in the area were 55 years or older (Wellman, Kelner, & Wigdor, 2001).

Less is known about age-related differences in the use of CAM specifically to treat or prevent mental health or emotional problems. Among adults in all age groups, self-reported anxiety or depression are associated with an increased likelihood of using CAM (Druss & Rosenheck, 2000; Grzywacz, Suerken, Quandt, Bell, Lang, & Arcury, 2006; Kessler et al., 2001; Unützer et al., 2000). According to nationally representative data from the United States, over half of all adults with self-reported severe depression report using alternative or complementary therapies to treat mental health symptoms (Kessler et al., 2001). Available data suggest that only a minority of CAM users in all age groups utilize CAM for mental-health related problems. In a population-based sample of nearly 6,000 older adults, 17.9% of CAM users with self-reported anxiety or depression reported having used CAM specifically for mental health reasons (Grzywacz et al., 2006), a figure consistent with the rate of 15% of CAM users reporting mental-health related CAM use in a representative survey of adults of all ages (Unützer et al., 2000).

However, there currently exist no published data comparing rates of mental-health related CAM use in older vs. middle-aged adults, and no data examining predictors of mental-health related CAM utilization. Furthermore, most studies examining the effect of anxiety/depression on CAM use among older adults have used respondents' self-report of these conditions rather than obtaining independent assessment of mental health status. In order to gain a comprehensive profile of the types of care that older adults access for the treatment of depression, it is useful to include utilization of alternative as well as conventional services. Older adults' utilization of alternative health services for the

treatment of depression is interesting because it represents recognition that a mental health problem exists and an active choice to seek help. It has been suggested that older adults may be drawn to alternative health services because of the increased time that can be devoted to their concerns in this arena (Andrews, 2002). By increasing our understanding of the predictors of utilization of alternative health services for late-life depression, we may in turn gain insight into the factors which prevent older adults from utilizing conventional mental health services to the fullest extent possible. It is also important to have as broad a picture as possible regarding the options that older adults may consider when seeking services for mental health problems. This is the goal of the third study in this dissertation.

Limitations of Previous Research

The accuracy of the emerging picture of the associations among age, depression, and health care utilization is potentially limited by the sampling strategies used in this research area. Most studies that compare the utilization of general medical versus specialty mental health services for treatment of late life depression are based either on samples drawn from health management organizations (HMOs; Unützer et al., 1999) or from community surveys conducted more than 20 years ago (Cole & Yaffe, 1996; Cooper-Patrick et al., 1994). The disadvantage of samples based on HMO patients is that they exclude people who are in need of health or mental health services but are not currently receiving them. Reliance on results obtained from older data can also be problematic because it is not clear how patterns of utilization may have changed due to factors such as a new cohort of older adults, advances in effective treatment of depression, greater awareness of the problem of depression in older adults, and

substantive changes in the nature of health and mental health care service provision across North America. Finally, generalizing from American data to the Canadian population may not be warranted owing to fundamental differences between the structure of the health care systems in Canada and the United States. It is thus extraordinarily important to look at age-related patterns in mental health care utilization using Canadian data.

Another important aspect of the dissertation studies was the examination of possible differences among the younger old and the older old. The proportion of oldest old adults (those aged 75 years and older) in relation to the group of adults aged 65 and older in the North American population is expected to rise from one-third at present to almost one half by 2030 (Desjardins & Dumas, 1993; Kinsella & Velkoff, 2001). Only a minority of studies on the utilization of mental health services for depression examine differences among age cohorts within the over-65 age group (German, Shapiro & Skinner, 1985), despite the fact that adults over 65 are an extremely heterogeneous group in terms of mental and physical health status (Spacapan & Oskamp, 1989). Therefore, in order to examine the utilization patterns of adults who are currently in old age as well as the large number of adults who will reach old age in the next three decades, in the present set of studies I compared data from middle-aged adults (45-64 years) to younger old (65-74 years) and older old (75 years and older) adults.

Overview of Studies and Hypotheses

The main goals in the present study were to compare patterns of mental health service utilization among older and middle-aged adults with depression and to identify predictors associated with accessing different types of services. The dissertation consists

of three separate studies in the following domains: 1) Consultations with mental health care professionals, 2) Utilization of psychoactive medications, and 3) Utilization of alternative health services and products. The data source is the Canadian Community Health Survey, Cycles 1.1 and 1.2. Cycle 1.1 (sample size approximately 130,000) yields nationally representative data on a broad range of health related topics including mental health care, whereas Cycle 1.2 (sample size approximately 30,000) provides provincial-level estimates specifically on mental health and related issues. Because utilization of conventional mental health services was intended to be the predominant focus of the Study 1, the larger dataset, Cycle 1.1, was used to examine consultations with mental health care professionals. Data from Cycle 1.2 were used for Studies 2 and 3 because, compared with Cycle 1.1, this survey provides more detailed data on utilization of psychoactive medications and alternative services and products.

Study 1.

The purpose of Study 1 was to describe rates of consultations with mental health care professionals among middle-aged, younger-old and older-old adults with depression, and identify significant predictors of service utilization. I tested a number of specific hypotheses about age, depression, chronic medical conditions and mental health service utilization. First, I predicted that adults aged 65 and over would be less likely than adults aged 45-64 to report consulting with (a) any health care professional for mental or emotional problems and (b) a specialty mental health provider (psychologist or psychiatrist) for mental health and emotional problems. Similarly, I predicted that adults aged 75 and older would be less likely than adults in the two younger age groups to report consulting with any health care professional for mental or emotional problems.

Furthermore, I predicted that age would be a significant and strong predictor of mental health consultations, even after accounting for other relevant variables such as gender, marital status, income, education, and number of chronic medical conditions.

With regards to predictors of mental health care utilization, I expected that factors that “signal” a need for mental health care will have a weaker association with service use among older adults compared to younger adults (e.g., depression, chronic medical conditions, comorbid psychiatric conditions). With respect to depression, I predicted that individuals meeting criteria for depression caseness, compared to those who do not meet criteria, would be more likely to report consulting health care professionals for mental health or emotional problems. I also predicted that individuals’ likelihood of consulting mental health professionals would increase according to increasing number of chronic conditions, even after accounting for the effect of depression. Finally, I predicted that depression and number of chronic medical conditions would have a stronger effect on service utilization in the middle-aged group compared to the two older groups.

Study 2.

In this study, I analyzed the prevalence of benzodiazepine and antidepressant medication use in a large community sample of middle-aged (45-64), younger-old (65-74) and older-old (75 and older) adults drawn from the Canadian Community Health Survey (CCHS) Cycle 1.2: Mental Health and Well-being, 2002. My objectives were to: 1) provide prevalence estimates for antidepressant, benzodiazepine, and concomitant antidepressant-benzodiazepine use and 2) evaluate the relative effect of age group and independently assessed depression on likelihood of using antidepressants or benzodiazepines. Compared to middle-aged adults, I hypothesized that depressed adults

in the two older age groups will be less likely to report antidepressant use, overall, and more likely to report benzodiazepine and concomitant antidepressant-benzodiazepine use. In relation to middle-aged and younger-old adults, I hypothesized that the older-old adults will be least likely to report antidepressant use and most likely to report benzodiazepine and concomitant antidepressant-benzodiazepine use. Because the survey data included actual examination of medication, the study does not rely on self-report, which makes it a particularly valuable contribution to the literature.

Study 3.

In the final study, I examined differences related to age and independently assessed depression and anxiety disorder in the utilization of mental health-related complementary and alternative health care services and products. My objectives were to 1) present utilization rates of complementary and alternative health care services and products commonly used to promote mental health and functioning among middle-aged (65-74), younger-old (65-74) and older-old (75 years and older) adults in Canada, 2) compare these rates to utilization rates of conventional mental health care services and medications available for the treatment of anxiety and depression, and 3) examine the relative contributions of age and depression or anxiety disorder caseness in predicting utilization of conventional and complementary services and medications/ health products after accounting for other relevant predictors (e.g., sex, education, income, chronic physical health conditions).

I hypothesized that respondents meeting caseness criteria for major depression or an anxiety disorder would be more likely to use both conventional and complementary mental health services and products/medications than those not meeting criteria. Given

older adults' relatively low utilization rates of conventional specialty mental health services, I hypothesized that, compared to middle-aged adults, adults aged 65 and older would be less likely to report using complementary services and products for mental health-related reasons. Furthermore, given that the likelihood of using both conventional and complementary services decreases with increasing age (Astin et al., 2000; Grzywacz et al., 2005), I hypothesized that adults in the oldest age group (aged 75 years and older) would be least likely to report using either conventional or complementary services for mental health-related reasons.

CHAPTER 2

MENTAL HEALTH CARE UTILIZATION AMONG OLDER ADULTS WITH
DEPRESSION

Crabb, R. & Hunsley, J. (2006). Utilization of Mental Health Care Services Among Older Adults with Depression. *Journal of Clinical Psychology, 62*, 299-312.

Abstract

Despite the availability of effective treatments for late life depression, data indicate only a small minority of adults over the age of 65 years with depression access any kind of care for emotional or mental health problems. Using data from the Canadian Community Health Survey (Cycle 1.1) we compared patterns of mental health service utilization among middle-aged (45-64 years), younger old (65-74 years) and older old (75 years and older) adults with and without depression and to identify predictors associated with accessing different services ($n = 59,302$). Compared to middle-aged adults with depression, individuals aged 65 and older with depression were less likely to report any mental health consultation in the past year and especially unlikely to report consulting with professionals other than a family physician. Age remained a significant predictor of mental health service utilization even after accounting for other relevant variables such as gender, marital status, years of education, depression caseness and number of chronic medical conditions. Although the prevalence of depression is lower in older age groups, the present study provides compelling evidence that mental health services are particularly under utilized by depressed older adults.

Utilization of Mental Health Care Services Among Older Adults with Depression

The inadequate recognition, diagnosis and treatment of late life depression continue to represent a serious threat to the quality of life, functioning, and mental and physical health of older persons. Despite the availability of efficacious pharmacological and psychosocial treatments for late life depression (Areán & Cook, 2002; Flint & Rifat, 1997), only a small minority of older adults with depression receive any kind of treatment for their condition (Unützer et al., 2000; Young et al., 2001). When older adults do receive treatment for depression, treatment is unlikely to be of an appropriate type, intensity or duration to effectively relieve depressive symptoms (Coyne & Katz, 2001; Flint, 1997). Untreated or undertreated depression in late life is associated with numerous grave consequences, including increased rates of mortality (Black & Markides, 1999; Penninx et al., 1999), poorer functional outcomes (Beekman et al., 1997; Ormel et al., 1998) and diminished health-related quality of life (Unützer et al., 2000).

Research has found that, compared to younger adults, older adults are less likely to consult with specialty mental health providers (e.g., psychologists, psychiatrists) and more likely to consult exclusively with general medical providers (e.g., primary care physicians) for the treatment of depression (Cole & Yaffe, 1996; Cooper-Patrick et al., 1994; Unützer et al., 1999). Barriers to accessing specialty care for depression in late life are likely to be both patient- and professional-related. Older adults with depression are less likely to experience subjective symptoms of sadness (Gallo et al., 1997) and are also less likely to perceive a need for mental health care even when experiencing significant depressive symptoms (Black et al., 1997; Klap et al., 2003). Furthermore, community-dwelling older adults meeting depression caseness criteria are less likely than younger

adults to be referred to specialty mental health services by their primary care physician (Collins et al., 1997). Finally, there are relatively few specialty mental health professionals who are appropriately trained in the delivery of services to older adults (Qualls et al., 2002). By receiving care almost exclusively in the general medical sector, older adults do not have the opportunity to benefit from psychosocial treatments with demonstrated efficacy for the treatment of depression in older adults (such as cognitive behavioral therapy; Areán & Cook, 2002) that are only likely to be available in the specialty care sector. Although much of the treatment for late-life depression has been found to fall short of clinical practice guidelines in both specialty mental health and general medical settings (Callahan, 2001), specialty mental health providers are more knowledgeable about treatment options and thus are more likely to provide appropriate treatment for late life depression.

The accuracy of the emerging picture of the associations among age, depression, and health care utilization is potentially limited by the sampling strategies used in this research area. Most studies that compare the utilization of general medical versus specialty mental health services for treatment of late life depression are based either on samples drawn from health management organizations (HMOs; Unützer et al., 1999) or from community surveys conducted more than 20 years ago (Cole & Yaffe, 1996; Cooper-Patrick et al., 1994). The disadvantage of samples based on HMO patients is that they exclude people who are in need of health or mental health services but are not currently receiving them. Reliance on results obtained from older data can also be problematic because it is not clear how patterns of utilization may have changed due to factors such as a new cohort of older adults, advances in effective treatment of

depression, greater awareness of the problem of depression in older adults, and substantive changes in the nature of health and mental health care service provision across North America.

Our main goals in the present study were to compare patterns of mental health service utilization among older and middle-aged adults with depression and to identify predictors associated with accessing different types of services. To this end we used data from a large and geographically diverse community sample collected for the Canadian Community Health Survey, Cycle 1.1. This nationally representative survey provides current data that are not biased by a reliance on obtaining data only from those who are currently receiving health services. Although data from newer community-based surveys have been used to compare specialty and general mental health utilization between older and younger adults (Klap et al., 2003), our study uses the largest, most recent and most geographically diverse sample available to date. Another important aspect of our study was the examination of possible differences among the younger old and the older old. The proportion of oldest old adults (those aged 75 years and older) in relation to the group of adults aged 65 and older in the North American population is expected to rise from one-third at present to almost one half by 2030 (Desjardins & Dumas, 1993; Kinsella & Velkoff, 2001). Only a minority of studies on the utilization of mental health services for depression examine differences among age cohorts within the over-65 age group (German et al., 1985), despite the fact that adults over 65 are an extremely heterogeneous group in terms of mental and physical health status (Spacapan & Oskamp, 1989). Therefore, in order to examine the utilization patterns of adults who are currently in old age as well as the large number of adults who will reach old age in the next three

decades, in the present study we compared data from middle-aged adults (45-64 years) to younger old (65-74 years) and older old (75 years and older) adults.

Chronic medical illness is prevalent in late life and has a complex influence on older adults' likelihood of accessing and receiving professional services for depression. There is evidence to suggest that the presence of chronic conditions is associated with greater likelihood of consulting with a professional about mental health problems (Young et al., 2001). Therefore, an important aim of our study was to examine how chronic medical conditions interact with age and depression caseness in determining the likelihood of accessing different types of health professionals for mental health care.

We tested a number of specific hypotheses about age, depression, chronic medical conditions and mental health service utilization. First, we predicted that adults aged 65 and over would be less likely than adults aged 45-64 to report consulting with (a) any health care professional for mental or emotional problems and (b) a specialty mental health provider (psychologist or psychiatrist) for mental health and emotional problems. Relatedly, we predicted that adults aged 75 and older would be less likely than adults in the two younger age groups to report consulting with any health care professional for mental or emotional problems. Furthermore, we predicted that age would be a significant and strong predictor of mental health consultations even after accounting for other relevant variables such as gender, marital status, income, education, and number of chronic medical conditions. With respect to depression, we predicted that individuals meeting criteria for depression caseness, compared to those who do not meet criteria, would be more likely to report consulting health care professionals for mental health or emotional problems. We also predicted that individuals' likelihood of consulting mental

health professionals would increase according to increasing number of chronic conditions, even after accounting for the effect of depression. Finally, we predicted that depression and number of chronic medical conditions would have a stronger effect on service utilization in the middle-aged group compared to the two older groups.

Method

Participants and Procedure

The Canadian Community Health Survey (CCHS) was developed by Statistics Canada, Health Canada and the Canadian Institute for Health Information to establish a nationally representative database on the health of Canadians and the effectiveness of Canada's health care system. Cycle 1.1 of the CCHS, the first year and cycle of the survey, was conducted between September 2000 and November 2001. A description of the aims, development and conduct of the CCHS 1.1 are part of the documentation accompanying the publicly available survey data (Statistics Canada, 2003a).

The total sample for the CCHS 1.1 comprised more than 130,000 individuals aged 12 and above from over 125,000 private households in 136 health care regions across all Canadian provinces and territories. The survey sample was limited to persons living in the community, and therefore excludes individuals living on Indian Reserves, residing in institutions (e.g. hospitals, long-term care facilities), employed full-time with the Canadian Armed Forces, or inhabiting remote regions. Three sampling frames were used to select households: an area frame, a random digit dialing (RDD) frame, and a list frame. The majority of households (83%) in the final sample were selected using an area frame where households were chosen at random from geographic or socio-economic strata within each health care region. To augment the area frame, 7% of households were

selected through random digit dialing, where banks of the first 8 digits of 10-digit telephone numbers were created to correspond to health regions. The remaining 10% of sample households were selected using a list frame, wherein telephone numbers from the Canada Post directory were mapped directly onto health care regions and then randomly sampled. Statistics Canada interviewers administered the survey to respondents in person whenever possible (46.6%) and by phone when not possible. The final rate of participation in the survey was 91.4% at the household level and 91.9% at the level of individual respondents, yielding an overall response rate of 84.7%.

The current study uses data from CCHS respondents aged 45 years and older who answered the question “In the past 12 months, have you seen or spoken on the telephone to a health professional about your emotional or mental health?” The total sample size for our study was 59,302 survey respondents. The proportion of missing data in the selected sample was 12% for income and less than 5% for all other variables. Cases with missing data were removed from analysis of variance and logistic regression analyses.

In the calculation of all estimates and tests of significance, population weights were used to adjust for unequal probability of selection for the study. To account for the complex design of the survey, we used an average design effect (DEF) provided by Statistics Canada. The average DEF accounts for the fact that sampling is not entirely random due to selection from strata and clusters, and allows us to calculate estimates that are generalizable to the population. Incorporating the average DEF into calculations approximates the adjustment of variance provided by resampling procedures. We incorporated the average DEF into the calculation of survey weights according to the method suggested by Chen, Breithaupt, and Muhajarine (2000). First, a working weight

was derived by dividing the population weight variable by its mean. An analytic weight was then computed by dividing the working weight by the square root of the average DEF. This weight was used in all analyses we report.

Measures

Socio-demographic characteristics.

Survey respondents were classified into three age groups: middle-aged (45-64 years), younger-old (65-74 years) and older-old (75 years and older). In addition to age, the analysis includes several other variables that have been shown to influence the likelihood that people will seek professional help for emotional or mental problems: gender, marital status, highest level of education, and annual household income. Levels of these variables are depicted as row headings for Table 1.

Chronic medical conditions.

Respondents were asked to report whether they suffered from any of the following medical conditions that had been diagnosed by a health professional and had lasted or were expected to last at least 6 months: food allergies, other allergies, asthma, fibromyalgia, arthritis or rheumatism, back problems excluding those caused by fibromyalgia or arthritis, high blood pressure, migraine headaches, chronic bronchitis, emphysema or chronic obstructive pulmonary disease, diabetes, epilepsy, heart disease, cancer, stomach or intestinal ulcers, effects of a stroke, urinary incontinence, a bowel disorder such as Crohn's disease or colitis, cataracts, glaucoma, a thyroid condition, chronic fatigue syndrome, multiple chemical sensitivities or other conditions.

Types of professionals consulted for mental health problems.

The CCHS asked respondents whether they had consulted with any health professional about their emotional or mental health in the past 12 months. If so, they were asked to report the type of professional(s) with whom they had consulted from the following list: family physician, psychologist, psychiatrist, nurse, social workers or other. In our analyses, we examined contacts with any health professional, as well as with family physicians, psychiatrists and psychologists specifically.

Depression.

The Composite International Diagnostic Interview Short Form Major Depression module (CIDI-SFMD; Kessler et al., 1994) was used to assess depression. The original full-scale CIDI was designed to provide epidemiological diagnoses that correspond to ICD-10 and DSM-III-R criteria and has been subjected to numerous validity studies that indicate its significant correlation with independent clinical diagnoses (Wittchen, 1994). The short form was derived using data from the National Comorbidity Survey wherein items that were most predictive of receiving a depression diagnosis according to the full-scale CIDI were selected for inclusion in the CIDI-SF (Kessler et al., 1994). The developers of the CIDI-SFMD reported good sensitivity and specificity for the measure when compared to the full scale CIDI major depression module (89.6% and 93.9% respectively; Kessler, Andrews, Mroczek, Usmun & Wittchen, 1998). In an independent validation study using Canadian data, Patten and colleagues (Patten, 1997; Patten, Brandon-Christie, Devji & Sedmark, 2000) found the CIDI-SFMD to have excellent sensitivity (98%) and relatively good specificity (73%). Although the CIDI-SF has not been specifically validated for use in older populations, both the full scale and short form CIDI have been used in numerous studies to determine the prevalence of major

depression in samples of older adults (e.g. Heun, Kockler, & Papassotiropoulos, 2000; Mojtabai & Olfson, 2004; Naumann & Byrne, 2004; Steffick, 2000). A cutoff score of five symptoms (out of a possible seven) on the CIDI-SFMD scale identified respondents who have a 90% likelihood of meeting DSM-III-R criteria for major depression if assessed using the more comprehensive full scale CIDI. This cutoff was used in our study to classify respondents as depressed or not depressed.

Results

All descriptive and inferential statistics were conducted using SPSS 10.1. We first present results for the rates of depression caseness and consultations for mental health concerns. Next we present the results of regression analyses used to test our hypotheses about the predictors of seeking mental health services.

Prevalence of Depression According to Age Group and Other Variables

Chi square statistics were used to compare proportions of individuals who reported consulting various mental health professionals according to age group and depression caseness. The proportion of respondents meeting criteria for major depression caseness varied significantly according to age group ($\chi^2(2, N = 38,766) = 203.28, p < .001, r = 0.072$). Among respondents aged 45-64, 6.8% met criteria for major depression, compared to 3.5% of respondents aged 65-74 and 3.0% of those aged 75 and older. Among respondents in all age categories, being female, being unmarried (widowed, separated or divorced) and having attained fewer academic degrees were associated with a higher proportion of major depression (see Table 2.1).

One-way analysis of variance was used to examine the relationship among age, depression and number of chronic medical conditions. The effect size (partial η^2)

Table 2.1

*Percentage of Survey Respondents Meeting Criteria for Major Depression**According to Demographic Predictors*

	45-64 years (n=35,958)	Age Group 65-74 years (n=12,788)	75 years and older (n=10,576)
Sex			
Male	4.9	2.5	2.0
Female	8.7	4.4	3.7
Marital status			
Married	5.1	2.5	2.4
Common-law	6.7	2.3	0
Widowed/separated/divorced	12.8	6.3	3.8
Single (never married)	11.4	2.9	1.7
Education			
Less than secondary	7.7	4.3	3.4
Secondary graduation	7.4	3.2	2.7
Some post-secondary	7.6	3.8	3.4
Secondary graduation	6.1	2.5	2.1
Annual household income			
No income	1.8	0	7.9
<\$15,000	16.3	6.6	3.9
\$15,000-29,999	10.3	4.0	2.3
\$30,000-49,999	6.4	3.0	3.1
\$50,000-79,999	6.0	3.1	2.7
\$80,000 +	4.8	2.4	3.9

represents the proportion of the total variance attributable to the variable. Individuals meeting depression caseness criteria reported a significantly higher mean number of chronic medical conditions (2.8) than those who did not meet criteria [1.8; $F(1, 33,675) = 300.14, p < .001, \text{partial } \eta^2 = .009$]. Increasing age was also significantly associated with a higher number of chronic medical conditions, $F(2, 33,675) = 164.95, p < .001, \text{partial } \eta^2 = .01$. Respondents aged 45-64 reported a mean of 1.6 conditions, compared to 2.3 among respondents aged 65-74 and 2.7 among those 75 years and older. There was no significant age and depression interaction on number of reported chronic medical conditions [$F(2, 33,675) = 1.48, ns, \text{partial } \eta^2 < .001$].

Consultations with Health Professionals for Mental Health or Emotional Problems

Consultations with any health professional for a mental health or emotional problem were more likely among persons meeting criteria for depression caseness than among those who did not meet criteria (43.1% vs. 4.7%; $\chi^2(1, N = 38,767) = 4788.26, p < .001, r = 0.75$). Regardless of depressive caseness, the following characteristics were associated with a higher likelihood of consulting for mental health concerns: being female, not married, having a higher level of completed education and having a higher number of chronic medical conditions (see Table 2.2). Analysis of variance was used to test the relationship between number of chronic conditions and any mental health consultations, using age and depression as covariates. After controlling for the effect of age and depression, individuals who had made at least one mental health consultation in the past year reported a significantly higher mean number of chronic medical conditions compared to individuals who had not made a mental health consultation [2.6 vs. 1.8; $F(1, 33,342) = 343.52, p < .001, \text{partial } \eta^2 = .01$].

Mental health care utilization in older adults 35

Table 2.2

Percentage of Survey Respondents Reporting at Least One Consultation with Any Health Professional for Mental Health and

Emotional Problems According to Age and Depression Caseness

	Age Group					
	45-64 years (n=2,775)		65-74 years (n=12,310)		75 years and older (n=10,279)	
	Depressed	Non-depressed	Depressed	Non-depressed	Depressed	Non-depressed
Sex						
Male	42.7	4.1	31.8	2.2	11.9	1.9
Female	49.3	7.4	30.5	3.6	24.1	2.5
Marital status						
Married	43.4	4.5	31.0	2.5	21.7	1.8
Common-law	43.4	6.1	0*	4.8	0*	0*
Widowed/separated/divorced	54.1	10.5	29.5	4.0	21.1	2.8
Single (never married)	46.5	7.6	60.0	3.8	25.0	1.7
Education						
Less than secondary	40.0	4.2	28.2	2.5	15.3	2.1
Secondary graduation	42.4	4.4	23.8	2.5	25.0	2.2
Some post-secondary	54.1	9.5	64.3	2.6	22.2	2.4
Secondary graduation	52.3	6.5	34.5	3.9	44.4	2.6
Annual household income						
No income	33.3	2.8	0*	4.4	0*	5.7
<\$15,000	47.8	10.3	36.4	3.7	28.6	2.6
\$15,000-29,999	49.1	6.6	25.0	3.2	15.0	2.6

	Mental health care utilization in older adults 36					
\$30,000-49,999	45.7	5.2	38.6	2.6	31.0	1.5
\$50,000-79,999	47.2	5.2	28.1	3.4	12.5	2.2
\$80,000 +	45.2	5.9	21.4	2.5	10.0	2.5

*Denotes empty cell

Age had a significant effect on the proportion of persons who reported consulting with any health professional for emotional or mental health problems ($\chi^2 (2, N = 38,766) = 348.89, p < .001, r = 0.095$): 8.5% of persons aged 45-64 reported at least one consultation with any professional, compared to 3.9% of those aged 65-74 and 2.8% of those aged 75 years and older. Furthermore, the effect of age group on consultations with any mental health professional was significant regardless of whether respondents met depression caseness criteria ($\chi^2 (2, N = 2194) = 57.89, p < .001, r = 0.16$ among depressed respondents and $\chi^2 (2, N = 36,573) = 174.00, p < .001, r = 0.069$ among non-depressed respondents). Rates of consulting among depressed respondents in the 45-64, 65-74, and 75 and older groups were: 46.9%, 31.1% and 20.9% for any mental health professional ($\chi^2 (2, N = 2194) = 57.89, p < .001, r = 0.16$); 25.4%, 18.4%, and 15.8% for family physicians ($\chi^2 (2, N = 2194) = 12.30, p < .01, r = 0.075$); 13.7%, 7.5% and 5.1% for psychiatrists ($\chi^2 (2, N = 2194) = 16.71, p < .001, r = 0.087$); and 10.3%, 4.9% and 2.5% for psychologists ($\chi^2 (2, N = 2194) = 17.31, p < .001, r = 0.089$).

Odds of Consulting Mental Health Professionals According to Predictors

Logistic regression was used to determine odds ratios for consulting health professionals for mental or emotional problems according to the level of each predictor variable. Age, gender, marital status, depression caseness, education, income and number of chronic medical conditions were entered into direct logistic regression equations to predict the probability of consulting with any health care professional for a mental health or emotional problem. Separate models were tested for consultations with family physicians, psychiatrists and psychologists.

The following characteristics were associated with significantly increased odds of consulting any health professional for a mental health or emotional problem: being younger, female, unmarried, having attained a higher level of education, meeting depression caseness criteria, and reporting a higher number of chronic medical conditions. Compared to individuals aged 75 years and older, individuals aged 45-64 years were approximately four times more likely to report a mental health consultation with any professional (*OR*, 3.93, 95% *CI*, 3.22-4.80). Respondents aged 65-74 years were 1.7 times more likely to report any consultation compared to respondents aged 75 years and older (*OR*, 1.71, 95% *CI*, 1.37-2.15). Individuals meeting criteria for depression were over ten times more likely to report a mental health consultation compared to individuals who did not meet criteria (*OR*, 10.58; 95% *CI*, 9.48-11.80). The likelihood of consulting any mental health professional increased for each additional chronic medical condition reported by respondents (*OR*, 1.27; 95% *CI*, 1.24-1.31).

When separate regression analyses were conducted for consultations with family physicians, psychiatrists, and psychologists, similar patterns of significant sociodemographic predictors were found across all models. In all three models, being younger, having attained a higher level of education, meeting depression caseness criteria, and reporting a higher number of chronic medical conditions were significantly related to mental health consultations. Differences were found among the models with respect to the significance of gender, marital status and age group. Whereas being female was associated with a greater likelihood of consulting a family physician (*OR*, 1.62; 95% *CI*, 1.42-1.84), gender was not a significant predictor of

consulting a psychiatrist or psychologist. Being married was associated with significantly reduced odds of having a mental health consultation with a psychiatrist (*OR*, 0.50; 95% *CI*, 0.38-0.67) or psychologist (*OR*, 0.43; 95% *CI*, 0.32-0.59), but was not a significant predictor of mental health consultations with a family physician.

Age-related differences were also found among the three models. After accounting for all other predictors, the oldest and youngest age groups differed most in their likelihood of consulting psychiatrists (*OR*, 4.33; 95% *CI*, 2.70-6.93) and psychologists (*OR*, 5.74; 95% *CI*, 3.24-10.19) and differed least in their likelihood of consulting with family physicians (*OR*, 2.38; 95% *CI*, 1.88-3.03), as indicated by the absolute values of the odds ratios. In relation to individuals aged 75 and older, individuals aged 65-74 were significantly more likely to consult a psychiatrist (*OR*, 2.68; 95% *CI*, 1.61-4.46). However, the two older age groups did not differ significantly in terms of consultations with family physicians (*OR*, 1.27; 95% *CI*, 0.96-1.67) or psychologists (*OR*, 1.46; 95% *CI*, .74-2.87).

Discussion

The present results using a large, recent and representative community data set are generally consistent with the conclusions of both older studies and studies with a narrower sampling frame that indicate adults aged 65 and older with depression are less likely than adults aged 45-64 years with depression to consult with any health care professional about their mental or emotional health. Our results further indicate that older adults (i.e., those over 65 years) are especially less likely to consult specialty mental health professionals (psychologists or psychiatrists) compared to middle-aged adults. Even after accounting for other sociodemographic and health-

related predictors, the odds of having at least one mental health consultation in the past year remained lower among older compared with middle-aged adults.

In community samples, the prevalence of major depression among adults aged 65 and older is typically estimated to be under 4% (Cole & Yaffe, 1996; Steffens et al., 2000; Turvey, Wallace, & Herzog, 1999). According to our results, the 12-month prevalence of major depression in the Canadian community was estimated to be 7.7% among adults aged 45-64 years, 3.7% among adults aged 65-74 years and 2.8% among adults 75 years and older. The prevalence of major depression is consistently found to be lower among adults aged 65 and older compared to middle-aged adults across numerous studies using different samples and methods of measurement (Henderson et al., 1998; Mojtabai & Olfson, 2004).

A substantial age effect clearly exists in the observed prevalence of depression in middle-aged and older adults, as indicated by the fact that the prevalence in the two older age groups was approximately half that in the middle-aged group. However, the effect size ($r = 0.072$) indicates that the influence of age, *per se*, is small in accounting for the prevalence of depression. The lower prevalence of depression among older compared to middle-aged adults is likely not be an effect of aging *per se*, as lifetime rates of depression are projected to be higher in cohorts that are currently young or middle-aged compared to current older cohorts (Jeste et al., 1999; Wittchen et al., 1994). Both societal and psychological factors have been hypothesized to contribute to the higher level of depression in younger cohorts, but the conceptualization and measurement of late-life depression may also play a role in age-related differences in depression (Mojtabai & Olfson, 2004). For instance, the

unique characteristics of late-life depression (e.g., lack of subjective sadness, predominance of somatic symptoms) may not always be detected using the standard DSM- or ICD-based measures of depression employed in most epidemiological studies. Additionally, lower prevalence rates among older adults may reflect differential mortality rates according to depression caseness, wherein individuals who survive until older age represent the most resilient members of their cohort.

Among survey respondents who met criteria for major depression according to the CIDI-SFMD, a minority of people in all age groups reported any mental health consultation in the year preceding the survey, a finding consistent with other community-based survey studies (Diverly & Beaudet, 1997; Henderson, Andrews & Hall, 2000; Hunsley et al., 2000). This indicates that far more needs to be done to ensure that all people with significant mental health problems access appropriate health care services. Mental health care utilization among people with depression varied significantly according to age, from 46.9% of people aged 45-64 years, to 31.1% of adults 65-74 years and 20.9% of those aged 75 and older. As indicated by effect size estimates, age had a moderate effect on whether any mental health consultations occurred for depressed individuals ($r = 0.35$), with small but consistent age effects evident when the three specific professional groups were considered (r -values ranging between 0.075 and 0.089). Thus, even though the prevalence of depression is lower in older age groups, these findings provide compelling evidence for the underutilization of mental health services among depressed older adults. Compared to the mental health care utilization rate of depressed middle-aged adults,

the utilization rate is approximately one-third lower for depressed younger old adults and over one-half lower for depressed older old adults.

In all age groups, people with depression were more likely to access mental health care from a family physician than from a specialty mental health provider (a psychologist or psychiatrist). Compared to the middle-aged group, adults aged 65 and older were especially unlikely to consult with specialty providers for mental health care. Our pattern of results coincides with prior survey-based research, suggesting that over the past 25 years little has changed in the limited use of specialist mental health services by older adults (German et al., 1985; Klap et al., 2003; Olfson & Pincus, 1996; Unützer et al., 1999). For example, a re-analysis of data from the Epidemiological Catchment Area (ECA) study conducted in the early 1980s showed that only 5.2% of community-dwelling American adults aged 65 and older who met criteria for major depression according to the Diagnostic Interview Schedule reported a specialty mental health consultation in the past year, compared to 21% of those 51-65 years (Cooper-Patrick et al., 1994). The stability of such findings over time is remarkable, as it seems that underutilization continues despite changes in the cohort of older adults and changes in the nature of mental health services.

The oldest group of older adults in this study, those aged 75 and older, were least likely to report any mental health consultations. Although relatively few studies have examined age-related differences within the 65 and older age group, our finding is consistent with analyses of ECA data that indicated particularly low rates of any mental health service use among adults 75 years and older (German et al., 1985). In a more recent analysis, 0.6% of adults aged 75 and older used ambulatory mental health

services, compared to rates of 1.2% among adults aged 65-74 and 1.5% among adults 18-64 (Demmler, 1998). We found a mixed pattern of results regarding relative rates of specialty mental health service use among adults 65 years and older. Compared to adults aged 65-74 years, adults aged 75 years and older were significantly less likely to consult family physicians and psychiatrists, but equally (un)likely to consult psychologists.

It is likely that both service barriers and protective factors play a role in the extremely low use of mental health services among the oldest adults (those aged 75 years and older) in our study, even after controlling for the effect of depression status and chronic physical illness. In terms of barriers, it is possible that a diminished number of informal supports among the oldest adults, a variable that has been found to promote seeking professional services, in turn reduces the likelihood of contacting professionals when mental health care is needed (Geerlings, Pot, Twisk, & Deeg, 2005). On the other hand, lower use of mental health services may be indicative of protective factors such as high perceived self-reliance and inner strength among the oldest-old. For example, self-reported levels of resilience, sense of coherence, purpose in life, and self-transcendence among a group of 125 oldest-old adults (aged 85 years and older) were found to be at least as high or higher than those reported by adults aged 21-74 (Nygren, Aléx, Jonsén, Gustafson, Norberg, & Lundman, 2005). It is notable that these results were obtained despite increased rates of disability, chronic physical illness, and bereavement among the oldest-old. However, it is not clear whether these putative protective factors are truly protective (e.g., an older adult who uses internal resources to cope with depression) or whether they can also represent an

impediment to seeking appropriate care (e.g., an older adult who believes it is unacceptable to seek professional help to cope with a personal problem).

Apart from age, significant sociodemographic predictors of mental health care utilization identified in the present study are consistent with those found in previous research (Klap et al., 2003; Olfson & Pincus, 1996; Swartz, Wagner, Swanson, Burns, George, & Padgett, 1998): being female, not married, and having more education were all associated with a greater likelihood of consulting health professionals for emotional and mental health problems. When the effects of age and depression caseness were controlled for statistically, the presence of chronic illnesses significantly positively influenced the likelihood of consulting for mental health problems. The impact of chronic illness on mental health care utilization may be due to factors such as the sensitization of the person to the importance of obtaining health care services and the increased detection of a mental health problem by health care providers involved in the treatment of the chronic conditions (cf. Diverty & Beaudet, 1997). However, according to our estimate of effect size (partial $\eta^2 = 0.01$), the presence of chronic medical conditions had relatively little effect on whether or not mental health consultations occurred, once age and depression were controlled for.

Some limitations must be noted regarding the methodology of the study. The survey sample excludes people living on reserves, in remote areas and in institutions such as nursing homes, as well as people who are homeless. Therefore, the present results cannot be generalized to these important subpopulations. The validity of the assessment of major depression with the CIDI-SF may be compromised because the measure indicates probable diagnoses of the disorder based on Criteria A, B, and C

from the DSM-IV and does not assess exclusionary criteria such as medical conditions or depression in the context of another mental disorder. As noted previously, the validity and reliability of the CIDI and CIDI-SF have not been established within older populations, and it is possible that DSM-based measures do not accurately capture the complex presentation of depression in late life. On the other hand, the widespread use of the CIDI-SF facilitates the comparison of the present data with previous survey data sets that have used the CIDI or other WHO-developed (i.e. DSM- and ICD-based) measures (e.g. Steffick, 2000). With respect to the assessment of utilization of mental health services, the survey only asked about consultation for mental health problems in general and did not specifically inquire about consultation for the treatment of depression. The survey questions were limited to mental health services provided by health care professionals and excluded services provided by alternative practitioners, members of the clergy, or informal supports. Finally, the cross-sectional design of the survey did not allow us to discriminate between age- and cohort-related effects on mental health care utilization. Longitudinal studies on utilization of mental health care services are the only means of distinguishing age and cohort effects, and are essential in projecting the future needs and demands for mental health services for late life depression.

Despite these limitations, the present study provides important findings about age-related differences in mental health care utilization among people with depression using the largest nationally representative sample to date. The identified predictors of accessing or not accessing mental health care are based on community data from a sample that includes people who have untreated or unidentified depression as well as

those who are receiving treatment. The results of the current study clearly indicate that mental health utilization patterns differ significantly among middle-aged, younger- and older-older adults. The demand for mental health services among members of the currently middle-aged cohort is projected to remain high as they reach their later years, and evidence of this shift is already found in rising rates of psychotherapy use among adults aged 55-64 (Olfson, Marcus, Druss, & Pincus, 2002). Should these trends continue, the apparently stable pattern of underutilization of mental health services by older adults may change dramatically. Accordingly, it is important that researchers continue to track the mental health service needs of older adults in order to ensure that care is accessible and maximally effective for both the current and coming generations of older adults.

CHAPTER 3

UTILIZATION OF ANTIDEPRESSANT MEDICATIONS AND
BENZODIAZEPINES AMONG OLDER ADULTS IN CANADA

Crabb, R. & Hunsley, J. (2008). *Utilization of antidepressant medications and benzodiazepines among older adults in Canada*. Manuscript in preparation.

Abstract

In this study, we analyzed the prevalence of benzodiazepine and antidepressant medication use in a large community sample of middle-aged (45-64 years; $n = 10,762$), younger-old (65-74 years; $n = 4113$) and older-old (75 years and older; $n = 3623$) adults drawn from the Canadian Community Health Survey (CCHS) Cycle 1.2: Mental Health and Well-being, 2002. Compared to middle-aged adults, younger-old and older-old adults continue to be less likely to use antidepressant medications and more likely to use benzodiazepines. When considered in the context of a broad range of sociodemographic and clinical predictors, age was significantly associated with the likelihood of benzodiazepine use but not with the likelihood of antidepressant medication or concomitant benzodiazepine and antidepressant medication use. Compared to adults aged 45-64 years, adults aged 65-74 years were 1.5 times more likely and adults aged 75 years and older were 2.5 times more likely to report having taken a benzodiazepine in the two days prior to being surveyed. Overall, high rates of benzodiazepine use coupled with low rates of antidepressant medications observed among depressed older adults suggest substantial inadequacies in the pharmacological treatment of late-life depression.

Utilization of Antidepressants and Benzodiazepines among Older Adults in Canada

Antidepressant medications are highly efficacious for the treatment of late-life depression (Wilson et al., 2000) and are recommended as a first-line treatment for depression in older adults according to professional guidelines (American Psychiatric Association, 2004; Canadian Coalition for Seniors' Mental Health, 2006; Baldwin & Burns (Royal College of Psychiatrists), 1998). Although marked underutilization of antidepressant medications among depressed older adults was common prior to the advent of the selective serotonin reuptake inhibitors (SSRIs; Ancill et al., 1988; Heston et al., 1992; Young et al., 1997), the availability of the more easily-tolerated SSRIs appears to have led to a substantial increase in the rate of antidepressant treatment in older adults in many countries (Blazer et al., 2005; Mamdani et al., 2000; Montagnier et al., 2006; Percudani et al., 2005). These results potentially indicate an improvement in the pharmacological treatment of late-life depression, but there are considerable limitations to the available data. The extent to which those in documented need of antidepressant treatment receive these services is difficult to gauge, as there are limited community-based data on the extent to which depressed older adults actually receive treatment and very few studies of antidepressant use among older adults include independent assessments of respondents' current diagnostic status. Finally, it is rare for studies to directly compare antidepressant utilization in older adults to utilization in younger age groups.

A common and serious problem with the pharmacological treatment of late-life depression is the excessively high rate of benzodiazepine (BZD) utilization among older adults with depression. In addition to being an ineffective treatment for

depressive symptoms (Flint, 1997), use of benzodiazepines in older adults is associated with an increased risk of adverse drug reactions (McLeod et al., 1997), cognitive decline (Paterniti et al., 2002), and falls (Ray et al., 2000). Despite the known risks associated with these medications, high rates of benzodiazepine use among older adults have been found in numerous surveys (Berg et al., 1996; Blalock et al., 2005; Colenda et al., 2003; Conn et al., 1999; van Dijk et al., 2002; Metge et al., 2005; Vinkers et al., 2003). Furthermore, concomitant use of antidepressants and BZDs has been estimated to occur in over half of all antidepressant users aged 65 and older (van Dijk et al., 2002).

In this study, we analyze the prevalence of benzodiazepine and antidepressant medication use in a large community sample of middle-aged (45-64), younger-old (65-74) and older-old (75 and older) adults drawn from the Canadian Community Health Survey (CCHS) Cycle 1.2: Mental Health and Well-being, 2002. Our objectives are to: 1) provide prevalence estimates for antidepressant, benzodiazepine, and concomitant antidepressant-benzodiazepine use and 2) evaluate the relative effect of age group and independently assessed depression on likelihood of using antidepressants or benzodiazepines. Compared to middle-aged adults, we hypothesized that depressed adults in the two older age groups will be less likely to report antidepressant use, overall, and more likely to report benzodiazepine and concomitant antidepressant-benzodiazepine use. In relation to middle-aged and younger-old adults, we hypothesized that the older-old adults will be least likely to report antidepressant use and most likely to report benzodiazepine and concomitant antidepressant-benzodiazepine use.

Method

Instrument

This study used data from the Canadian Community Health Survey (CCHS), Cycle 1.2. The CCHS 1.2 is a cross-sectional survey that provides nation-wide estimates on various issues related to mental health and well-being, including determinants of mental health status and mental health system utilization. Data collection was completed between May and December 2002. Further details on the objectives, development, and conduct of the CCHS 1.2 are available in the documentation accompanying the data set (Statistics Canada, 2003b).

Sampling Procedures

The Canadian Community Health Survey Cycle 1.2 included approximately 37,000 individuals aged 15 and over from across the ten Canadian provinces (Statistics Canada, 2003b). Excluded from the survey sample were individuals living on Indian Reserves and Crown Lands, residing in health care institutions, employed full-time with the Canadian Armed Forces, as well as were residents of the territories and inhabitants of certain remote regions. Respondents were selected according to a multistage stratified design. Populated areas were divided into major urban centres, cities and rural regions and each region was subdivided into geographical or socio-economic strata. Strata were divided into clusters defined by a certain number of dwellings in urban areas and by census enumeration boundaries in small cities and rural regions. Clusters were randomly selected from each stratum and then households were randomly selected from within each cluster. Finally, one or two members of each household were selected to participate in the survey, according to

the size and age composition of each household. Individuals aged 15-24 and aged 65 and older were strategically oversampled to ensure adequate representation of these two groups. The sampling frame used for the CCHS 1.2 covered approximately 98% of the community-dwelling population aged 15 and over across the ten provinces.

Trained interviewers administered the computer-assisted survey in person to respondents whenever possible (86% of cases), and by telephone when an in-person interview was not possible. Informed consent for participation was obtained from each respondent. Survey non-participation was minimized by encouraging selected persons to complete the survey on at least three occasions following an initial refusal. The survey's final participation rate was 86.5% at the household level, 89.0% at the person level and 77.0% overall. The subsample selected for the present study consisted of 10,762 individuals aged 45-64, 4113 individuals aged 65-74, and 3623 individuals aged 75 years and older.

Medication Use

Respondents were asked to report exact medication names and produce containers for all medications used the past 2 days. The generic name of the each medication as indicated on the container's label was recorded and translated into its corresponding Anatomic Therapeutic Chemical (ATC) codes, which allow accurate classification of individual drugs according to relevant sub-categories. For example, the ATC code for fluoxetine (N06AB03) indicates that it is a nervous system drug (N), a psychoanaleptic (N06), an antidepressant (N06A), and an SSRI (N06AB). According to ATC codes, medications were classified as antidepressants or benzodiazepines. Antidepressants included selective serotonin reuptake inhibitors

(SSRIs; sertraline, zimeldine, fluoxetine, citalopram), monoamine oxidase inhibitors (nialamide, phenelzine, moclobemide), tricyclic antidepressants (TCAs) (desipramine, imipramine, imipramine oxide, clomipramine, opipramol, trimipramine, dibenzepine, amitriptyline, nortriptyline, protriptyline), and “other” antidepressants (mirtazepine, bupropion, reboxetine), but were not divided according to class in analyses due to small cell sizes for some subtypes. Benzodiazepines were subclassified according to the ATC system as those with a primarily anxiolytic effect (diazepam, chlordiazepoxide, medazepam, oxazepam, potassium clorazepate, lorazepam, and bromazepam) and those with a primarily sedative or hypnotic effect (flurazepam, nitrazepam, flunitrazepam, estazolam, and zopiclone).

Predictor Variables

Socio-demographic characteristics.

In addition to age, the current analyses included several other socio-demographic variables: sex, marital status (married or common-law vs. widowed, divorced, separated, or never married), ethnic background (Caucasian vs. non-Caucasian), education (less than secondary graduation vs. secondary graduation or higher), 12-month household income (expressed in thousands of Canadian dollars), and insurance for prescription medications (having vs. not having insurance).

Mental disorders.

Mental disorders were assessed using an adapted version of the World Mental Health Composite International Diagnostic Interview (WMH-CIDI), which estimates the probability that a respondent meet diagnostic criteria for various disorders in accordance with the definitions given by the *ICD-10* and the *DSM-IV* (Kessler &

Ustün, 2004). The WMH-CIDI was developed by the World Health Organization (WHO) in the late 1990s as a standardized measure to estimate and compare the prevalence of mental disorders in various countries around the world. The original CIDI, released in 1990, has been subjected to numerous validity studies indicating its significant correlation with independent clinical diagnoses (Wittchen, 1994). The WMH-CIDI is intended to improve the validity of diagnoses given by the CIDI by modifying questions to facilitate respondents' retrieval of memories related to symptoms and by including sections on severity and functional limitations associated with mental disorders.

The WMH-CIDI was used to assess CCHS 1.2 respondents for various mental disorders occurring over the lifetime and within the most recent 12 months. In the current analyses, we consider diagnoses of major depressive episode and selected anxiety disorders (panic disorder, agoraphobia, and social phobia) occurring in the 12 months prior to interview.

Physical health status.

In order to obtain an index of general physical health, we derived a variable indicating the number of chronic physical conditions (i.e., conditions that had been diagnosed by a health care professional and were expected to last six or more months) reported by each respondent (cf. Crabb & Hunsley, 2006). Conditions included in the calculation of this variable were: food allergies, other allergies, asthma, fibromyalgia, arthritis, back problems, high blood pressure, migraine headaches, diabetes, epilepsy, heart disease, cancer, stomach/intestinal ulcers, stroke, Crohn's disease, cataracts,

glaucoma, thyroid problems, chronic fatigue syndrome, multiple chemical sensitivities, chronic bronchitis, and emphysema.

Mental health services use.

Respondents were asked whether they had consulted various health care professionals for a mental health or emotional problem in the 12 months before the survey. In the current analyses, consultations with psychiatrists and general practitioners (the two provider types most likely to prescribe psychoactive medications) are analyzed as potential predictors of medication use.

Missing Data

The proportion of missing data was less than 1% for all variables in the current analyses, with the exception of income for which 21% of cases had missing data. Because of the high proportion of missing data on this variable, missing values on income were imputed using a regression model based on age, sex, education, and province. Cases with missing data for any variable in an analysis were excluded from that particular analysis.

Statistical Analysis

Cross-tabulations and chi square statistics were used to obtain and compare point estimates for utilization of medications according to age group and depression caseness. Logistic regression modeling was used to determine odds ratios for utilization of mental health services according to levels of predictor variables. All point estimates reported in text and tables were calculated with SPSS 13.0, using population weights to adjust for unequal probability of selection for the study due to factors such as household non-response and provincial buy-ins. Tests of significance

were calculated using BOOTVAR, a statistical software program that uses bootstrap resampling methods to adjust for stratification and clustering in the sampling design. It should be noted that because the resampling software includes a correction to adjust for clustering and stratification in chi square tests, degrees of freedom associated with chi square comparisons frequently have non-integar values (Rao & Scott, 1984).

Results

Demographic and Clinical Characteristics of Sample

Demographic and clinical characteristics of survey respondents according to age group are presented on Table 3.1. Compared to respondents aged 45-64, respondents in older age groups were more likely to be female ($\chi^2(1, N = 18,498) = 48.84, p < 0.001$) and Caucasian ($\chi^2(1.90, N = 18,380) = 84.36, p < 0.001$), and less likely to be in a current marriage or common-law relationship ($\chi^2(1.93, N = 18,478) = 482.45, p < 0.001$). Older respondents reported lower incomes ($F(2, 18,498) = 515010.76, p < 0.001, \text{partial } \eta^2 = 0.083$) and had on average attained fewer academic degrees ($\chi^2(1.99, N = 18,369) = 670.55, p < 0.001$). Older individuals were significantly less likely to report ever having had a session of counseling lasting at least 15 minutes ($\chi^2(1.67, N = 18,412) = 274.36, p < 0.001$). Age was not significantly related to having insurance to help cover the cost of prescription medications ($\chi^2(1.95, N = 18,396) = 4.86, p = 0.085$).

Older respondents reported having a greater number of chronic physical health conditions. The mean number of reported chronic conditions was 1.8, 2.4, and 2.9 for persons aged 45-64, 65-74, and 75 years and older, respectively ($F(2, 18,4335) = 327082.2, p < 0.001, \text{partial } \eta^2 = 0.055$). In contrast, respondents aged 65 years and

older were less likely to meet criteria for a major depressive episode occurring in the past 12 months ($\chi^2(1.85, N = 18,363) = 54.97, p < 0.001$). Across age groups, a significantly higher 12-month prevalence of major depression was found among women than among men (4.3% vs. 3.1%; $\chi^2(1, N = 18,363) = 8.18, p < 0.001$) and persons who were widowed, divorced, or separated compared to those who were married (6.5% vs. 2.6%; $\chi^2(1, N = 18,344) = 50.87, p < 0.001$). The 12-month prevalence of major depression was not significantly related to Caucasian versus non-Caucasian ethnicity (3.8 vs. 2.7; $\chi^2(1, N = 18,249) = 1.51, p = 0.22$), or level of education (3.9% vs. 3.3%; $\chi^2(1, N = 18,240) = 2.56, p = 0.11$).

Table 3.1

*Demographic and Clinical Characteristics of Survey Respondents According to Age**Group*

	Age Group		
	45-64 Years	65-74 Years	75 Years and Older
Demographic Characteristics			
Sex			
Male	49.5	46.7	39.6
Female	50.5	53.3	60.4
Marital Status			
Married or common-law	77.8	67.5	47.6
Widowed, divorced, separated, or never married	22.2	32.5	52.4
Ethnicity			
Caucasian	85.8	90.8	94.7
Other	14.2	9.2	5.3
Education			
Less than secondary graduation	22.0	44.7	55.1
Secondary graduation	78.0	55.3	44.9
Household Income (dollars/year; <i>M (SD)</i>)	62,604 (47,825)	38,799 (38,331)	29,908 (24,749)
Insurance for Prescription Medications			
No	21.1	22.6	23.8
Yes	78.9	77.4	76.2
Clinical Characteristics			
Major Depressive Episode - 12			

Mental health care utilization in older adults 59

months			
No	95.4	97.9	98.3
Yes	4.6	2.1	1.7
Selected anxiety disorders – 12 months			
No	95.8	98.2	98.7
Yes	4.2	1.8	1.3
Number of chronic conditions - <i>M (SD)</i>	1.8 (1.8)	2.4 (1.9)	2.9 (2.0)

Individuals meeting 12-month criteria for major depression, compared to those not meeting criteria, were more likely to report having insurance for prescription medications ($\chi^2(1, N = 18,267) = 4.09, p < 0.05$) and more likely to report having had a counseling session ($\chi^2(1, N = 18,286) = 165.43, p < 0.001$). Respondents aged 65 years and older were also less likely to meet criteria for an anxiety disorder (social phobia, panic disorder, or agoraphobia) occurring in the past 12 months ($\chi^2(1.62, N = 17,757) = 55.68, p < 0.001$).

Utilization of Antidepressants

Utilization of antidepressant medications varied significantly according to age regardless of depression caseness. When both depressed and nondepressed respondents were considered, rates of antidepressant use were 6.6%, 4.6%, and 4.6% among respondents aged 45-64, 65-74, and 75 years and older, respectively ($\chi^2(1.96, N = 18,279) = 22.07, p < 0.001$; see Figure 3.1). Among respondents who met criteria for major depression in the past 12 months, the corresponding rates of use were 42.8%, 37.3%, and 16.4% for respondents aged 45-64, 65-74, and 75 years and older ($\chi^2(1.98, N = 681) = 6.28, p < 0.05$).

Figure 1. Medication use among respondents meeting criteria for major depression in past 12 months.

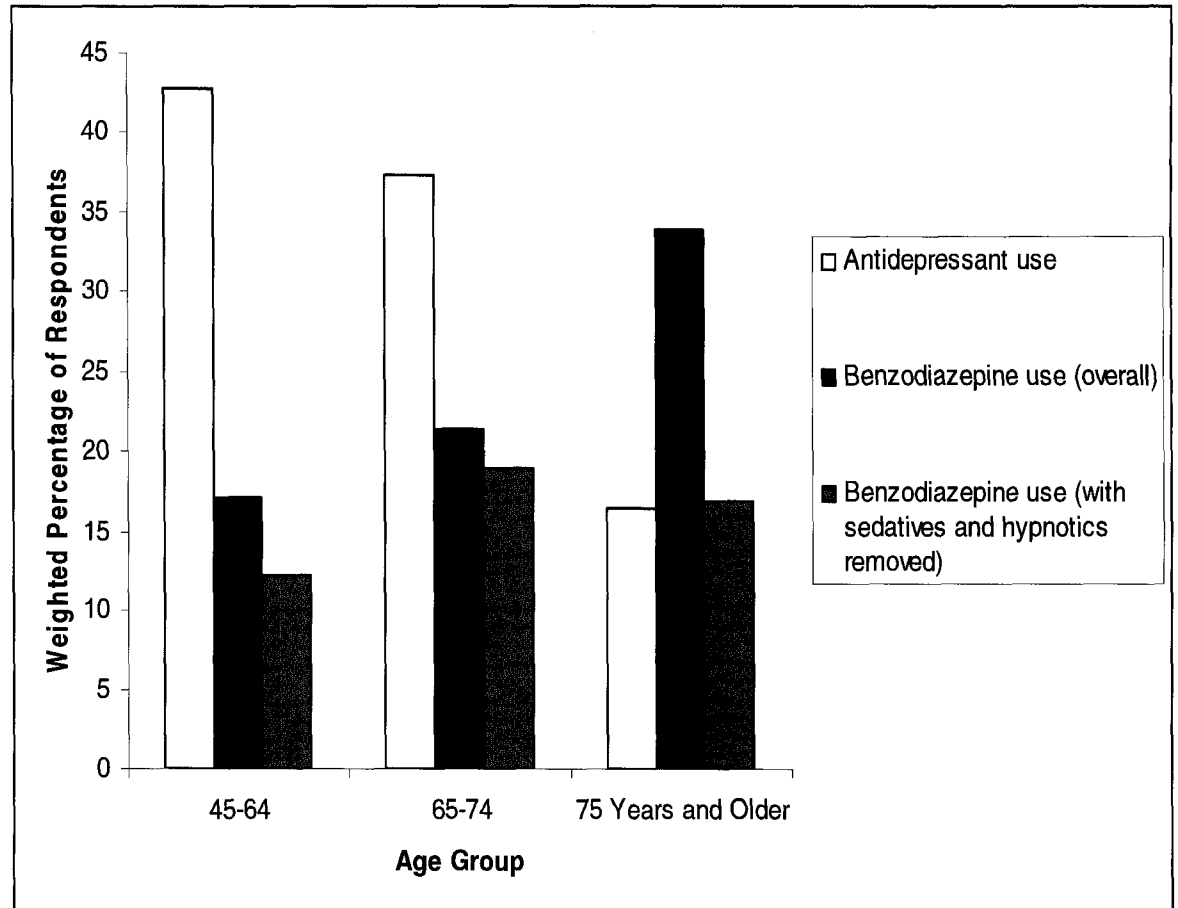


Table 3.2 displays the odds ratios and 95% confidence intervals associated with the likelihood of antidepressant medication use, benzodiazepine use, or concomitant use of both medication types according to all predictor variables. In a logistic regression model with all predictors entered simultaneously, the following characteristics were associated with significantly increased odds of using an antidepressant medication (based on specific drug product categories): being female; having insurance to offset the cost of prescription medications; meeting criteria for a 12-month MDE or anxiety disorder; reporting a higher number of chronic conditions; having a recent mental health consultation with a GP and having ever received at least one 15-minute counseling session. Income was also significantly associated with odds of antidepressant use, although the odds ratio's absolute value of 0.99 indicates that the effect of income is relatively limited. Age, marital status, ethnicity, education, and having a recent mental health consultation with a psychiatrist were not significantly associated with the odds of receiving an antidepressant medication.

Utilization of Benzodiazepines

When both depressed and nondepressed respondents were considered, overall rates of benzodiazepine use were 3.8%, 6.1%, and 10.8% among respondents aged 45-64, 65-74, and 75 years and older respectively ($\chi^2(1.86, N = 18,279) = 98.73, p < 0.001$). Significant age-related differences were observed in the utilization of benzodiazepines with primarily anxiolytic effects (2.8%, 4.7%, and 7.7% for the three age groups, respectively; $\chi^2(1.89, N = 18,279) = 65.28, p < 0.001$) as well as those with primarily sedative or hypnotic effects (1.2%, 1.7%, and 3.5% for the three age groups, respectively; $\chi^2(1.73, N = 18,279) = 31.92, p < 0.0001$).

Table 3.2

*Logistic Regressions Analyses for Predictors of Use of Antidepressant Medications,
Benzodiazepines, and Concomitant Use of Both Medication Types*

Predictor Variables	Antidepressant use <i>OR (95% CI)</i>	Benzodiazepine use <i>OR (95% CI)</i>	Concomitant use <i>OR (95% CI)</i>
65-74 Years	0.80 (0.62-1.03)	1.50 (1.19-1.89)**	1.03 (0.66-1.61)
75 Years and Over	0.85 (0.61-1.18)	2.48 (1.93-3.18)**	1.73 (0.92-3.25)
Female Widowed, divorced, separated, or never married	1.48 (1.20-1.84) **	1.16 (0.94-1.43)	0.99 (0.61-1.62)
Non-Caucasian	1.04 (0.82-1.32)	1.07 (0.87-1.31)	1.33 (0.86-2.07)
Secondary school diploma	0.53 (0.29-0.98)	0.65 (0.37-1.13)	1.22 (0.33-4.55)
Household Income (1000s of dollars/year)	0.89 (0.71-1.13)	0.66 (0.54-0.81)**	0.64 (0.43-0.96)*
Insurance for Prescription Medication	1.00 (0.99-1.00)	0.99 (0.99-0.99)	0.99 (0.98-1.00)*
Major Depressive Disorder (12 month diagnosis)	1.55 (1.79-2.04)**	1.05 (0.83-1.34)	1.01-3.78*
Selected Anxiety Disorder (12 month diagnosis)	5.02 (3.49-7.22)**	1.84 (1.24-2.72)**	2.50 (1.39-4.50)**
Number of Chronic Physical Conditions Received	2.53 (1.73-3.71)**	2.52 (1.74-3.66)**	3.32 (1.87-5.89)**
Counseling Mental Health Consultation with Psychiatrist (past 12 months)	1.19 (1.14-1.25)**	1.24 (1.19-1.29)**	1.19 (1.10-1.28)**
Mental Health Consultation with General Practitioner (past 12 months)	5.30 (4.24-6.61)**	3.43 (2.68-4.38)**	7.54 (4.66-12.20)**
	1.87 (0.98-3.54)	0.84 (0.41-1.74)	1.70 (0.38-7.63)
	0.52 (0.32-0.85)**	1.06 (0.63-1.76)	0.52(0.23-1.18)

* significant at $p < 0.05$, ** significant at $p < 0.01$

Among respondents who met criteria for major depression in the past 12 months, overall rates of benzodiazepine use were 17.1%, 21.4%, and 33.9% for respondents aged 45-64, 65-74, and 75 years and older respectively, a non-significant difference ($\chi^2(1.93, N = 681) = 3.96, p = 0.13$; see Figure 3.1). Among depressed respondents, utilization rates of benzodiazepines with a primarily anxiolytic effect did not vary significantly according to age group (12.2%, 19.0%, and 16.9% for the three age groups respectively; $\chi^2(2, N = 681) = 1.88, p = 0.39$). Utilization rates of benzodiazepines with a primarily sedative or hypnotic effect were significantly higher among depressed adults aged 75 years and older compared to depressed adults in the other two age groups; in fact, no respondents in the 65-74 age group had used a sedative or hypnotic benzodiazepine in the past 2 days (6.2%, 0%, and 24.1% in the three age groups, respectively; $\chi^2(1.32, N = 681) = 4.72, p < 0.05$). Accordingly, Figure 3.1 shows that use of sedative or hypnotic benzodiazepines comprise almost half of overall benzodiazepine use among depressed adults aged 75 years and older, whereas use of anxiolytic benzodiazepines comprise the overwhelming majority of benzodiazepine use in the 45-64 and 65-74 years age groups.

In a logistic regression model with all predictors entered simultaneously, the following characteristics were associated with significantly increased odds of using any benzodiazepine (based on specific drug product categories; see Table 3.2): being 65 years or older; having not attained secondary graduation; meeting criteria for a 12-month MDE or anxiety disorder; reporting a higher number of chronic conditions;

and having ever received at least one 15-minute counseling session. Income was significantly associated with increased odds of benzodiazepine use (again, however, an odds ratio value of 0.99 indicates that its effect is relatively limited). Sex, marital status, ethnicity, insurance status, and having a recent mental health consultation with a psychiatrist or GP were not significantly associated with the odds of receiving a benzodiazepine.

Concomitant Use of Antidepressants and Benzodiazepines

When both depressed and nondepressed respondents were considered, overall rates of concomitant use of antidepressant medications and benzodiazepines were 1.4%, 1.2%, and 2.0% among respondents aged 45-64, 65-74, and 75 years and older respectively, a non-significant difference ($\chi^2(1.64, N = 18,279) = 3.14, p = 0.15$). Among depressed respondents, rates of concomitant use of antidepressant medications and benzodiazepines also did not vary significantly according to age group (11.1%, 10.8%, and 10.7% among the three age groups respectively; $\chi^2(1.91, N = 681) = 0.01, p = 0.99$). Significant age-related differences were found in relation to the proportion of antidepressant medication users with a concomitant prescription for a benzodiazepine: 20.9%, 25.2%, and 41.3% of antidepressant medication users in the three respective age groups had a concomitant prescription for a benzodiazepine ($\chi^2(1.75, N = 1,265) = 10.44, p < 0.01$).

In a logistic regression model with all predictors entered simultaneously, the following characteristics were associated with a significantly increased likelihood of concomitant use of benzodiazepines and antidepressant medications (based on specific drug product categories; see Table 3.2): having not attained secondary

graduation; meeting criteria for a 12-month MDE or anxiety disorder; reporting a higher number of chronic conditions; and having ever received at least one 15-minute counseling session, and having insurance to offset the cost of prescription medications. Income was also significantly associated with odds of antidepressant use, although the odds ratio's absolute value of 0.99 indicates that the effect of income is relatively limited. Age, sex, marital status, ethnicity, and mental health consultations with GPs or psychiatrists were not significantly associated with concomitant use of antidepressant medications and benzodiazepines.

Discussion

We used data from a large and geographically diverse community sample to compare utilization rates of antidepressant medications and benzodiazepines among middle-aged (45-64 years of age), younger-old (65-74 years), and older-old adults (75 years and older) and evaluate the relative effect of age (and depression) on utilization of these medications. The following is a summary of our key findings.

Bivariate analyses indicated significant age-related differences in rates of antidepressant medication use among the whole sample and among the subsample of depressed respondents. Among all respondents, younger-old and older-old adults were equally less likely than middle-aged adults to use antidepressant medications. Among depressed respondents, younger-old and older-old adults were both less likely than middle-aged adults to use antidepressant medications but older-old adults were considerably less likely than the other two age groups to use antidepressant medications. In fact, the rate of antidepressant medication use observed in depressed

adults 75 years of age and older was less than half that observed in the depressed adults 65-74 years of age.

Although we found differences among the three age groups with respect to the use of antidepressant medication, particularly among depressed respondents, when considered in the context of a broad range of sociodemographic and clinical characteristics, age was not a significant predictor of antidepressant medication use. In particular, the prevalence of 12-month major depressive episode was far greater in the middle-aged compared to the younger-old and older-old groups (4.6%, 2.1% and 1.7%, respectively), meaning that the role of age in predicting medication use in the larger sample is subsumed under the strong predictive value of depression status.

Bivariate analyses indicated significant age-related differences in rates of benzodiazepine use in the whole sample. Among all respondents, younger-old and older-old adults were more likely than middle-aged adults to report using benzodiazepines, regardless of their classification as primarily anxiolytic or primarily sedative/hypnotic. Older-old adults had the highest rate of use for both categories of benzodiazepines. Among depressed respondents, bivariate analyses indicated nonsignificant age-related differences for overall use of benzodiazepines and use of anxiolytic benzodiazepines. However, depressed older-old adults had a significantly higher rate of use of sedative or hypnotic benzodiazepines compared to the other two age groups. Age was a significant predictor of overall benzodiazepine use after accounting for other relevant sociodemographic and clinical characteristics. Compared to adults aged 45-64 years, adults aged 65-74 years were 1.5 times more likely and adults aged 75 years and older were 2.5 times more likely to report having

taken a benzodiazepine in the two days prior to being surveyed.

Bivariate analyses indicated nonsignificant age-related differences in the rate of concomitant antidepressant medication and benzodiazepine use among the whole sample and among the subsample of depressed respondents. However, among individuals who used antidepressants, younger-old and older-old adults were significantly more likely to use at least one benzodiazepine concomitantly. Age was not a significant predictor of concomitant antidepressant medication and benzodiazepine use when other relevant sociodemographic and clinical factors were accounted for statistically.

Sociodemographic predictors of medication use varied in significance according to the class of medication in question. Being female was associated with increased odds of antidepressant medication use but not with use of benzodiazepines or concomitant use of antidepressant medications and benzodiazepines. Marital status was not significantly associated with use of either medication type. Having a lower level of educational attainment was associated with increased odds of benzodiazepine and concomitant use. Although a statistically significant association was found between income and all types of medication use, the fact that relative value of the odds ratio is almost 1.00 indicates that its effect is negligible. Ethnicity was not a significant predictor of use of antidepressant medications or benzodiazepines. This finding is in contrast to other studies that found a significant association between Caucasian ethnicity and increased likelihood of using antidepressant medications (Blazer et al., 2005; Brown, Lapane, & Luisi, 2002; Weisberg, Dyck, Culpepper, & Keller, 2007). The nonsignificance of ethnicity as a predictor of antidepressant

medication use in our study should be interpreted in the context of the Canadian health care system, where residents have universal access to a wide range of mental health care services and on average pay far less for medications compared to residents of the United States, where the above-noted studies were conducted. Mental health care services and medications may be more accessible to minority ethnic groups in the context of universal health care.

The most reliable predictors of all types of medication use were characteristics related to need for health or mental health services. Meeting criteria for 12-month diagnosis of major depressive disorder or a selected anxiety disorder and having a higher number of chronic medical conditions was associated with use of antidepressant medication, benzodiazepines, and concomitant use of both medication types. The only significant utilization-related factor was having consulted a GP for a mental health-related problem within the past 12 months, which was associated with a nearly 50% decrease in the likelihood of using an antidepressant medication but not with the likelihood of using a benzodiazepine or using both medication types concomitantly. Having a recent consultation with a psychiatrist was not associated with the odds of using an antidepressant medication or benzodiazepine after accounting for other factors.

Comparison with Other Findings

The overall prevalence of past two-day utilization of antidepressant medication among adults aged 65 and older in our sample (4.6% among both the 65-74 and 75 years and older age groups) was slightly lower than annual rates obtained in other Canadian, American, and European studies of older adults. (Canada: 10.9%,

Mamdani et al., 2005; 8.0%, Rojas-Fernandez, Thomas, Carver, & Tonks, 1999; United States: 8.1%, Blazer et al., 2005; 6%, Hanlon et al., 2002; Europe: 11.9%, Montagnier et al., 2006; 9.4%, Percudani et al., 2005). The wide sampling frame and high survey response rate of the CCHS 1.2 means that the reported data on medication use should be highly accurate at the point of collection, but may underestimate the percentage using medication during the course of a year.

Past two-day rates of benzodiazepine use among the older adults in our sample (6.1% for those aged 65-74 and 10.8% for those aged 75 years and older) were comparable to annual rates obtained in other North American studies of community-dwelling adults aged 65 years and older conducted in the 1990s or early 2000s (Canada: annual incidence rate of 6.5%, Metge et al., 2005; United States: annual prevalence rate of 10%, Blazer et al., 2005). Our rates were considerably lower than rates obtained in two European samples, although varying age ranges and time frame of medication use make comparison difficult (France: 22.4% among persons aged 60-70 years over four years, Paterniti et al., 2002; Netherlands: point prevalence of 30% among persons aged 85 years and older; Vinkers et al., 2003). Few other studies have examined concomitant use of antidepressant medications and benzodiazepines. However, one analysis of a pharmacy database in the Netherlands indicated that over half of antidepressant users aged 65 years and older had a concomitant benzodiazepine prescription over a two-year period (van Dijk et al., 2002).

Summary and Implications

One of the two most important findings of our study is the fact that rates of antidepressant medication use among younger-old and older-old adults continue to be low compared to those among middle-aged adults. Furthermore, this discrepancy is particularly pronounced among respondents meeting 12-month criteria for major depressive disorder, that is, among those most in need of antidepressant medications. In our sample, among community-dwelling individuals with independently diagnosed depression, over one-third of adults aged 65-74 and one-fifth of those aged 75 years and older had used an antidepressant medication in the past two days prior to the survey. Rates of antidepressant medication use in older adults appear to be somewhat higher in studies where depression has been diagnosed by a health care provider. In the United States, two-thirds of Medicare recipients with a diagnosis of depression by their health care provider received antidepressants (Sambamoorthi, Olfson, Walkup, & Crystal, 2003). Similarly, over three-quarters of geriatric patients diagnosed with depressive disorders by psychiatrists belonging to a practice research network (PRN) received an antidepressant medication (Colenda et al., 2003). Obviously, antidepressants cannot be prescribed unless depression is first recognized and diagnosed, and thus low use of antidepressant medications in older adults is likely linked to low rates of contact with mental health professionals observed in numerous other studies (Crabb & Hunsley, 2006; Klap et al., 2005).

The other important finding in this study is the fact that older adults continue to use benzodiazepines at a high rate compared to middle-aged adults. High rates of benzodiazepine use among older adults may be accounted for by the use of benzodiazepines to ameliorate comorbid anxiety in late-life depression, a strategy that

is commonly used at the initiation of antidepressant medication treatment (Flint, 1997). However, there is little evidence to suggest the effectiveness of using a benzodiazepine as an adjunct to antidepressant treatment among older adults with comorbid anxiety (Andreescu et al., 2007).

Another possible explanation for high rates of benzodiazepine use among older adults is the use of benzodiazepines to treat chronic insomnia, which occurs at a rate of nearly 50% among older adults compared to 25% of the adult population (Liu & Ancoli-Israel, 2006). Furthermore, sleep disturbances are strongly associated with the risk of developing depression in the future among older adults (Livingston, Blizard, & Mann, 1993; Roberts, Shema, Kaplan, & Strawbridge, 2000), suggesting that many of those individuals who are either currently depressed or at risk of developing depression in the future are likely to use sedative or hypnotic benzodiazepines to treat sleep problems. Indeed, in our sample, among adults 75 years and older with a independently assessed recent major depressive episode, nearly half of those respondents who reported using a benzodiazepine had used at least one that was classified as a sedative or hypnotic. Despite the prevalence of sedative and hypnotic medications for sleep problems in older adults, a recent meta-analysis indicated that the therapeutic benefits of sedative or hypnotic benzodiazepines for insomnia in older adults are small relative to the risk of adverse cognitive events, adverse psychomotor events, and daytime fatigue (Glass, Lanctôt, Hermann, Sproule, & Busto, 2005). Overall, the high rates of benzodiazepine use coupled with low rates of antidepressant medications observed among depressed older adults in our study indicate substantial inadequacies in the pharmacological treatment of late-life

depression.

Strengths and Limitations

The CCHS 1.2 survey sample was limited to persons residing in the community and therefore the present results cannot be generalized to individuals who are homeless, or who reside in remote areas, on reserves, or in institutions such as nursing homes. It is possible that results from this community-dwelling sample underestimate use in nursing home or other long-term care facilities, where the prevalence of use of antidepressant medications has been estimated at between 12.2% (Conn et al., 1999) and 55% (Brown et al., 2002) and the prevalence of benzodiazepine use ranges between 13.4% (Heston et al., 1992) and 22.5% (Conn et al., 1999). Finally, although the utilization rates reported in our study provide a rough estimate of the adequacy of pharmacological treatment for late-life depression, previous research has shown that approximately half of older adults who use antidepressant medications receive treatment that is inappropriate in terms of dose, duration, or type of medication (Hanlon et al., 2002; Rojas-Fernandez et al., 1999). A limitation of our data source is that it does not provide data on any of these additional indicators of appropriateness such as dose and duration.

Despite the limitations noted above, the present study provides data on age-related patterns of antidepressant medication and benzodiazepine use using a large, geographically diverse community sample that includes people with untreated or unidentified depression as well as those who are receiving treatment. Although previous studies have provided estimates of the prevalence of pharmacological treatment for late-life depression, ours is the first study to directly compare rates of

utilization of medications commonly used for the treatment of depression among middle-aged, younger-old, and older-old adults.

CHAPTER 4

UTILIZATION OF CONVENTIONAL AND COMPLEMENTARY MENTAL
HEALTH TREATMENTS AMONG OLDER ADULTS WITH DEPRESSION AND
ANXIETY DISORDERS

Crabb, R. & Hunsley, J. (2008). *Utilization of conventional and complementary mental health treatments among older adults with depression and anxiety disorders.*

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Abstract

Older adults tend to under-utilize conventional services for depression and anxiety disorders compared to middle-aged adults with these disorders, and are less likely to use appropriate pharmacological treatments for depression and anxiety. However, no studies have directly addressed the extent to which a similar age-related pattern exists in the utilization of complementary and alternative services products for mental health-related problems. The present study used a large and geographically diverse Canadian community sample to examine rates and predictors of utilization of conventional and complementary mental health care services and mental health-related medications and products among middle-aged (45-64 years; $n = 10,762$), younger-old (65-74; $n = 4113$) and older-old adults (75 years and older; $n = 3623$). When considered in the context of other sociodemographic and clinical characteristics, older age was positively associated with mental health-related utilization of alternative health products. Overall, age-related patterns in mental health-related use of CAM did not directly correspond to age-related patterns in conventional mental health care utilization, suggesting different sets of predictors involved in the two types of care.

Utilization of Conventional and Complementary Mental Health Treatments
among Older Adults with Depression and Anxiety Disorders

Older adults tend to under-utilize conventional services for depression and anxiety disorders compared to middle-aged adults with these disorders, and are more likely to seek mental health care services in the general medical sector than in the specialty mental health sector (Crabb & Hunsley, 2006; Klap et al., 2003; Unützer et al., 2000; Young et al., 2001). Survey data also suggest lower rates of appropriate medication treatment for depression and anxiety among older adults (Young et al., 2001; Colenda et al., 2003). However, no studies have directly addressed the extent to which a similar age-related pattern exists in the utilization of complementary and alternative services products for mental health-related problems.

Complementary and alternative medicine (CAM) is a term referring to a broad range of practitioner-delivered services such as acupuncture and massage therapy and to a variety of non-prescription health products such as herbal remedies. An estimated 40-50% of American adults of all ages use at least one CAM modality for any reason (Eisenberg et al., 1998); in comparison, an estimated 30-40% of adults aged 65 years and older utilize CAM (Astin et al., 2000; Foster et al., 2000). Several studies that directly compared older adults to younger age groups have shown that older age is associated with decreased likelihood of using CAM (Foster et al., 2000; Simon et al., 2004; Unützer et al., 2000), although others have found the effect of age to be nonsignificant after accounting for other sociodemographic and health-related factors (Astin et al., 1998; Kessler et al., 2001; Ness et al., 2005).

Less is known about age-related differences in the use of CAM specifically to treat or prevent mental health or emotional problems. Among adults in all age groups, self-reported anxiety or depression are associated with an increased likelihood of using CAM (Druss & Rosenheck, 2000; Grzywacz et al., 2006; Kessler et al., 2001; Unützer et al., 2000). Available data suggest that a minority of CAM users in all age groups utilize CAM for mental-health related problems. In a population-based sample of nearly 6,000 adults aged 65 and older, 17.9% of CAM users with self-reported anxiety or depression reported having used CAM specifically for mental health reasons (Grzywacz et al., 2006), a figure consistent with the rate of 15% of CAM users reporting mental-health related CAM use in a representative survey of adults of all ages (Unützer et al., 2000).

However, to our knowledge, there currently exist no published data comparing rates of mental-health related CAM use in older vs. middle-aged adults, and no data examining predictors of mental-health related CAM utilization. Furthermore, most studies examining the effect of depression or anxiety on CAM use among older adults have used respondents' self-report of these conditions rather than obtaining independent assessment of mental health status. To address this gap in the literature, we used survey data from a large and geographically diverse Canadian sample to examine differences related to age and independently assessed depression and anxiety disorder in the utilization of mental health-related complementary and alternative health care services and products. Our objectives were to 1) present utilization rates of complementary and alternative health care services and products commonly used to promote mental health and functioning among middle-aged (45-64 years),

younger-old (65-74) and older-old (75 years and older) adults in Canada, 2) compare these rates to utilization rates of conventional mental health care services and medications available for the treatment of anxiety and depression, and 3) examine the relative contributions of age and depression or anxiety disorder caseness in predicting utilization of conventional and complementary services and medications/ health products after accounting for other relevant predictors (e.g., sex, education, income, chronic physical health conditions).

We hypothesized that respondents meeting caseness criteria for major depression or an anxiety disorder would be more likely to use both conventional and complementary mental health services and products/medications than those not meeting criteria. Given older adults' relatively low utilization rates of conventional specialty mental health services and appropriate pharmacological treatments, we hypothesized that, compared to middle-aged adults, adults aged 65 and older would be less likely to report using complementary services and products for mental health-related reasons. Furthermore, given that the likelihood of using both conventional and complementary services decreases with increasing age (Astin et al., 2000; Grzywacz et al., 2006), we hypothesized that adults in the oldest age group (aged 75 years and older) would be least likely to report using either conventional or complementary services for mental health related reasons.

Method

Instrument

The data source used for this study was the Canadian Community Health Survey (CCHS), Cycle 1.2. The CCHS 1.2 is a cross-sectional survey that provides

nation-wide estimates on various issues related to mental health and well-being, including determinants of mental health status and mental health system utilization. Data were collected between May and December 2002 from approximately 37,000 individuals aged 15 years and over from across the ten Canadian provinces (Statistics Canada, 2003b). Excluded from the survey sample were individuals living on Indian Reserves and Crown Lands, residing in health care institutions, employed full-time with the Canadian Armed Forces, as were residents of the Canadian territories and certain remote regions.

Respondents were selected according to a multistage stratified design to ensure adequate representation of a diverse range of geographical and socio-economic sub-regions. Populated areas were divided into major urban centers, cities and rural regions and each region was subdivided into geographical or socio-economic strata. Strata were divided into clusters defined by a certain number of dwellings in urban areas and by census enumeration boundaries in small cities and rural regions. Clusters were randomly selected from each strata and households were randomly selected from within each cluster. Finally, one or two members of each household were selected to participate in the survey, according to the size and age composition of each household. Individuals aged 15-24 and aged 65 and older were strategically oversampled to ensure adequate representation of these two groups. The sampling frame used for the CCHS 1.2 covered approximately 98% of the community-dwelling population aged 15 and over across the ten provinces.

Written informed consent for participation was obtained from each respondent. Trained interviewers administered the computer-assisted survey in person

to respondents whenever possible (86% of cases), and by telephone when an in-person interview was not possible. The survey's final participation rate was 86.5% at the household level, 89.0% at the person level and 77.0% overall. The subsample selected for the present study consisted of 10,762 individuals aged 45-64, 4113 individuals aged 65-74, and 3623 individuals aged 75 years and older. Further details on the objectives, development, and conduct of the CCHS 1.2 are available in the documentation accompanying the data set (Statistics Canada, 2003b).

Utilization of Conventional Mental Health Services

Respondents were asked whether they had consulted any of the following health care professionals for problems with emotions, mental health, or use of alcohol or drugs at any time in the past 12 months: psychiatrist, family doctor or general practitioner, other medical doctor, psychologist, nurse, social worker, counselor, or psychotherapist, religious or spiritual advisor, or other professional. In the current analyses, conventional mental health services included those delivered by specialty mental health providers (psychiatrist, psychologist, or social worker) and those delivered by non-specialty mental health care provider (general practitioner, other MD, or nurse).

Utilization of Complementary and Alternative Services (past 12 months)

Respondents who indicated that they had consulted with "other" professionals for an emotional or mental health concern were asked to indicate what kind(s) of professional(s) they had seen or talked to. Their responses were classified according to the following categories: acupuncturist, biofeedback teacher, chiropractor, energy healing specialist, exercise or movement therapist, herbalist, homeopath or

naturopath, guided imagery specialist, massage therapist, relaxation, yoga or meditation teacher, dietician, or other.

Respondents were asked about their use of other complementary services for mental health-related issues in the past 12 months, specifically use of telephone crisis lines, self-help groups, and internet chat rooms for mental health-related issues. In our analyses, these data are examined separately from the CAM provider data.

Medication Use (Past Two Days)

Respondents' use of medications was assessed in two ways. The first method required respondents to indicate whether or not they had taken any of a list of 21 types of medications in the past month. The second method required respondents to report exact medication names and produce containers for all medications used in the past 2 days. The generic name of the each medication as indicated on the container's label was recorded and translated into its corresponding Anatomic Therapeutic Chemical (ATC) codes, which allow accurate classification of individual drugs according to relevant sub-categories. For example, the ATC code for fluoxetine (N06AB03) indicates that it is a nervous system drug (N), a psychoanaleptic (N06), an antidepressant (N06A), and an SSRI (N06AB). In our preliminary analyses, substantial discrepancies were found between respondents' answers to these two assessment methods. For example, among respondents who reported antidepressant medication use on the self-report style question, only 74.9% produced a medication container for a drug coded as an antidepressant on the home inventory style question. In order to produce maximally

accurate estimates of medication utilization, all analyses reported in this paper are based on the home inventory style assessment method (cf. Neutel & Walop, 2000).

According to ATC codes, medications were classified as antidepressants or benzodiazepines. Antidepressants included selective serotonin reuptake inhibitors (SSRIs; sertraline, zimeldine, fluoxetine, citalopram), monoamine oxidase inhibitors (nialamide, phenelzine, moclobemide), tricyclic antidepressants (TCAs; desipramine, imipramine, imipramine oxide, clomipramine, opipramol, trimipramine, dibenzepine, amitriptyline, nortriptyline, protriptyline), and “other” antidepressants (mirtazepine, bupropion, reboxetine), but were not divided according to class in analyses due to small cell sizes for some subtypes. Benzodiazepines were subclassified according to the ATC system as those with a primarily anxiolytic effect (diazepam, chlordiazepoxide, medazepam, oxazepam, potassium clorazepate, lorazepam, and bromazepam) and those with a primarily sedative or hypnotic effect (flurazepam, nitrazepam, flunitrazepam, estazolam, and zopiclone, a benzodiazepine-related derivative).

Utilization of Alternative Products (past 12 months)

Respondents were asked to report on their utilization of non-prescription health products in the past 12 months for problems with emotions, alcohol or drug use, energy, concentration, sleep or ability to deal with stress. Responses were categorized according to the following list: St. John’s Wort, valerian, chamomile, ginseng, kava kava, lavender, chasteberry, black cohosh, ginkgo, NeuRecover-DA, vitamins, and other.

Predictor Variables

Socio-demographic characteristics.

In addition to age, the current analyses included several other socio-demographic variables: sex, marital status (married or common-law vs. widowed, divorced, separated, or never married), ethnic background (Caucasian vs. non-Caucasian), education (less than secondary graduation vs. secondary graduation or higher), 12-month household income (expressed in thousands of Canadian dollars), and insurance for prescription medications (having vs. not having insurance).

Mental disorders.

Mental disorders were assessed using an adapted version of the World Mental Health Composite International Diagnostic Interview (WMH-CIDI), which estimates the probability that a respondent meet diagnostic criteria for various disorders in accordance with the definitions given by the *ICD-10* and the *DSM-IV* (Kessler & Üstün, 2004). The WMH-CIDI was developed by the World Health Organization (WHO) in the late 1990s as a standardized measure to estimate and compare the prevalence of mental disorders in various countries around the world. The original CIDI, released in 1990, has been subjected to numerous validity studies indicating its significant correlation with independent clinical diagnoses (Wittchen, 1994). The WMH-CIDI is intended to improve the validity of diagnoses given by the CIDI by modifying questions to facilitate respondents' retrieval of memories related to symptoms and by including sections on severity and functional limitations associated with mental disorders.

The WMH-CIDI was used to assess CCHS 1.2 respondents for various mental disorders occurring over the lifetime and within the most recent 12 months. In the

current analyses, we consider diagnoses of major depressive episode and selected anxiety disorders (panic disorder, agoraphobia, and social phobia) occurring in the 12 months prior to interview. It should be noted that Statistics Canada chose to collect data on a limited range of anxiety disorders in order to reduce respondent burden. Diagnostic data on other common anxiety disorders (post-traumatic stress disorder and generalized anxiety disorder) were collected as part of Statistics Canada's Canadian Forces Supplement (CFS) survey, but not as part of the CCHS 1.2, and therefore they are not considered here (Statistics Canada, 2003b).

Physical health status.

In order to obtain an index of general physical health, we derived a variable indicating the number of chronic physical conditions (i.e., conditions that had been diagnosed by a health care professional and were expected to last six or more months) reported by each respondent (cf. Crabb & Hunsley, 2006). Conditions included in the calculation of this variable were: food allergies, other allergies, asthma, fibromyalgia, arthritis, back problems, high blood pressure, migraine headaches, diabetes, epilepsy, heart disease, cancer, stomach/intestinal ulcers, stroke, Crohn's disease, cataracts, glaucoma, thyroid problems, chronic fatigue syndrome, multiple chemical sensitivities, chronic bronchitis, and emphysema.

Missing Data

The proportion of missing data was less than 1% for all variables in the current analyses, with the exception of income for which 21% of cases had missing data. Because of the high proportion of missing data on this variable, missing values on income were imputed using a regression model based on age, sex, education, and

province. Cases with missing data for any variable in an analysis were excluded from that particular analysis.

Statistical Analysis

Cross-tabulations and chi square statistics were used to obtain and compare point estimates for utilization of conventional and alternative products and services according to age group and depression/anxiety disorder caseness. Logistic regression modeling was used to determine odds ratios for utilization of mental health services according to levels of predictor variables. All point estimates reported in text and tables were calculated with SPSS 13.0, using population weights to adjust for unequal probability of selection for the study due to factors such as household non-response and provincial buy-ins. Tests of significance were calculated using BOOTVAR, a statistical software program that uses bootstrap resampling methods to adjust for stratification and clustering in the sampling design. It should be noted that because the resampling software includes a correction to adjust for clustering and stratification in chi square tests, degrees of freedom associated with chi square comparisons frequently have non-integar values (Rao & Scott, 1984).

Results

Demographic and Clinical Characteristics of Sample

Table 4.1 summarizes demographic and clinical characteristics of survey respondents according to age group. Compared to the 45-64 age group, respondents in the two older age groups were more likely to be female, Caucasian, have a lower level of educational attainment, be widowed, divorced, separated, or never married, have lower incomes and have a greater number of chronic physical health conditions.

Age was not significantly related to having insurance to help cover the cost of prescription medications.

Table 4.2 displays the prevalence of major depression or selected anxiety disorder in relation to sociodemographic and clinical characteristics. Meeting caseness criteria for either major depressive disorder or a selected anxiety in the past 12 months was significantly associated with being female, middle-aged, widowed, divorced, or separated having a lower income, having a higher number of chronic medical conditions, and having insurance for prescription medications. The 12-month prevalence of major depression or selected anxiety disorder was not significantly related to ethnicity or level of education.

Utilization of Conventional and Complementary Services

Table 4.1

Demographic and Clinical Characteristics of Survey Respondents According to Age Group

	Age Group			Analysis		
	45-64 Years (n = 10, 762)	65-74 Years (n = 4113)	75 Years and Older (n = 3623)	χ^2 (F)	df	p
Demographic Characteristics						
Sex						
Male (%)	49.5	46.7	39.6	48.84	1	<0.001
Female (%)	50.5	53.3	60.4			
Marital Status						
Married or common-law (%)	77.8	67.5	47.6	482.45	1.93	<0.001
Widowed, divorced, separated, or never married (%)	22.2	32.5	52.4			
Ethnicity						
Caucasian (%)	85.8	90.8	94.7	84.36	1.9	<0.001
Other (%)	14.2	9.2	5.3			
Education						

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Less than secondary graduation (%)	22.0	44.7	55.1	670.55	1.99	<0.001
Secondary graduation (%)	78.0	55.3	44.9			
Household Income (dollars/year; <i>M, SD</i>)	62,604 (47,825)	38,799 (38,331)	29,908 (24,749)	(515010.76)	2,11352749	<0.001
Insurance for Prescription Medications						
No (%)	21.1	22.6	23.8	4.86	1.95	0.085
Yes (%)	78.9	77.4	76.2			
Clinical Characteristics						
Major Depressive Episode or Selected Anxiety Disorders - 12 months						
No (%)	92.6	96.5	97.5	100.09	1.81	<0.0001
Yes (%)	7.4	3.5	2.5			
Number of chronic conditions (<i>M, SD</i>)	1.8 (1.8)	2.4 (1.9)	2.9 (2.0)	327082.2	2,11282936	<0.001

Table 4.2

Proportion of Respondents Meeting 12-Month Caseness Criteria for Major Depression or Selected Anxiety Disorders

According to Demographic, Clinical, and Service Utilization Characteristics

	Respondents meeting caseness criteria for 12-month MDE/anxiety disorder	Analysis of MDE/Anxiety Disorder Caseness vs. Other Characteristics		
		χ^2 (F)	df	p
Demographic Characteristics				
Age				
45-64	7.4%	100.09	1.81	0.0001
65-74	3.5%			
75 and older	2.5%			
Sex				
Male	4.6%	22.31	1	<0.0001
Female	7.2%			
Marital Status				
Married or common-law	4.7%	51.17	1	<0.0001

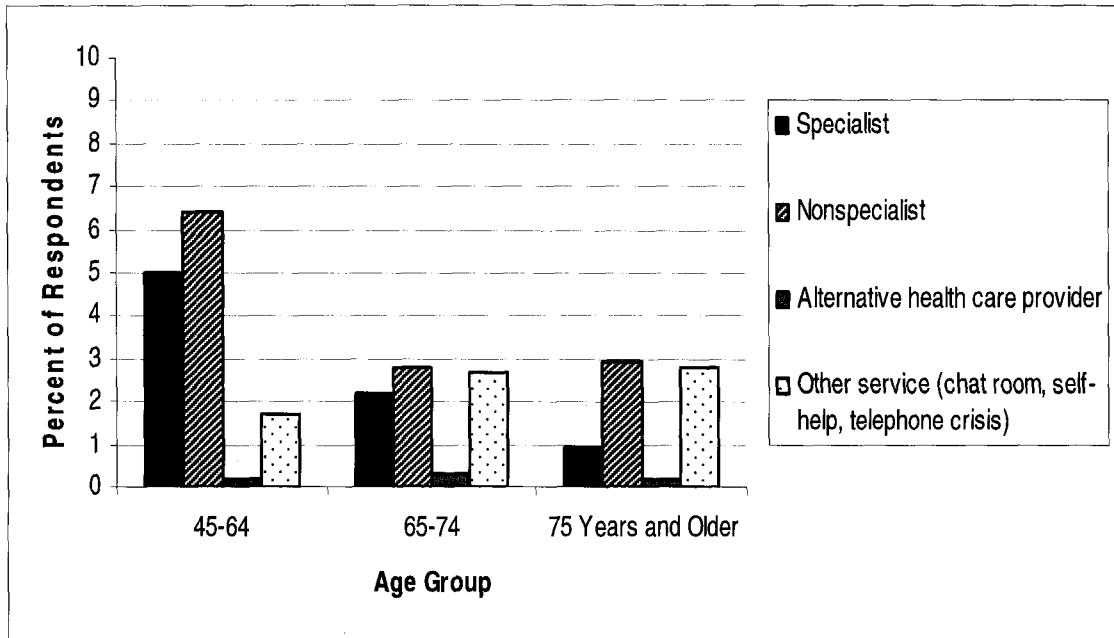
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Widowed, divorced, separated, or never married	9.2%				
Ethnicity					
Caucasian	6.1%	1.37	1	0.24	
Other	4.8%				
Education					
Less than secondary graduation	5.3%	2.97	1	0.08	
Secondary graduation	6.3%				
Household Income (dollars/year; mean, SD)	48,788 (35,426)	326.92	1,17,673	<0.0001	
Insurance for Prescription Medications					
No	5.0%	4.03	1	<0.05	
Yes	6.1%				
Clinical Characteristics					
Number of chronic conditions (mean, SD)	3.0 (2.3)	14.25	1,17,551	<0.001	

Figure 4.1 illustrates age-related rates of past 12-month utilization of conventional, complementary, and other mental health services among the whole study sample. Among the whole sample, significantly smaller proportions of younger-old and older-old adults reported having utilized any conventional mental health services in the past 12 months compared to middle-aged adults ($\chi^2(1.55, N = 18,383) = 57.96, p < 0.0001$). Age was significantly associated with consultations with both specialty ($\chi^2(1.37, N = 18,401) = 29.89, p < 0.0001$) and non-specialty providers ($\chi^2(1.82, N = 18,392) = 86.09, p < 0.0001$). As is evident in the figure, the ratio of non-specialty to specialty mental health consultations is much greater in the 75+ group (approximately 3:1) than the same ratio in the younger two groups (approximately 5:4). Among all respondents, the proportion who reported consulting any CAM provider for mental health-related reasons in the past 12 months was very small and did not differ significantly across age groups ($\chi^2(1.87, N = 18,421) = 1.98, p = 0.45$).

Compared to the middle-aged adults, a slightly larger proportion of younger-old and older-old adults reported utilization of self-help groups in the past year for mental health-related reasons; 1.5%, 2.6%, and 2.6% for the three age categories respectively ($\chi^2(1.78, N = 18,422) = 10.84, p < 0.01$). The proportion of respondents who reported past-year use of a chatroom for mental health-related reasons did not differ significantly according to age group (0.2%, 0.9%, and 0.2% for the three age categories, respectively; $\chi^2(1.07, N = 18,421) = 0.73, p = 0.42$). Although the proportion of respondents who reported past-year use of a telephone helpline for mental health-related reasons did differ significantly according to age group, the

Figure 4.1. Percentage of respondents reporting 12-month mental health-related utilization of conventional vs. complementary or alternative health care services among whole sample.



statistical test only met significance at the 0.05 level, indicating a relatively small effect given the large sample size (0.2%, 0.3%, and 0.3% for the three age categories, respectively; $\chi^2(1.87, N = 18,424) = 6.42, p < 0.05$).

Within respondents meeting caseness criteria for major depression or a selected anxiety disorder, a smaller proportion of younger-old and older-old adults reported using any conventional mental health service in the past 12 months in relation to middle-aged adults ($\chi^2(1.96, N = 1,034) = 8.60, p < 0.05$). The raw numbers of respondents over age 65 who reported consulting CAM providers for mental health reasons or using other mental health-related services (i.e., self-help groups) were so small that weighted estimates and statistical comparisons from these cross-tabulations are not considered reliable enough for release according to Statistics Canada standards and, therefore, are not reported here. The fact that the raw values were so low as to preclude the possibility of estimating an accurate population value indicates that, among individuals with depression or selected anxiety disorders, receiving services from conventional providers is far more common than receiving services from CAM providers.

Table 4.3 displays the results of logistic regression analyses for the past 12-month utilization of conventional, complementary and other mental health services. After controlling for all other sociodemographic and clinical characteristics, older age was associated with significantly decreased odds of consulting either a specialty or non-specialty conventional health care provider for mental health or emotional concerns in the past 12 months. In relation to middle-aged adults, younger-old adults were 63% less likely to consult a specialty mental health provider and 58% less likely

to consult a non-specialty provider. In relation to middle-aged adults, the corresponding decreases in likelihood for older-old adults were 84% and 61%.

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Table 4.3

Logistic Regression Analyses for Predictors of Use of Conventional, Alternative, and Other Mental Health Services

Predictor Variables	Any conventional services <i>OR (95% CI)</i>	Specialty mental health <i>OR (95% CI)</i>	Non-specialty mental health <i>OR (95% CI)</i>	Alternative service provider <i>OR (95% CI)</i>	Other services <i>OR (95% CI)</i>
65-74 Years	0.41 (0.31-0.53) ^d	0.37 (0.25-0.55) ^d	0.42 (0.31-0.57) ^d	1.52 (0.53-4.37)	1.29 (1.02-1.65) ^a
75 Years and Over	0.30 (0.22-0.40) ^d	0.16 (0.09-0.29) ^d	0.39 (0.28-0.56) ^d	0.80 (0.020-31.41)	1.66 (1.27-2.16) ^c
Female	1.62 (1.34-1.96) ^d	1.38 (1.03-1.84) ^a	1.38 (1.12-1.71) ^b	0.48 (0.21-1.08)	0.98 (0.79-1.20)
Widowed, divorced, separated, or never married	1.67 (1.37-2.04) ^d	2.28 (1.72-3.03) ^d	1.44 (1.15-1.81) ^b	0.63 (0.26-1.51)	0.96 (0.79-1.16)
Non-Caucasian	0.33 (0.22-0.48) ^d	0.29 (0.17-0.51) ^d	0.36 (0.23-0.56) ^d	0.77 (0.00-50751.30)	1.60 (1.13-2.26) ^b
Secondary school diploma	1.41 (1.14-1.76) ^c	1.96 (1.47-2.63) ^d	1.28 (0.99-1.65)	1.01 (0.40-2.56)	1.02 (0.80-1.28)
Household Income (1000s of dollars/year)	1.00 (1.00-1.00)	1.00 (1.00-1.00) ^b	1.00 (1.00-1.00)	1.00 (0.99-1.00)	1.00 (1.00-1.00)
Insurance for Prescription Medication	1.12 (0.91-1.39)	1.22 (0.90-1.66)	1.10 (0.85-1.41)	0.98 (0.28-3.39)	1.15 (0.92-1.43)
Major Depressive Disorder or Selected Anxiety Disorder (12 month diagnosis)	13.03 (10.28-16.52) ^d	10.12 (7.36-13.91) ^d	15.27 (11.90-19.60) ^d	0.00 (0-0)	0.67 (0.44-1.02)

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Number of Chronic Physical Conditions	1.13 (1.08-1.19) ^d	1.16 (1.10-1.22) ^d	1.20 (1.00-1.44)	1.04 (0.99-1.08)
Specialist consultation	N/A	N/A	0.09 (0.00-16422.69)	0.85 (0.57-1.29)
Non-specialist consultation	N/A	N/A	3.36 (0.00-6895.43)	1.49 (0.99-2.24)

^a $p < 0.05$

^b $p < 0.01$

^c $p < 0.001$

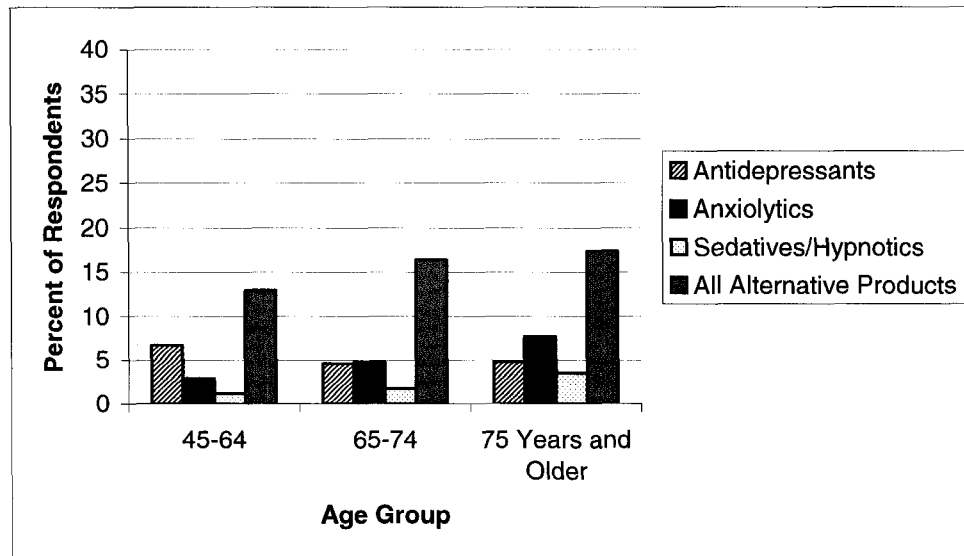
^d $p < 0.0001$

In addition to age, other significant predictors of consulting any conventional mental health care provider were female sex, Caucasian ethnicity, being widowed, divorced, separated or never married, having a secondary school diploma, meeting criteria for major depression or a selected anxiety disorder, and having a higher number of chronic physical health conditions. Predictors were similar for consultations with specialty and non-specialty providers, with the exception of education, in that having a secondary school diploma was associated with an increased likelihood of consulting a specialty mental health care provider but was not associated with the likelihood of consulting non-specialty mental health care providers. After controlling for all other sociodemographic and clinical characteristics, age was not a significant predictor of consulting a CAM provider for mental health or emotional concerns. In fact, none of the proposed predictors were significant, possibly due to the very low numbers of respondents who reported mental health-related consultations with CAM providers. Older age was associated with significantly increased odds of using other services for mental health or emotional concerns, largely due to the effects of self-help group involvement. Compared to middle-aged adults, younger-old adults were 29% more likely and older-old adults were 66% more likely to report mental health-related utilization of such services. In addition to an association with older age, utilization of other mental health-related services was associated with being non-Caucasian.

Utilization of Conventional and Complementary Products

Figure 4.2 displays age-related rates of utilization of conventional psychoactive medications commonly used for anxiety and depression vs. utilization

Figure 4.2. Utilization of conventional medications and alternative products among whole sample.



of complementary products used for mental health reasons among the whole study sample. Compared to middle-aged adults, significantly smaller proportions of younger-old and older-old adults reported past-two day utilization of antidepressants ($\chi^2(1.96, N = 18,279) = 22.07, p < 0.0001$), and significantly greater proportions reported using anxiolytics ($\chi^2(1.91, N = 18,279) = 63.92, p < 0.0001$) and sedative-hypnotics ($\chi^2(1.74, N = 18,279) = 33.03, p < 0.0001$). Compared to middle-aged adults, significantly larger proportions of younger-old and older-old adults reported past 12-month mental health-related utilization of alternative products ($\chi^2(1.94, N = 18,416) = 20.23, p < 0.0001$).

Figure 4.3 displays the same set of bivariate associations among respondents meeting criteria for major depression or a selected anxiety disorder. In this subsample, significantly smaller proportions of younger-old and older-old adults reported using antidepressant medications compared to middle-aged adults ($\chi^2(1.92, N = 1,034) = 5.95, p < 0.05$). In contrast to the results for the whole sample, age was not significantly related to the proportion of respondents with major depression or a selected anxiety disorder who reported using anxiolytic ($\chi^2(1.97, N = 1,034) = 1.52, p = 0.46$) or sedative/hypnotic medications ($\chi^2(1.43, N = 1,034) = 3.99, p = 0.079$). Age group was also not significantly related to mental health-related utilization of alternative products ($\chi^2(1.51, N = 1,034) = 0.36, p = 0.73$).

Figure 4.3. Utilization of conventional vs. complementary or alternative products among respondents with major depression or selected anxiety disorders.

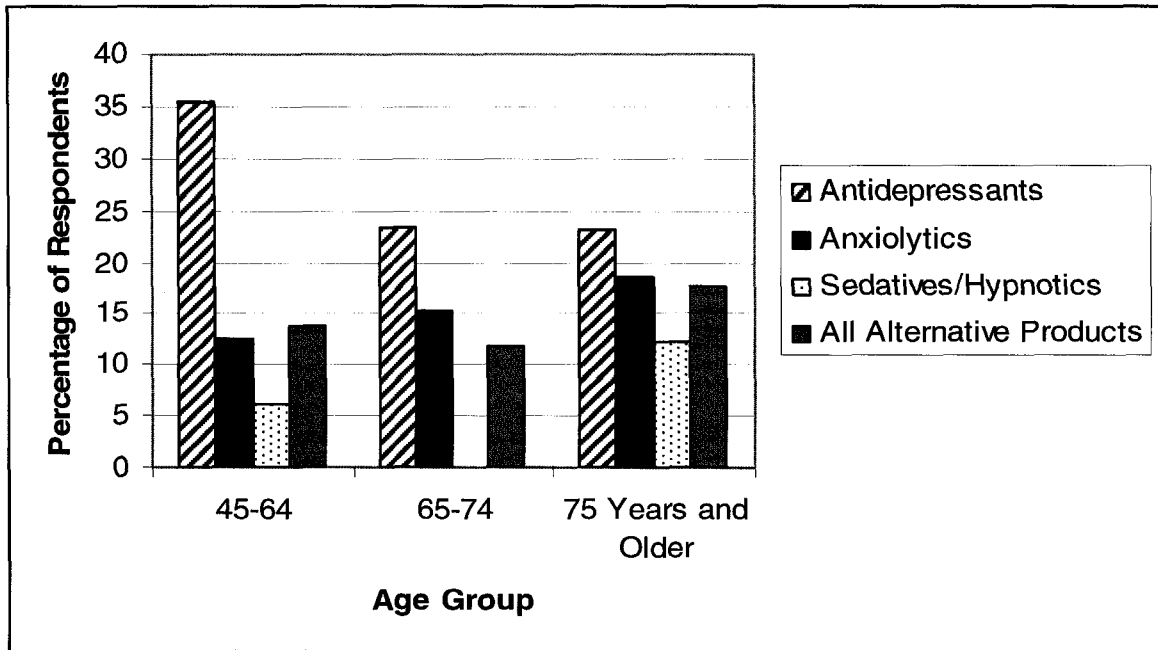


Table 4.4 presents the results of logistic regression analyses for past-two day utilization of conventional psychoactive medications and for past-month mental health-related utilization of complementary products. After accounting for all other sociodemographic and clinical predictors, older age was negatively associated with utilization of antidepressant medications and positively associated with utilization of anxiolytic and sedative/hypnotic medications. In relation to the middle-aged adults, younger-old adults were 41% more likely to use anxiolytic medications and equally likely to use sedative/hypnotic medications. In relation to middle-aged adults, the corresponding increases in likelihood for older-old adults were 89% and 92%.

Significant predictors of all three types of medication utilization were meeting 12-month criteria for major depression or a selected anxiety disorder, having a higher number of chronic medical conditions, and consulting either a specialty or non-specialty mental health provider in the past 12 months. Income was significantly associated with all three types of medication use, although the odds ratio's absolute value of 0.99 and confidence interval including the value 1.00 indicates that the effect of income is relatively limited. Additional significant predictors of antidepressant medication use were female sex and Caucasian ethnicity. The only additional significant predictor of anxiolytic medication use was having attained secondary graduation. Additional significant predictors of sedative/hypnotic medication use were Caucasian ethnicity and having insurance to help offset the cost of prescription medications.

After accounting for other sociodemographic and clinical factors, age was significantly related to mental health-related utilization of alternative health products.

Table 4.4

*Logistic Regression Analyses for Predictors of Use of Conventional Psychoactive Medications Commonly Used for**Depression and Anxiety and Alternative Products used for Mental Health Reasons*

Predictor Variables	Antidepressants <i>OR (95% CI)</i>	Anxiolytics <i>OR (95% CI)</i>	Sedatives/hypnotics <i>OR (95% CI)</i>	Alternative products <i>OR (95% CI)</i>
65-74 Years	0.74 (0.57-0.95) ^a	1.41 (1.08-1.84) ^a	1.21 (0.82-1.79)	1.30 (1.11-1.52) ^b 1.45 (1.22-1.73) ^d
75 Years and Over	0.67 (0.50-0.92) ^a	1.89 (1.43-2.50) ^d	1.92 (1.30-2.84) ^b	
Female	1.50 (1.21-1.86) ^c	1.24 (0.97-1.59)	1.16 (0.81-1.65)	1.07 (0.94-1.22)
Widowed, divorced, separated, or never married	1.12 (0.89-1.42)	1.06 (0.84-1.33)	1.38 (0.99-1.93)	1.07 (0.93-1.23)
Non-Caucasian	0.46 (0.24-0.89) ^a	0.66 (0.35-1.25)	0.37 (0.15-0.89) ^a	1.19 (0.92-1.53)
Secondary school diploma	0.94 (0.75-1.18)	0.67 (0.53-0.85) ^b	0.76 (0.53-1.08)	1.17 (1.01-1.36) ^a
Household Income (1000s of dollars/year)	1.00 (0.99-1.00) ^a	0.99 (0.99-1.00) ^c	0.99 (0.99-1.00) ^b	1.00 (1.00-1.00)
Insurance for Prescription Medication	1.61 (1.21-2.14) ^b	0.97 (0.73-1.28)	1.45 (1.02-2.04) ^a	1.05 (0.89-1.24)
Major Depressive Disorder or Selected Anxiety Disorder (12 month diagnosis)	3.59 (2.67-4.82) ^d	2.46 (1.66-3.65) ^d	2.40 (1.22-4.75) ^a	1.03 (0.75-1.40)
Number of Chronic conditions	1.21 (1.15-1.27) ^d	1.23 (1.17-1.29) ^d	1.27 (1.20-1.35) ^d	1.00 (0.97-1.03)
Specialist Consultation	2.43 (1.63-3.63) ^d	1.98 (1.10-3.55) ^a	2.33 (1.23-4.41) ^b	0.85 (0.57-1.27)

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Non-specialist consultation	7.30 (5.39-9.88) ^d	2.28 (1.44-3.62) ^c	1.96 (1.08-3.55) ^a	0.99 (0.73-1.34)
Conventional product use	N/A	N/A	N/A	1.04 (0.85-1.28)

^a $p < 0.05$

^b $p < 0.01$

^c $p < 0.001$

^d $p < 0.0001$

Compared to adults aged 45-64, adults aged 65-74 years were 30% more likely and adults aged 75 years and older were 45% more likely to use alternative health products for mental health reasons. Apart from age, the only factor significantly associated with utilization of alternative products was having attained secondary school graduation.

Discussion

The present study used a large and geographically diverse Canadian community sample ($N = 18,498$) to examine rates and predictors of utilization of conventional and complementary mental health care services and mental health-related medications and products among middle-aged (45-64 years), younger-old (65-74) and older-old adults (75 years and older). The following is a summary of our key findings.

Summary of Results

We hypothesized that respondents meeting 12-month criteria for a major depressive episode or a selected anxiety disorder would be more likely to utilize both conventional and complementary mental health services and medications/products compared to those without depression or anxiety disorders. Indeed, having depression or an anxiety disorder was associated with an increased likelihood of using conventional mental health services and with using antidepressant, anxiolytic, and sedative/hypnotic medications. However, meeting criteria for depression or an anxiety disorder was not associated with the likelihood of consulting CAM providers, using other services (chat room, self-help group, telephone crisis line), or using CAM products for mental-health related reasons. Consistent with these results, previous

studies have indicated that general CAM use is more prevalent among those with transient stress, adjustment disorders, or those who self-identify as having depression or anxiety than among those with mental disorders identified using standardized diagnostic criteria (Astin et al., 1998; Druss & Rosenheck, 2000; Unützer et al., 2000).

Among all respondents, younger-old and older-old adults had lower rates of consultation with any conventional mental health care provider in the past 12 months compared to middle-aged adults, and older-old adults had the lowest rates of consultation. This same age-related pattern of utilization occurred among the subsample of respondents meeting 12-month criteria for major depression or a selected anxiety disorder. When considered in the context of other potentially relevant sociodemographic and clinical characteristics, age remained a highly significant predictor of utilization of conventional mental health services. Compared to middle-aged adults, younger-old adults were 59% less likely and older-old adults were 70% less likely to report consulting with any conventional mental health provider in the past year. These findings are consistent with the pattern of underutilization of mental health care services among older adults previously described in a wide range of samples (Klap et al., 2003; Young et al., 2001).

Among all respondents, younger-old and older-old adults had lower rates of antidepressant medication use and higher rates of anxiolytic and sedative/hypnotic medication use compared to middle-aged adults. Among individuals with major depression or a selected anxiety disorder, younger-old and older-old adults still had lower rates of antidepressant medication use compared to middle-aged adults;

however, the three age groups did not differ significantly on use of anxiolytic or sedative/hypnotic medications. When considered in the context of a wide range of sociodemographic and clinical predictors, older age was negatively associated with utilization of antidepressant medication and positively associated with utilization of anxiolytic and sedative/hypnotic medications. Relatively low rates of antidepressant medication use coupled with high rates of anxiolytic and sedative/hypnotic medication use among older adults are consistent with the results of other studies (e.g., Blazer et al., 2005; Hanlon et al., 2002). Given that selective serotonin reuptake inhibitor (SSRI) antidepressant medications are the first-line treatment for depression and many anxiety disorders (American Psychiatric Association, 2004; Canadian Psychiatric Association, 2001), low use of antidepressant medications among older adults with depression or selected anxiety disorders potentially indicates inadequate pharmacological treatment of these disorders.

We hypothesized that age-related utilization of CAM would mirror the pattern found in utilization of conventional services and medications. That is, we expected that younger-old and older-old adults would be less likely than middle-aged adults to report consulting CAM providers or utilizing CAM products for mental health-related reasons and that older-old adults would be least likely to report use of these services and products. Among all respondents, rates of mental health-related utilization of CAM services were extremely low and did not differ significantly according to age group. Among respondents meeting 12-month caseness criteria for major depression or a selected anxiety disorder, the raw numbers of respondents in older age groups reporting CAM service use were so low that accurate population values could not be

estimated. When considered in the context of other relevant sociodemographic and clinical characteristics, neither age nor any of the other putative predictors were significantly associated with the likelihood of seeing a CAM provider for mental health-related reasons. This finding suggests that, at the population level in Canada, mental health-related use of CAM providers is miniscule. In comparison, use of CAM services for any reason was estimated at 17% among adults aged 52 and older in a nationally representative Canadian study (Votova & Wister, 2007) and at 19% in a nationally representative American study (Foster et al., 2000).

Among the whole sample, younger-old and older-old adults were more likely to use complementary other services, primarily due to the use of self-help groups. Among respondents meeting 12-month caseness criteria for major depression or a selected anxiety disorder, the raw numbers of respondents reporting use of other services were so low that accurate population values could not be estimated. When considered in the context of a broad range of sociodemographic and clinical characteristics, older age was associated with significantly increased odds of using other services for mental health or emotional concerns. However, it must be emphasized that the absolute rates of use of other services (again, accounted for primarily by use of self-help groups) were extremely small in all three age groups (between 1% and 3%) and therefore it is unlikely that this finding represents a practically significant effect of age on use of these services.

Among all respondents, younger-old and older-old adults had higher rates of mental health-related CAM product use compared to middle-aged adults and older-old adults had the highest rates of all three groups. Among respondents meeting 12-

month criteria for major depression or a selected anxiety disorder, age was not significantly related to rates of mental health-related CAM product use. When considered in the context of other sociodemographic and clinical characteristics, older age was positively associated with mental health-related utilization of alternative health products. Although we know of no other data bearing specifically on age differences in mental health-related CAM product use, the relatively high rates of mental health-related use of CAM products among older adults in our sample are consistent with rates of general use of CAM products among older adults reported in other studies. The prevalence of general utilization of CAM products was estimated at 27.4% in an American sample of adults 75 years and older (Nahin, Fitzpatrick, Williamson, Burke, DeKosky, & Furberg, 2006) and at 19.1% in a Swedish sample of adults aged 60 and older. Herbal products are consistently found to be one of the two most-commonly used forms of CAM among adults 65 years and older (along with chiropractic; Astin, 1998; Foster et al., 2000) and utilization of herbal products has been found to increase with increasing age among adults aged 52 and older (Ness et al., 2005).

Conclusions and Implications

Overall, the likelihood using of CAM services or products for mental health reasons was not significantly related to having a clinically significant, independently assessed mental health problem (i.e., meeting criteria for depression or a selected anxiety disorder). Furthermore, age-related patterns in mental health-related use of CAM did not directly correspond to age-related patterns in conventional mental health care utilization. Instead, mental health-related utilization of CAM services was

very low and did not differ according to age in either the whole sample or subsample of depressed/anxious respondents. Among the whole sample, younger-old and older-old adults were more likely to report mental health-related use of CAM products, but among the subset of individuals meeting criteria for depression or a selected anxiety disorder, age differences in mental health-related use of CAM products were not significant.

Mental health-related use of CAM has been found to comprise a relatively small proportion of overall CAM use and thus the generally low rates obtained in our study may be consistent with these results. Among adults of all ages, 9.8% of those with a self-reported mental health condition reported past year use of CAM services, and half of that number (4.5%) reported that they had used CAM services to treat their mental health condition (Druss & Rosenheck, 2000). Among adults aged 65 years and older, 17.9% of CAM service or product users with self-reported depression or anxiety reported using CAM specifically to treat a mental health condition (Grzywacz et al., 2006). In our study using a Canadian sample, an extremely small proportion of respondents consulted CAM providers for mental health services but a much larger proportion took CAM products for their presumed mental health benefits. Although American data also show higher rates of CAM product use compared to CAM service use (e.g., Grzywacz et al., 2006), the extremely low rates of mental health-related CAM service use observed in our study may be at least partly explained by Canada's system of universal coverage for health care services. Having access to universal health care may reduce the tendency to seek mental health care from CAM providers who are charging for services.

It is notable that none of the proposed predictors of CAM service use and very few of the proposed predictors of CAM product use were significant in logistic regression analyses. Significant predictors of general CAM use (services and/or products) in previous studies have included being middle-aged, female, and Caucasian, having a higher income and level of education, residing in western states and provinces, reporting more pain, and having a greater number of chronic physical conditions (Astin, 1998; Eisenberg et al., 1998; Millar, 2001; Simon et al., 2004). However, the significance of predictors appears to vary widely across studies and samples. Among respondents with independently assessed major depression, significant predictors of CAM service use were being female, having more education, and reporting more chronic conditions (Wang, Patten, & Russell, 2001). Among persons with self-reported depression and anxiety, no sociodemographic characteristics were significantly associated with CAM use (Kessler et al., 2001). Although adults over 65 years of age were less likely to use CAM services and products than adults under 65 years, no demographic variable distinguished users and non-users of CAM among adults aged 65 and older (Foster et al., 2000). Significant predictors of mental health-related CAM visits among older adults with self-reported depression or anxiety were younger age and a lower level of educational attainment (Grzywacz et al., 2006).

Factors other than sociodemographic and clinical characteristics may be important in determining mental health-related CAM use, such as individuals' personal experiences with and beliefs about health care systems. Given the low rates of mental health service use and high rates of potentially inappropriate psychotropic

prescribing for older adults found in various studies (Blalock et al., 2005; Metge et al., 2005), the greater likelihood of older adults in our study to report mental health-related use of CAM products may reflect a need that is unmet by the prescription of conventional psychotropic medications. On the other hand, CAM users of all ages are in fact more likely than others to have a regular conventional health care provider and to have more visits with conventional health care providers, even after accounting for need-related factors such as pain and chronic medical conditions (Foster et al., 2000; Millar, 2001).

Although self-perceived unmet need for care was a significant predictor of CAM service use among adults aged 18 and older in a nationally representative Canadian survey (Millar, 2001), self-perceived unmet need for care did not predict CAM service use when an analysis of the same survey was limited to data from respondents aged 65 years and over (Votova & Wister, 2007). Instead, significant predictors of CAM service use among older adults included reporting a higher level of spirituality and a belief in a self-care approach to health care (Votova & Wister, 2007). Among older Californian Medicare recipients, personal belief characteristics associated with the use of CAM services and products included having a holistic health philosophy and having a worldview that incorporated a commitment to environmentalism, feminism, and spiritual and personal growth psychology (Astin et al., 1998). The CCHS 1.2 does not provide data on respondents' beliefs about health and health care and thus in our study it was not possible to assess the extent to which these factors influence who uses CAM services and products for mental health reasons.

Strengths and Limitations

The CCHH 1.2 survey sample was limited to persons residing in the community, meaning that the present results cannot be generalized to individuals who are homeless, or who reside in remote areas, on reserves, or in institutions such as nursing homes. A further limitation is that we were not able to determine predictors of mental health-related CAM service use and few of CAM product use, due primarily to the miniscule numbers of respondents who reported consulting CAM providers for mental health reasons. Despite the above-noted limitations, the present results are based on current data from a very large and geographically diverse community sample that includes people who have untreated or unidentified depression and selected anxiety disorders. This is the first study to directly compare middle-aged, younger-old, and older-old adults' mental health-related utilization of CAM services and products in relation to their utilization of conventional mental health care services and medications. Whereas most other studies combine utilization of CAM services and products into overall CAM utilization, we have examined service and product use separately, which allowed us to comment on discrepant rates of CAM service and product use.

CHAPTER 5

General Discussion

Previous studies have indicated a tendency for older adults with depression to under-utilize mental health care services. The three studies of my dissertation were intended to provide representative Canadian data on three related aspects of this problem: (1) mental health consultations with health care professionals, (2) utilization of psychoactive medications commonly used in treatment of late-life depression, and (3) mental health-related utilization of alternative or complementary services and products. The data source for the dissertation was Statistics Canada's Canadian Community Health Survey, Cycles 1.1 (Study 1) and 1.2 (Studies 2 and 3). In relation to the hypotheses outlined in the general introduction, my general conclusions are as follows.

Older adults are less likely than middle-aged adults to seek mental health care services from any health care professional. Among survey respondents who met criteria for major depression according to the CIDI-SFMD (Study 1) or who met criteria for major depression or a selected anxiety disorder according to the WMH-CIDI (Study 3), a minority of people in all age groups reported any mental health consultation in the year preceding the survey, a finding consistent with other community-based survey studies (Diverty & Beaudet, 1997; Henderson et al., 2000; Hunsley et al., 2000). Past 12-month mental health care utilization among people with depression varied significantly according to age, from 46.9% of people aged 45-64 years, to 31.1% of adults 65-74 years and 20.9% of those aged 75 and older (Study 1). Among people with depression or a selected anxiety disorder, the corresponding rates

were 46.4%, 37.8%, and 23.4% (Study 3). Even after accounting for other sociodemographic and health-related characteristics, the odds of having at least one mental health consultation in the past year remained lower among older compared with middle-aged adults (Studies 1 and 3).

Even though the prevalence of depression is lower in older age groups (7.7%, 3.7%, and 2.8% for the three age groups, respectively; Study 1), these findings provide compelling evidence for the underutilization of mental health services among depressed older adults and particularly among older old adults (i.e., 75 years and older). Compared to the mental health care utilization rate of depressed middle-aged adults, the utilization rate is approximately one-third lower for depressed younger old adults and over one-half lower for depressed older old adults. Although relatively few studies have examined age-related differences within the 65 and older age group, my finding is consistent with other nationally representative data that indicated particularly low rates of any mental health service use among adults 75 years and older compared to adults aged 65-74 (Demmler, 1998; German et al., 1985).

Older adults are less likely to consult specialty mental health professionals (psychologists or psychiatrists) compared to middle-aged adults. In all age groups, people with depression were more likely to access mental health care from a family physician than from a specialty mental health provider (a psychologist or psychiatrist). In both Studies 1 and 3, younger-old and older-old adults were especially unlikely to consult with a specialty provider for mental health care after accounting for other sociodemographic and clinical characteristics. Among adults aged 65 years and older, I found a mixed pattern of results regarding relative rates of

specialty mental health service use. Compared to adults aged 65-74 years, adults aged 75 years and older were significantly less likely to consult family physicians and psychiatrists, but equally (un)likely to consult psychologists. Our pattern of results coincides with prior survey-based research, suggesting that over the past 25 years little has changed in the limited use of specialist mental health services by older adults (German et al., 1985; Klap et al., 2003; Olfson & Pincus, 1996; Unützer et al., 1999).

Rates of antidepressant medication use among younger-old and older-old adults continue to be low compared to those among middle-aged adults. Among all respondents, younger-old and older-old adults were equally less likely than middle-aged adults to use antidepressant medications (6.6%, 4.6%, and 4.6% for the three age groups, respectively). Among depressed respondents, younger-old and older-old adults were both less likely than middle-aged adults to use antidepressant medications but older-old adults were considerably less likely than the other two age groups to use antidepressant medications (42.8%, 37.3%, and 16.4%). In fact, the rate of antidepressant medication use observed in depressed adults 75 years of age and older was less than half that observed in the depressed adults 65-74 years of age.

Although I found differences among the three age groups with respect to the use of antidepressant medication, particularly among depressed respondents, when considered in the context of a broad range of sociodemographic and clinical characteristics, age was not a significant predictor of antidepressant medication use. In particular, the prevalence of 12-month major depressive episode was far greater in the middle-aged compared to the younger-old and older-old groups (4.6%, 2.1% and

1.7%, respectively), meaning that the role of age in predicting medication use in the larger sample is subsumed under the strong predictive value of depression status ($OR = 5.02$, 95% $CI = 3.49-7.22$).

Rates of antidepressant medication use in older adults appear to be somewhat higher in studies where depression has been diagnosed by a health care provider. For example, two-thirds of Medicare recipients and three-quarters of geriatric psychiatry patients with a diagnosis of depression by their health care provider receive an antidepressant medication (Colenda et al., 2003; Sambamoorthi et al., 2003).

Obviously, antidepressants cannot be prescribed unless depression is first recognized and diagnosed, and thus low use of antidepressant medications in older adults is likely linked to low rates of contact with mental health professionals observed in numerous other studies (Crabb & Hunsley, 2006; Klap et al., 2005).

Older adults are more likely to use benzodiazepines compared to middle-aged adults. Among all respondents, compared to middle-aged adults, younger-old and older-old adults were more likely to report using benzodiazepines (3.8%, 6.1%, and 10.8%, respectively), regardless of their classification as primarily anxiolytic or primarily sedative/hypnotic. Among depressed respondents, rates of overall use of benzodiazepines and use of anxiolytic benzodiazepines did not differ significantly according to age group. However, depressed older-old adults had a significantly higher rate of use of sedative or hypnotic benzodiazepines compared to the other two age groups (6.2%, 0%, and 24.1% for middle-aged, younger-old, and older-old adults, respectively). Age was a significant predictor of overall benzodiazepine use after accounting for other relevant sociodemographic and clinical characteristics.

Compared to adults aged 45-64 years, adults aged 65-74 years were 1.5 times more likely and adults aged 75 years and older were 2.5 times more likely to report having taken a benzodiazepine in the two days prior to being surveyed.

Rates of concomitant antidepressant medication and benzodiazepine use did not vary significantly according to age, either among the whole sample and among the subsample of depressed respondents. However, among individuals who used antidepressants, younger-old and older-old adults were significantly more likely to use at least one benzodiazepine concomitantly (20.9%, 25.2%, and 41.3% for middle-aged, younger-old, and older-old adults, respectively). Age was not a significant predictor of concomitant antidepressant medication and benzodiazepine use when other relevant sociodemographic and clinical factors were accounted for statistically.

High rates of benzodiazepine use among older adults may be accounted for by the use of benzodiazepines to ameliorate comorbid anxiety or sleep problems in late-life depression, (a strategy that is commonly used at the initiation of antidepressant medication treatment (Flint, 1997)). However, there is little evidence to suggest the effectiveness of using a benzodiazepine as an adjunct to antidepressant treatment among older adults with comorbid anxiety (Andreescu et al., 2007). Furthermore, a recent meta-analysis indicated that the therapeutic benefits of sedative or hypnotic benzodiazepines for insomnia in older adults are small relative to the risk of adverse cognitive events, adverse psychomotor events, and daytime fatigue (Glass et al., 2006). Overall, the high rates of benzodiazepine use coupled with low rates of antidepressant medications observed among depressed older adults in my study indicate substantial inadequacies in the pharmacological treatment of late-life

depression.

Age-related patterns in mental health-related use of CAM did not directly correspond to age-related patterns in conventional mental health care utilization.

Mental health-related utilization of CAM services was very low and did not differ according to age in either the whole sample or subsample of respondents meeting criteria for major depression or a selected anxiety disorder. When considered in the context of other relevant sociodemographic and clinical characteristics, neither age nor any of the other putative predictors were significantly associated with the likelihood of seeing a CAM provider for mental health-related reasons. This finding suggests that, at the population level, mental health-related use of CAM providers is miniscule.

Among the whole sample, younger-old and older-old adults were more likely to report mental health-related use of CAM products (13%, 16.4%, and 17.4% for the middle-aged, younger-old and older-old groups, respectively), but among the subset of individuals meeting criteria for depression or a selected anxiety disorder, age differences in mental health-related use of CAM products were not significant. When considered in the context of other sociodemographic and clinical characteristics, older age was positively associated with mental health-related utilization of alternative health products. Given the low rates of mental health service use and high rates of potentially inappropriate psychotropic prescribing for older adults found in various studies (Blalock et al., 2005; Metge et al., 2005), the greater likelihood of older adults in our study to report mental health-related use of CAM products may reflect a need that is unmet by the prescription of conventional psychotropic medications. On the

other hand, CAM users of all ages are in fact more likely than others to have more frequent visits with regular conventional health care provider, even after accounting for need-related factors such as pain and chronic medical conditions (Foster et al., 2000; Millar, 2001).

Relative to utilization of conventional mental health services, mental health-related utilization of CAM services and products arguably depends more strongly on an individual's initiative to seek help for a recognized problem. If age-related patterns of mental health-related CAM use had followed the same pattern observed for conventional mental health service use, I might have speculated that it represented a generalized tendency on the part of older adults to fail to seek help for mental health problems. However, this was not the case. The fact that age-related patterns of mental health-related CAM service and product use did not reflect age-related patterns of conventional mental health service use suggests that low utilization of mental health care services in older adults are not related simply to failure to recognize the problem on the part of older adults. On the other hand, the very small number of individuals in all age groups who used mental health-related CAM services and products makes it difficult to draw broad conclusions about age-related patterns.

Other sociodemographic and clinical predictors were generally consistent with those found in other studies, with a few notable exceptions. Apart from age, significant sociodemographic predictors of having a past 12-month mental health consultation were consistent with those found in previous research (Klap et al., 2003; Olfson & Pincus, 1996; Swartz et al., 1998): being female, not married, and having more education were all associated with a greater likelihood of consulting health

professionals for emotional and mental health problems (Studies 1 and 3). Income was not significantly associated with the likelihood of having a mental health consultation in the past year (Studies 1 and 3). In Study 3, ethnicity was analyzed as an additional potential predictor of mental health consultations. After accounting for all other potential predictors, non-Caucasian individuals were 67% less likely than Caucasian individuals to have a mental health consultation with any health care provider (specialty or non-specialty). This finding is consistent with American data that indicate low rates of use of outpatient mental health services among Black and Hispanic individuals even after controlling for factors such as socioeconomic and health insurance status (Padgett, Patrick, Burns, & Schlesinger, 1994).

Sociodemographic predictors of medication use varied in significance according to the class of medication in question (Studies 2 and 3). Being female was associated with increased odds of antidepressant medication use but not with use of benzodiazepines or concomitant use of antidepressant medications and benzodiazepines. Marital status was not significantly associated with use of either medication type. Having a lower level of educational attainment was associated with increased odds of benzodiazepine and concomitant use.

Although a statistically significant association was found between income and all types of medication use (Studies 2 and 3), the fact that relative value of the odds ratio is almost 1.00 indicates that its effect is negligible. Ethnicity was not a significant predictor of use of antidepressant medications or benzodiazepines (Study 2). Caucasian ethnicity was associated with a greater likelihood of using antidepressant and sedative/hypnotic medications in Study 3, but the significance

level of $p < 0.05$ suggests a relatively weak association. These findings are in contrast to other studies that found a highly significant association between Caucasian ethnicity and increased likelihood of using antidepressant medications (Blazer et al., 2005; Brown et al., 2002; Weisberg et al., 2007). The nonsignificance of income and ethnicity as predictors of antidepressant medication use in my study should be interpreted in the context of the Canadian health care system, where residents have universal access to a wide range of mental health care services and on average pay far less for medications compared to residents of the United States.

The most reliable predictors of mental health care consultations and all types of medication use were characteristics related to need for health or mental health services. Meeting criteria for 12-month diagnosis of major depressive disorder or a selected anxiety disorder and having a higher number of chronic medical conditions were strongly associated with all types of conventional mental health care consultations (Studies 1 and 3) and with use of antidepressant medication, benzodiazepines, and concomitant use of both medication types (Study 2). Utilization-related factors were examined in relation to medication use (Study 2). The only significant utilization-related factor was having consulted a GP for a mental health-related problem within the past 12 months, which was associated with a nearly 50% decrease in the likelihood of using an antidepressant medication.

It is notable that none of the proposed predictors of mental health-related CAM service use and very few of the proposed predictors of mental health-related CAM product use were significant in logistic regression analyses. Apart from age, having attained secondary graduation was associated with a slight increase in the

likelihood of using a CAM product for mental health reasons. Significant predictors of general CAM use (services and/or products) in previous studies have included being middle-aged, female, and Caucasian, having a higher income and level of education, residing in western states and provinces, reporting more pain, and having a greater number of chronic physical conditions (Astin, 1998; Eisenberg et al., 1998; Millar, 2001; Simon et al., 2004). However, the significance of predictors appears to vary widely across studies and samples. Factors other than sociodemographic and clinical characteristics may be important in determining mental health-related CAM use, such as individuals' personal experiences with and beliefs about health care systems.

General Limitations and Strengths

Some general limitations must be noted regarding the methodology of the three studies. The CCHS 1.1 and 1.2 survey samples were limited to persons residing in the community, meaning that the present results cannot be generalized to individuals who are homeless, or who reside in remote areas, on reserves, or in institutions such as nursing homes. It is possible that results from this community-dwelling sample may overestimate rates of mental health consultations and underestimate rates of psychoactive medication use in nursing homes or other long-term care facilities, given the rates of mental health care and medication use reported in previous studies of these settings (Conn et al., 1999; Brown et al., 2002; Burns, Wagner, Taube, Magaziner, Pernutt, & Lenderman, 1993; Smyer, Shea, & Streit, 1994).

Major depression was assessed using the CIDI-SFMD in the CCHS 1.1 (Study 1) and using the WMH-CIDI in the CCHS 1.2 (Studies 2 and 3). The validity of the assessment of major depression with the CIDI-SFMD may be compromised because the measure indicates probable diagnoses of the disorder based on Criteria A, B, and C from the DSM-IV and does not assess exclusionary criteria such as medical conditions or depression in the context of another mental disorder. The WMH-CIDI is intended to improve the validity of diagnoses given by the CIDI-SF by modifying questions to facilitate respondents' retrieval of memories related to symptoms and by including sections on severity, functional limitations, and exclusionary criteria (i.e., medical illness and substance use) associated with mental disorders. At a construct level, it is possible that DSM-based measures such as the CIDI-SF and WMH-CIDI do not accurately capture the complex presentation of depression in late life. Clinically significant late-life depression is less often defined by subjective sadness and less likely to meet DSM-IV criteria for Major Depressive Disorder (Lyness et al., 2007). On the other hand, the widespread use of the CIDI-SF facilitates the comparison of the present data with previous survey data sets that have used the CIDI or other WHO-developed (i.e. DSM- and ICD-based) measures (e.g. Steffick et al., 2000).

With respect to the assessment of utilization of mental health services, both surveys only asked about consultation for mental health problems in general and did not specifically inquire about consultation for the treatment of depression. Similarly, questions on the CCHS 1.2 only address utilization of CAM services and products for mental health reasons rather than specifically for the treatment of depression or

anxiety. Furthermore, both surveys provide categorical utilization data but no data on other potentially important indicators of treatment adequacy such as frequency, intensity, or duration of utilization. Finally, the cross-sectional design of the survey did not allow me to discriminate between age- and cohort-related effects on mental health care utilization.

Despite these limitations, the three studies provide important findings about age-related differences in mental health care utilization using current data from a large and geographically diverse Canadian community sample that includes people with untreated or unidentified depression and anxiety disorders. Most studies that compare the utilization of general medical versus specialty mental health services for treatment of late life depression are based either on samples drawn from health management organizations (HMOs; Unützer et al., 1999) or from community surveys conducted more than 20 years ago (e.g., Cooper-Patrick et al., 1994). The data source for Study 1 provides a clear advantage over previous studies. Although previous studies have provided estimates of the prevalence of pharmacological treatment for late-life depression, Study 2 is the first study to directly compare rates of utilization of medications commonly used for the treatment of depression among middle-aged, younger-old, and older-old adults. Study 3 is the first study to directly compare middle-aged, younger-old, and older-old adults' mental health-related utilization of CAM services and products in relation to their utilization of conventional mental health care services and medications.

Implications and Future Directions

The results of the three dissertation studies clearly indicate that mental health utilization patterns differ significantly among middle-aged, younger- and older-older adults. The stability of such findings over time is remarkable, as it seems that underutilization continues despite changes in the cohort of older adults and changes in the nature of mental health services. On the other hand, the demand for mental health services among members of the currently middle-aged cohort is projected to remain high as they reach their later years, and evidence of this shift is already found in rising rates of psychotherapy use among adults aged 55-64 (Olfson, Marcus, Druss, & Pincus, 2002). Diagnosis rates of late-life depression doubled during the 1990s in the United States (Crystal, Sambamoorthi, Walkup, & Akincigil, 2003) and rates of antidepressant use among depressed elderly have also risen (Blazer et al., 2005). Should these trends continue, the apparently stable pattern of underutilization of mental health services by older adults may change dramatically. Subsequently, it is important that researchers continue to track the mental health service needs of older adults in order to ensure that care is accessible and maximally effective for both the current and coming generations of older adults. Longitudinal studies on utilization of mental health care services are the only means of distinguishing age and cohort effects, and are essential in projecting the future needs and demands for mental health services for late life depression.

In the meantime, various interventions have been employed to address barriers to older adults' use of mental health services for late-life depression. My results confirm that, consistent with results obtained from a variety of data sources (e.g., Klap et al., 2003; Unützer et al., 1999), older Canadian adults are more likely to seek

mental health care in the general medical sector rather than the specialty mental health sector. Accordingly, large-scale interventions to address under-utilization of mental health care services among older adults have focused on improving the detection and treatment of late-life depression in primary care, the setting in which older adults are most likely to seek help. Collaborative or shared care models incorporate the expertise of specialty mental health providers into a primary care system of service delivery. Collaborative or shared care models rely on a primary care physician, a depression case manager (usually a psychiatric nurse), and a consulting specialty mental health provider (usually a geriatric psychiatrist) to coordinate and deliver evidence-based pharmacological and psychotherapeutic interventions to older adults identified as having depression. Uniting all depression-related service providers within one clinic effectively minimizes both provider and patient barriers to obtaining appropriate care for late-life depression.

Models of collaborative care have so far garnered considerable empirical support. In the United States, the IMPACT (Improving Mood – Promoting Access to Collaborative Treatment) model of collaborative care has been found to be far superior to usual depression care in terms of reducing depressive symptoms and increasing physical functioning among older depressed adults (Callahan et al., 2005; Unützer et al., 2002). IMPACT has so far been implemented in 68 organizations in 22 states (University of Washington, Department of Psychiatry and Behavioral Sciences, 2008). The Canadian Collaborative Mental Health Initiative (CCMHI) funded by Health Canada is responsible for implementing and evaluating collaborative care for depression in Canadian primary care clinics. A recent report released by the CCMHI

provided data on 89 collaborative care initiatives and identified nearly 60 additional initiatives across Canada (CCMHI, 2005). Although the mandate of the CCMHI is not specifically directed at late-life depression, such an initiative clearly has the possibility to serve as a more effective means of delivering mental health care services to older adults.

In conclusion, the three studies of my dissertation demonstrate that substantial age-related differences in patterns of mental health care consultation, utilization of psychoactive medication, and mental health-related use of CAM services and products. My results are based on a large, representative, and geographically diverse Canadian community sample and as such as highly likely to provide an accurate representation of age-related patterns of mental health care utilization in the Canadian community-dwelling population. Consequently, these data have legitimate potential to influence policy decisions on the future of mental health care for older adults in Canada.

References

- Alexopoulos, G. S. & Apfeldorf, W. (2004). Unipolar depression. In S. P. Roose & H. A. Sackeim (Eds.), *Late-life depression* (pp.21-29). New York: Oxford University Press, Inc.
- American Psychiatric Association (1981). *Diagnostic and statistical manual of mental disorders* (3rd ed.). Washington, DC: Author.
- American Psychiatric Association (2004). Practice guidelines for the treatment of patients with major depression. Retrieved on March 21, 2004 from www.psych.org/psych_pract/treatg/pg/Depression2e.book.cfm
- Ancill, R. J., Embury, G. D., MacEwan, G. W. & Kennedy, J. S. (1988). The use and misuse of psychotropic prescribing for elderly psychiatric patients. *Canadian Journal of Psychiatry*, 33, 585-589.
- Andersen R. (1968). *A behavioral model of families' use of health services*. Chicago: Centre for Health Administration Studies.
- Andreescu, C., Lenze, E. J., Dew, M. A., Begley, B. H., Mulsant, A. Y., Dombrovski, B. G., et al. (2007). Effect of comorbid anxiety on treatment response and relapse risk in late-life depression: controlled study. *British Journal of Psychiatry*, 190, 344-349.
- Andrews, G. (2001). Prevalence, comorbidity, disability and service utilisation. *British Journal of Psychiatry*, 178, 145-153.
- Andrews, G. (2002). Private complementary medicine and older people: service use and user empowerment. *Ageing and Society*, 22, 343-368.
- Areán, P. A., Ayalon, L., Hunkeler, E., Lin, E. H. B., Tang, L., Harpole, L., Hendrie,

- H., Williams, J. W., & Unutzer, J. (2005). Improving depression care for older, minority patients in primary care. *Medical Care*, *43*, 381-390.
- Areán, P. A., Alvidrez, J., Barrera, A., Robinson, G. S., & Hicks, S. (2002). Would older medical patients use psychological services? *The Gerontologist*, *42*, 392-398.
- Areán, P.A. & Cook, B.L. (2002). Psychotherapy and combined psychotherapy/ pharmacotherapy for late life depression. *Biological Psychiatry*, *52*, 293-303.
- Astin, J.A. (1998). Why patients use alternative medicine: Results of a national study. *Journal of the American Medical Association*, *19*, 1548-1553.
- Astin, J. A., Pelletier, K. R., Marie, A., & Haskell, W. L. (2000). Complementary and alternative medicine use among elderly persons: one-year analysis of a Blue Shield Medicare supplement. *Journal of Gerontology*, *55A*, M4-M9.
- Baldwin, R. & Burns, A. (1998). Pharmacological treatments. In R. Butler & B. Pitt (Eds.), *Seminars in old age psychiatry* (pp. 247-264). London: Royal College of Psychiatrists.
- Bartels, S. J., Horn, S., Sharkey, P., & Levine, K. (1997). Treatment of depression in older primary care patients in health maintenance organizations. *International Journal of Psychiatry in Medicine*, *27*, 215-231.
- Beekman, A., Deeg, D., Braam, A., Smit, J., & van Tilburg, W. (1997). Consequences of major and minor depression in later life: a study of disability, well-being and service utilization. *Psychological Medicine*, *27*, 1397-1409.
- Berg, S. & Dellasega, C. (1996). The use of psychoactive medications and

- cognitive function in older adults. *Journal of Aging and Health*, 8, 136-149.
- Black, B. S., Rabins, P. V., German, P., McGuire, M., & Roca, R. (1997). Need and unmet need for mental health care among elderly public housing residents. *The Gerontologist*, 37, 717-728.
- Black, S. A., & Markides, K. S. (1999). Depressive symptoms and mortality in older Mexican Americans. *Annals of Epidemiology*, 9, 45-52.
- Blalock S. J., Byrd, J. E., Hansen, R. A., Yamanis, N., McMullen, K., DeVellis, B.M., et al. (2005). Factors associated with potentially inappropriate drug utilization in a sample of rural community-dwelling older adults. *American Journal of Geriatric Pharmacotherapy*, 3, 168-179.
- Blazer, D. (2002). *Depression in late life*. New York: Springer Publishing Company, Inc.
- Blazer, D. G., Hybels, C. F., Fillenbaum, G. G., & Pieper, C. F. (2005). Predictors of antidepressant use among older adults: Have they changed over time? *American Journal of Psychiatry*, 162, 705-710.
- Brogan, D. (1998). Software for sample survey data, misuse of standard packages. In P. Armitage & T. Colton (Eds.), *Encyclopedia of biostatistics*, Vol. 5. (pp. 4167-4174). New York: Wiley. Retrieved January 13, 2005, from www.rti.org/sudaan/pdf_files/brogan.pdf
- Brown, M. N., Lapane, K. L., & Luisi, A. F. (2002). The management of depression in older nursing home residents. *Journal of the American Geriatrics Society*, 50, 69-76.
- Burns, B. J., Wagner, H. R., Taube, J. E., Magaziner, J., Pernutt, T., & Lenderman, L.

R. (1993). Mental health service use by the elderly in nursing homes.

American Journal of Public Health, 83, 331-337.

Colenda, C. C., Wagenaar, D. B., Mickus, M., Marcus, S. C., Tanielian, T. & Pincus, H. A. (2003). Comparing clinical practice with guideline recommendations for the treatment of depression in geriatric patients. *American Journal of Geriatric Psychiatry, 11*, 448-457.

Conn, D. K., Ferguson, I., Mandelman, K., & Ward, C. (1999). Psychotropic drug utilization in long-term-care facilities for the elderly in Ontario, Canada. *International Psychogeriatrics, 11*, 223-233.

Coyne, J. & Katz, I.R. (2001). Improving the primary care treatment of late life depression: Progress and opportunities. *Medical Care, 39*, 756-759.

Callahan, C. M. (2001). Quality improvement research on late life depression in primary care. *Medical Care, 39*, 772-784.

Callahan, C. M., Kroenke, K., Counsell, S. R., Hendrie, H. C., Perkins, A. J., Katon, W. et al. (2005). Treatment of depression improves physical functioning in older adults. *Journal of the American Geriatrics Society, 53*, 367-373.

Canadian Coalition for Seniors' Mental Health (2006). National Guidelines for Seniors' Mental Health: The Assessment and Treatment of Depression. Toronto, Canada: Retrieved on April 7, 2008 from www.ccsmh.ca/en/guidelinesUsers.cfm

Canadian Collaborative Mental Health Initiative (2005). *Collaborative Mental Health Care in Primary Health Care: A Review of Canadian Initiatives. Volume II – Resource Guide*. Retrieved on March 6, 2008 from

http://www.ccmhi.ca/en/products/documents/05b_CanadianReviewII-EN.pdf

- Canadian Psychiatric Association (2001). Clinical guidelines for the treatment of depressive disorders: Special populations. Retrieved on March 21, 2004 from www.cpa-apc.org/Publications/Clinical_Guidelines/depression/main.asp
- Chen, Y., Breithaupt, K., & Muhajarine, N. (2000). Occurrence of chronic obstructive pulmonary disease among Canadians and sex-related risk factors. *Journal of Clinical Epidemiology*, *53*, 755-761.
- Cole, M. G. & Yaffe, M. J. (1996). Pathway to psychiatric care of the elderly with depression. *International Journal of Geriatric Psychiatry*, *11*, 157-161.
- Cole, M.G., McCusker, J., Sewitch, M., Ciampi, A., & Dyachenko, A. (2008). Health services use for mental health problems by community-living seniors with depression. *International Psychogeriatrics*, *20*, 554-570.
- Collins, E., Katona, C., & Orrell, M. W. (1997). Management of depression in the elderly by general practitioners: Referral for psychological treatments. *British Journal of Clinical Psychology*, *36*, 445-448.
- Cooper-Patrick, L., Crum, R. M., & Ford, D. E. (1994). Characteristics of patients with major depression who received care in general medical and specialty mental health settings. *Medical Care*, *32*, 15-24.
- Crabb, R. & Hunsley, J. (2006). Utilization of mental health care services among older adults with depression. *Journal of Clinical Psychology*, *62*, 299-312.
- Crawford, M. J., Prince, M., Menezes, P., & Mann, A. H. (1998). The recognition and treatment of depression in older people in primary care. *International Journal of Geriatric Psychiatry*, *13*, 172-176.

- Crystal, S., Sambamoorthi, U., Walkup, J. T., & Akincigil, A. (2003). Diagnosis and treatment of depression in the elderly medicare population: predictors, disparities, and trends. *Journal of the American Geriatrics Society, 51*, 1718-1728.
- Demmler, J. (1998). Utilization of specialty mental health organizations by older adults: U.S. national profile. *Psychiatric Services, 49*, 1079-1081.
- Desjardins, B., & Dumas, J. (1993). Population ageing and the elderly: Current demographic analysis. *Statistics Canada Demography Division. Catalogue No. 91-533E*.
- van Dijk, K. N., de Vries, C. S., ter Huurne, K., van den Berg, P. B., Brouwers, J. R., & de Jong-an den Berg, L.T. (2002). Concomitant prescribing of benzodiazepines during antidepressant therapy in the elderly. *Journal of Clinical Epidemiology, 55*, 1049-1053.
- Druss, B.G. & Rosenheck, R.A. (2000). Use of practitioner-based complementary therapies by persons reporting mental conditions in the United States. *Archives of General Psychiatry, 57*, 708-714.
- Diversity, B., & Beaudet, M.P. (1997). Depression: An undertreated disorder? *Health Reports, 8*, 9-18.
- Eisenberg, D. M., Davis, R. B., Ettner, S. L., Appel, S., Wilkey, S., Van Rompay, M., et al. (1998). Trends in alternative medicine use in the United States, 1990-1997: Results of a follow-up national study. *Journal of the American Medical Association, 280*, 1569-1575.
- Flint, A. J. (1994). Epidemiology and comorbidity of anxiety disorders in the elderly.

American Journal of Psychiatry, 151, 640-649.

Flint, A. J. (1997). Pharmacologic treatment of depression in late life. *Canadian Medical Association Journal*, 157, 1061-1067.

Flint, A. J., & Rifat, S. L. (1997). The effect of treatment on the two-year course of late-life depression. *British Journal of Psychiatry*, 170, 268-272.

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

Gallo, J. J., Rabins, P. V., Lyketsos, C. G., Tien, A. Y., & Anthony, J. C. (1997). Depression without sadness: Functional outcomes of nondysphoric depression in later life. *Journal of the American Geriatrics Society*, 45, 570-578.

Geerlings, S. W., Pot, A. M., Twisk, J. W. R., & Deeg, D. J. H. (2005). Predicting transitions in the use of informal and professional care by older adults. *Aging and Society*, 25, 111-130.

German, P. S., Shapiro, S., & Skinner, E. A. (1985). Mental health of the elderly: Use of health and mental health services. *Journal of the American Geriatrics Society*, 33, 246-251.

Glass, J, Lanctôt, K.L., Hermann, N., Sproule, B.A., & Busto, U.E. (2005). Sedative hypnotics in older people with insomnia: meta-analysis of risks and benefits. *British Medical Journal*, 339, 1169. DOI:10.1136/bmj.38623.768588.47

Grzywacz, J.G., Suerken, C.K., Quandt, S.A., Bell, R.A., Lang, W. & Arcury, T.A. (2006). Older adults' use of complementary and alternative medicine for

mental health: Findings from the 2002 national health interview survey.

Journal of Alternative and Complementary Medicine, 12, 467-473.

Hanlon, J. T., Schmader, K. E., Boulton, C., Gross C.R., Fillenbaum, G.G., Ruby, C.M., et al. (2002). Use of inappropriate prescription drugs by older people. *Journal of the American Geriatrics Society*, 50, 26-34.

Henderson, A. S., Jorm, A. F., Korten, A. E., Jacomb, P., Christensen, H., & Rodgers, B. (1998). Symptoms of depression and anxiety during adult life: evidence for a decline in prevalence with age. *Psychological Medicine*, 28, 1321-1328.

Henderson, S., Andrews, G. & Hall, W. (2000). Australia's mental health: An overview of the general population survey. *Australia and New Zealand Journal of Psychiatry*, 34, 197-205.

Heston, L. L., Garrard, J., Makris, L., Kane, R. L., Cooper, S., Dunham, T., & Zelterman, D. (1992). Inadequate treatment of depressed nursing home elderly. *Journal of the American Geriatrics Society*, 40, 1117-1122.

Heun, R., Kockler, M., & Papassotiropoulos, A. (2000). Distinction of early- and late-onset depression in the elderly by their lifetime symptomatology. *International Journal of Geriatric Psychiatry*, 15, 1138-1142.

Hunsley, J., Lee, C., & Aubry, T. (2000). Who uses psychological services in Canada? *Canadian Psychology*, 40, 232-240.

Improving Mood – Promoting Access to Collaborative Treatment (IMPACT; 2008). Participating organizations. Retrieved on March 7, 2008 from www.impact-uw.org/implementation/

Jeste, D. V., Alexopoulos, G. S., Bartels, S. J., Cummings, J. L., Gallo, J. J., Gottlieb,

- G. L., et al. (1999). Consensus statement on the upcoming crisis in geriatric mental health: Research agenda for the next 2 decades. *Archives of General Psychiatry*, 56, 848-853.
- Katon, W. J., Lin, E., Russo, J., & Unützer, J. (2003). Increased medical costs of a population-based sample of depressed elderly patients. *Archives of General Psychiatry*, 60, 897-903.
- Kessler, R. C., McGonagle, K. A., Zhao, S., Nelson, C. B., Hughes, M., et al. (1994). Lifetime and 12-month prevalence of DSM-III-R psychiatric disorders in the United States: Results from the National Comorbidity Study. *Archives of General Psychiatry*, 51, 8-19.
- Kessler, R.C., Andrews, G., Mroczek, D., Usmun, T.B. & Wittchen, H.U. The World Health Organization Composite International Diagnostic Interview Short Form (CIDI-SF). (1998). *International Journal of Methods in Psychiatric Research*, 7, 171-185.
- Kessler, R. C., Soukup, J., Davis, R. B., Foster, D. F., Wilkey, S. A., Van Rompay, M. I., et al. (2001). The use of complementary and alternative therapies to treat anxiety and depression in the United States. *American Journal of Psychiatry*, 158, 289-294.
- Kessler, R. C., & Ustun, T. B. (2004). The World Mental Health (WMH) Survey Initiative version of the World Health Organization (WHO) Composite International Diagnostic Interview (CIDI). *International Journal of Methods in Psychiatric Research*, 13, 93-121.
- Kinsella, K., & Velkoff, V. A. (2001). *An Aging World: 2001*. Washington, DC: US

Bureau of the Census.

- Kim, H. F. S., Braun, U., & Kunik, M. (2001). Anxiety and depression in medically ill older adults. *Journal of Clinical Geropsychology, 7*, 117-130.
- Klap, R., Unroe, K., & Unutzer, J. (2003). Caring for mental illness in the United States: A focus on older adults. *American Journal of Geriatric Psychiatry, 11*, 517-524.
- Lebowitz, B. D., Pearson, J. L., Schneider, L. S., Reynolds, C. F., Alexopoulos, G. S., Bruce, M. L., et al. (1997). Diagnosis and treatment of depression in late life: Consensus statement update. *Journal of the American Medical Association, 278*, 1186-1190.
- Lin, L. H. B., Katon, W., Von Korff, M., Tang, L., Williams, J. W., Kroenke, K. et al. (2003). Effect of improving depression care on pain and functional outcomes among older adults with arthritis: a randomized controlled trial. *Journal of the American Medical Association, 290*, 2428-2429.
- Liu, L., Ancoli-Israel, S. (2006). Insomnia in the older adult. *Sleep Medicine Clinics, 1*, 409-421.
- Livingston, G., Blizard, B., & Mann, A. (1993). Does sleep disturbance predict depression in elderly people? A study in inner London. *British Journal of General Practice, 43*, 445-448.
- Lyness, J. M., Kim, J., Tang, W., Tu, X., Conwell, Y., King, D. A., et al. (2007). The clinical significance of subsyndromal depression in older primary care patients. *American Journal of Geriatric Psychiatry, 15*, 214-223.
- Mackin, R. S. & Arean, P.A. (2005). Evidence-based psychotherapeutic interventions

- for geriatric depression. *Psychiatric Clinics of North America*, 28, 805-820.
- Mamdani, M. M., Parikh, S. V., Austin, P. C., & Upshur, R. E. (2000) Use of antidepressants among elderly subjects : trends and contributing factors. *American Journal of Psychiatry*, 157, 360-367.
- McLeod, P. J., Huang, A. R., Tamblyn, R. M., & Gayton, D. C. (1997). Defining inappropriate practices in prescribing for elderly people: a national consensus panel. *Canadian Medical Association Journal*, 156, 385-391.
- Metge, C., Grymonpre, R., Dahl., M., & Yogendran, N. (2005). Pharmaceutical use among older adults: using administrative data to examine medication-related issues. *Canadian Journal on Aging*, 24 (Suppl. 1), 81-95.
- Millar, W. J. (2001). Patterns of use – alternative health care practitioners. *Health Reports*, 13, 9-21.
- Mojtabai, R., & Olfson, M. (2004). Major depression in community-dwelling middle-aged and older adults: prevalence and 2- and 4-year follow-up symptoms. *Psychological Medicine*, 34, 623-634.
- Montagnier, D., Barberger-Gateau, P., Jacquim-Gadda, H., Dartiques, J. F., Rainfray, M., Pérès, K., et al. (2006). Evolution of prevalence of depressive symptoms and antidepressant use between 1988 and 1999 in a large sample of older French people: Results from the Personnes Agees Quid Study. *Journal of the American Geriatrics Society*, 54, 1839-1835.
- Mottram, P., Wilson, K., & Strobl., J. (2006) Antidepressants for depressed elderly. *Cochrane Database of Systematic Reviews*, 4.
- Nahin, R.L., Fitzpatrick, A.L., Williamson, J.D., Burke, G.L., DeKosky, S.T. &

- Furberg, C. (2006). Use of herbal medicine and other dietary supplements in community-dwelling older people: Baseline data from the ginkgo evaluation of memory study. *Journal of the American Geriatrics Society, 54*, 1725-1735.
- Naumann, V., & Byrne, G. J. (2004). WHOQOL-BREF as a measure of quality of life in older patients with depression. *International Psychogeriatrics, 16*, 159-173.
- Ness, J., Cirillo, D.J., Weir, D.R., Nisly, N.L. & Wallace, R.B. (2005). Use of complementary medicine in older Americans: Results from the Health and Retirement Study. *The Gerontologist, 45*, 516-524.
- Neutel, C. I. & Walop, W. (2000). Comparing two different approaches to measuring drug use within the same survey. *Chronic Diseases in Canada, 21*, 150-156.
- Nygren, B., Aléx, L., Jonsén, E., Gustafson, Y., Norgerg, A., & Lundman, B. (2005). Resilience, sense of coherence, purpose in life and self-transcendence in relation to perceived physical and mental health among the oldest old. *Aging and Mental Health, 9*, 354-362.
- O'Hara, R., Coman, E., & Butters, M. A. (2006). Late-life depression. In Snyder, Nussbaum, & Robins (Eds.) *Clinical neuropsychology (2nd ed.)* pp.183-209.
- Olfson, M., Marcus, S.C., Druss, B. & Pincus, H.A. (2002). National trends in the use of outpatient psychotherapy. *The American Journal of Psychiatry, 159*, 1914-1920.
- Olfson, M. & Pincus, H.A. (1996). Outpatient mental health care in nonhospital settings: Distribution of patients across provider groups. *American Journal of Psychiatry, 153*, 1353-1356.

- Ormel, J., Kempen, G. I. J. M., Deeg, D. J. H., Brilman, E. I., van Sonderen, E., & Relyveld, J. (1998). Functioning, well-being, and health perception in late middle-aged and older people: comparing the effects of depressive symptoms and chronic medical conditions. *Journal of the American Geriatrics Society*, *46*, 39-48.
- Padgett, D. K., Patrick, C., Burns, B. J., & Schlesinger, H. J. (1994). Ethnicity and the use of outpatient mental health services in a national insured population. *American Journal of Public Health*, *84*, 222-226.
- Parslow, R. A., & Jorm, A. F. (2000). Who uses mental health services in Australia? An analysis of data from the National Survey of Mental Health and Wellbeing. *Australian and New Zealand Journal of Psychiatry*, *34*, 997-1008.
- Paterniti, S., Dufouil, C., & Alperovitch, A. (2002). Long-term benzodiazepine use and cognitive decline in the elderly: The Epidemiology of Vascular Aging study. *Journal of Clinical Psychopharmacology*, *22*, 285-293.
- Patten, S.B. (1997). Performance of the Composite International Diagnostic Interview Short Form for major depression in community and clinical samples. *Chronic Diseases in Canada*, *18*, 109-112.
- Patten, S.B., Brandon-Christie, J., Devji, J. & Sedmark, B. (2000). Performance of the Composite International Diagnostic Interview Short Form for major depression in a community sample. *Chronic Diseases in Canada*, *21*, 68-72.
- Penninx, B. J. H, Geerlings, S. W., Deeg, D. J. H., vanEijk, J. T. M., van Tilburg, W., & Beekman, A. T. F. (1999). Minor and major depression and the risk of death in older persons. *Archives of General Psychiatry*, *56*, 889-895.

- Percudani, M., Barbui, C., Fortino, I., & Petrovich, L. (2005). Antidepressant drug prescribing among elderly subjects: a population-based study. *International Journal of Geriatric Psychiatry, 20*, 113-118.
- Pinquart, M., Duberstein, P. R., & Lyness, J. M. (2007). Effects of psychotherapy and other behavioral interventions on clinically depressed older adults: A meta-analysis. *Aging and Mental Health, 11*, 645-657.
- Qualls, S. H., Segal, D. L., Norman, S., Niederehe, G., & Gallagher-Thompson, D. (2002). Psychologists in practice with older adults: Current patterns, sources of training, and need for continuing education. *Professional Psychology: Research & Practice, 33*, 435-442.
- Rao, J. N. K. & Scott, A. J. (1984). On chi-squared tests for multiway contingency tables with cell proportions estimated from survey data. *The Annals of Statistics, 12*, 46-60.
- Ray, W. A., Thapa, P. B., & Gideon, P. (2002). Benzodiazepines and risk of falls in nursing home residents. *Journal of the American Society, 48*, 682-682.
- Rojas-Fernandez, C., Thomas, V. S., Carver, D., & Tonks, R. (1999). Suboptimal use of antidepressants in the elderly: A population-based study in Nova Scotia. *Clinical Therapeutics, 21*, 1937-1950.
- Roberts, R. E., Shema, S. J., Kaplan, G. A., & Strawbridge, W. J. (2000). Sleep complaints and depression in an aging cohort: a prospective perspective. *American Journal of Psychiatry, 157*, 81-88.
- Qualls, S., Segal, D., Norman, S., Niederehe, G. & Gallagher-Thompson, D. (2002).

- Psychologists in practice with older adults: Current patterns, sources of training, and need for continuing education. *Professional Psychology: Research & Practice*, 33, 435-442.
- Roose, S. P., & Sackeim, H. A. (2004). Antidepressant medication for the treatment of late-life depression. In S. P. Rosse & H. A. Sackeim (Eds.), *Late-life depression* (pp.192-198). New York: Oxford University Press, Inc.
- Rowan, P., Davidson, K., Campbell, J., Dobrez, D., & MacLean, D. (2002). Depressive symptoms predict medical care utilization in a population-based sample. *Psychological Medicine*, 32, 903-908.
- Sambamoorthi, U., Olfson, M., Walkup, J. T., & Crystal, S. (2003). Diffusion of new generation antidepressant treatment among elderly diagnosed with depression. *Medical Care*, 41, 180-194.
- Scogin, F., Welsh, D., Hanson, A., Stump, J., & Coates, A. (2005). Evidence-based psychotherapies for depression in older adults. *Clinical Psychology Science and Practice*, 12, 222-237.
- Simon, G. E., Cherkin, D. C., Sherman, K. J., Eisenberg, D. M., Deyo, R. A., & Davis, R. B. (2004). Mental health visits to complementary and alternative medicine providers. *General Hospital Psychiatry*, 26, 171-177.
- Sirey, J. A., Bruce, M. L., Alexopoulos, G. S., Perlick, D. A., Raue, P., Friedman, S. J., et al. (2001). Perceived stigma as a predictor of treatment discontinuation in young and older outpatients with depression. *American Journal of Psychiatry*, 158, 479-481.
- Sjernberg, L., Berglund, J. & Halling, A. (2006). Age and gender effects on the use of

herbal medicine products and food supplements among the elderly.

Scandinavian Journal of Primary Health Care, 24, 50-55.

Spacapan, S., & Oskamp, S. (Eds.). (1989). *The social psychology of aging*.

Newbury, CA: Sage Publications.

Smyer, M. A., Shea, D. G., & Streit, A. (1994). The provision and use of mental

health services in nursing homes: results from the National Medical

Expenditures Survey. *American Journal of Public Health*, 84, 284-287.

Statistics Canada (2003a). *Canadian Community Health Survey Cycle 1.1 (2000-*

2001), Public Use Microdata File Documentation. Ottawa, ON: Author.

Statistics Canada (2003b). *Canadian Community Health Survey: Mental Health and*

Well-being, Cycle 1.2, Master File Documentation. Ottawa, ON: Author.

Steffens, D. C., Skoog, I., Norton, M. C., Hart, A. D., Tschanz, J. T., Plassman, B. L.,

et al. (2000). Prevalence of depression and its treatment in an elderly

population: The Cache County study. *Archives of General Psychiatry*, 57,

601-607.

Steffick, D.E. (2000). *Documentation of Affective Functioning in the Health and*

Retirement Survey (HRS). HRS/AHEAD Documentation Report DR-005.

Retrieved on April 28, 2005 from [www.umich.edu/~hrswww/docs/userg/dr-](http://www.umich.edu/~hrswww/docs/userg/dr-005.pdf)

[005.pdf](http://www.umich.edu/~hrswww/docs/userg/dr-005.pdf)

Stek, ML, Vinkers, D.J., Gussekloo, J., Mast, R.C. van der, Beekman, A.T.F. &

Westendorp, R.G.J. (2006). Natural history of depression in the oldest old.

Population-based prospective study. *British Journal of Psychiatry*, 188, 65-69.

Sjernberg, L., Berglund, J., & Halling, A. (2006). Age and gender effects on the use

of herbal medicine products and food supplements among the elderly.

Scandinavian Journal of Primary Health Care, 24, 50-55.

Swartz, M.S., Wagner, H.R., Swanson, J.W., Burns, B.J., George, L.K. & Padgett,

D.K. (1998). Comparing use of public and private mental health services: The enduring barriers of race and age. *Community Mental Health Journal, 34,*

133-144.

Turvey, C. L., Wallace, R. B., & Herzog, R. (1999). A revised CES-D measure of

depressive symptoms and a DSM-based measure of major depressive episodes in the elderly. *International Psychogeriatrics, 11,* 139-148.

Thompson, L. W., Coon, D. W., Gallagher-Thompson, D., Sommer, B.R., & Koin, D.

(2001). Comparison of desipramine and cognitive/behavioral therapy in the treatment of elderly outpatients with mild-to-moderate depression. *American*

Journal of Geriatric Psychiatry, 9, 225-240.

Unützer, J. (2002). Diagnosis and treatment of older adults with depression in

primary care. *Biological Psychiatry, 52,* 285-292.

Unützer, J., Katon, W., Russo, J., Simon, G., Bush, T., Walker, E., et al., (1999).

Patterns of care for depressed older adults in a large-staff model HMO.

American Journal of Geriatric Psychiatry, 7, 235-243.

Unützer, J., Klap, R., Sturm, R., Young, A.S., Marmon, T., Shatkin, J., et al., (2000).

Mental disorders and the use of alternative medicine: Results from a national survey. *American Journal of Psychiatry, 157,* 1851-1857.

Unützer, J., Katon, W., Callahan, C. M., Williams, J. W., Hunkeler, E., Harpole, L., et

al. (2002). Collaborative-care management of late-life depression in the

- primary care setting: a randomized controlled trial. *Journal of the American Medical Association*, 288, 2836-2845.
- Vinkers, D.J., Gussekloo, J., van der Mast, R.C., Zitman, F.G., Westendorp, R.G.J. (2003). Benzodiazepine use and risk of mortality in individuals aged 85 years or older. *Journal of the American Medical Association*, 290, 2942-2943.
- Votova, K. & Wister, A.V. (2007). Self-care dimensions of complementary and alternative medicine use among older adults. *Gerontology*, 53, 21-27.
- Wang, J., Patten, S.B. & Russell, M.L. (2001). Alternative medicine use by individuals with major depression. *Canadian Journal of Psychiatry*, 46, 528-533.
- Wei, W., Sambamoorthi, U., Olfson, M., Walkup, J. T., & Crystal, S. (2005). Use of psychotherapy for depression in older adults. *American Journal of Psychiatry*, 162, 711-717.
- Weisberg, R. B., Dyck, I., Culpepper, L., & Keller, M. B. (2007). Psychiatric treatment in primary care patients with anxiety disorders: A comparison of care received from primary care providers and psychiatrists. *American Journal of Psychiatry*, 164, 276-282.
- Wells, K. B., Schoenbaum, M., Unützer, J., Lagomasino, I. T., & Rubenstein, L. V. (1999). Quality of care for primary care patients with depression in managed care. *Archives of Family Medicine*, 8, 529-536.
- Wellman, B., Kelner, M., & Wigdor, B. T. (2001). Older adults' use of medical and alternative care. *Journal of Applied Gerontology*, 20, 3-23.
- Wilson, K., Mottram, P., Sivananthan, A., & Nightingale, A. (2001). Antidepressants

versus placebo for the depressed elderly. *Cochrane Database of Systematic Reviews*, 4.

Wittchen, H. U. (1994). Reliability and validity studies of the WHO Composite International Diagnostic Interview (CIDI): a critical review. *Journal of Psychiatric Research*, 28, 57-84.

Wittchen, H. U., Knauper, B., & Kessler, R. C. (1994). Lifetime risk of depression. *British Journal of Psychiatry*, 165, 16-22.

Young, A. S., Klap, R., Sherbourne, C. D., & Wells, K.B. (2001). The quality of care for depressive and anxiety disorders in the United States. *Archives of General Psychiatry*, 58, 55-61.

Zuvekas, S. H. (2001). Trends in mental health services use and spending, 1987-1996. *Health Affairs*, 20, 214-224.