Title: Utilization of health services for depression and anxiety in Ontario: An eleven-year comparison of determinants

By:

Ritsuko Kakuma, MSc

Department of Epidemiology, Biostatistics, and Occupational Health

McGill University, Montreal

August 2007

A thesis submitted to McGill University in partial fulfillment of the requirements of the degree of Doctor of Philosophy

Abstract

Introduction: The prevalence of mood and anxiety disorders is continuing to increase. Yet, over two thirds of people with mental disorders do not seek treatment. Various changes in the provision of mental health services in Ontario and the population profile makes assessment of the corresponding changes in the pattern and determinants of mental health service utilization timely.

Objective: To examine and compare, between 1991 and 2002 in Ontario, the rate, patterns, and predictors of health services utilization between individuals with depression, anxiety, or comorbid depression and anxiety disorders. Individuals in these three mutually exclusive groups were examined to determine how the results compare between these three disorder types over an 11 year period.

Methods: This thesis is based on data from two independent cross-sectional population health surveys: the Mental Health Supplement (1990/91) to the Ontario Health Survey (1990) and the Canadian Community Health Survey, Cycle 1.2 Mental Health and Well-being (2002; Ontario subset).

Results: The rate of service utilization during the preceding 12 months has increased from 32% in 1991 to 41% in 2002, with a greatest increase seen among individuals with anxiety (17% in 1991 vs. 28% in 2002). Multivariate regression modeling showed changes in the predictors of service utilization between 1991 and 2002. The use of antidepressants and anxiety-reducing medications increased from 2.2% to 7.7%, with the largest increase seen among respondents with anxiety (7% to 25%). The three most commonly sought service providers in both 1991 and 2002 were family physicians, psychiatrists, and social workers: 60%, 26%, and 23%, respectively in 1991 and 73%, 40%, and 30%, respectively in 2002. Nonetheless, 20% of the 1991 respondents and 26% of the 2002 respondents reported unmet needs, with the highest rate seen in the comorbid depression and anxiety group (41% in 1991 and 47% in 2002). Multilevel regression modeling showed that geographic area characteristics were not significant in predicting service utilization.

Conclusions: These findings suggest that more individuals with depression and/or anxiety are seeking treatment in recent years. However, the persistent high rate of unmet needs suggests that promotion efforts to seeking care and improving access to services is necessary to improve mental health service utilization.

Résumé

Introduction: La prévalence des troubles d'humeur et d'anxiété continue d'augmenter. Pourtant, plus que deux-tiers des individus avec des troubles mentaux ne cherchent pas des traitements. Divers changements dans l'offre des services de santé mentale dans l'Ontario et dans les profiles de la population rendre l'évaluation des changements correspondant aux modèles and déterminants d'utilisation de service santé mentale opportun.

Objectif : Examiner et comparer, entre 1991 et 2002 en Ontario, les taux, profiles, et facteurs prédictifs d'utilisation de services de santé entre les individus avec dépression, anxiété, ou troubles comorbides de dépression et d'anxiété. Les individus de ces trois groupes exclusifs ont été examiné afin de déterminer comment les résultats se comparent entre ces trois catégories de troubles sur la période de 10 ans.

Méthodes: Cette thèse est basée sur des données de deux enquêtes indépendantes de santé populationnelle : le Supplément de santé mentale (1990/91) à l'enquête sur la santé en Ontario (1990) et l'Enquête sur la santé dans les collectivités canadiennes (ESCC) – Santé mentale et bien-être - Cycle 1.2 (2002; sous-échantillon d'Ontario).

Résultats: Le taux d'utilisation des services durant les 12 mois précédant a augmenté de 32% en 1991 à 41% en 2002, avec la plus grande augmentation notée seulement parmi les individus avec l'anxiété (17% en 1991 contre 28% de 2002). Les résultats des analyses de régressions multi-variées ont démontrée des changements de déterminants d'utilisation des services entre 1991 et 2002. L'utilisation des médicaments psychotropes a augmenté de 2.2% à 7.7%, avec la plus grande augmentation notée parmi les individus avec l'anxiété (7% à 25%). Les trois practiciens le plus généralement consulté dans 1991 et 2002, étaient des médecins de famille, des psychiatres, et des travailleurs sociaux : 60%, 26%, and 23%, respectivement en 1991 et 73%, 40%, and 30%, respectivement en 2002). Cependant, en 1991, 20% des répondants et 26% des répondants en 2002 ont rapporté ou evoqué des besoins non-comblé, parmi qui le taux le plus élevé a été

vu chez ceux avec les troubles comorbides de dépression et de l'anxiété (41% en 1991 et 47% en 2002).

Conclusions: Les résultats suggèrent que plus d'individus avec dépression et/ou anxiété cherchent à se faire traiter ces dernières années. Néanmoins, le taux élevé persistant des besoins non-comblé suggèrent que les efforts de promotion de l'importance de la consultation et l'amélioration d'accès aux services soient nécessaire pour améliorer l'utilisation des services de santé mentale.

Disclaimer

The study is based on data provided by the Ontario Ministry of Health, Statistics Canada, and the Canadian Institute for Health Information. The interpretation and conclusions reported in this manuscript do not necessarily represent those of the Government of Ontario, Statistics Canada, or Canadian Institute for Health Information.

Statement of Originality

This thesis work was undertaken to determine if there was a change in the rate of service utilization for depression and/or anxiety disorders in Ontario between 1991 and 2002 and to determine how the predictors of service utilization changed between the two time points. This research constitutes original scholarship and advances in the knowledge in the field of mental health service utilization. This is the first study in the literature that has looked at the change in service utilization in mental health over time in the Canadian context. Although previous work has looked at predictors of service utilization, this thesis represents the first study that focuses specifically on depression and anxiety disorders, comparing individuals with one or both of these disorders. It is also the first study that examines the impact of geographic-area level predictors on an individual's decision to seek treatment for depression and/or anxiety disorders.

Under the supervision of Dr. Rebecca Fuhrer and guidance and contribution of the committee members, Dr. Alain Lesage, Dr. Elizabeth Lin and Dr. Nancy Ross, I personally carried out the literature review, design, analyses, and the write up of the thesis.

Acknowledgements

The completion of this thesis would not have been possible without the generous contribution of many individuals to whom I am very grateful. First and foremost, my thesis supervisor, Dr. Rebecca Fuhrer, has guided me through the entire process, particularly with the many obstacles that arose. She provided encouragement and support, as well as guidance and direction, which resulted in an incredible learning experience.

I would also express my sincerest gratitude to my thesis committee members, whose generous contribution with their time and insight has been beyond my expectations. I have gained invaluable knowledge from Dr. Alain Lesage, Dr. Nancy Ross and Dr. Elizabeth Lin over the years.

I am also very grateful to the members of the Health Analysis and Measurement Group at Statistics Canada in Ottawa. Their welcoming environment and their keen interest in my thesis topic was very much appreciated. The opportunities for one-on-one discussions with many of the Unit members were extremely helpful. I would also like to extend my gratitude to the researchers at the Statistics Canada Research Data Centres at Université de Montreal and McGill University who were extremely helpful in resolving some of the problems with my data: Mr. Franck Larouche, Mr. Denis Gonthier, Ms. Tanya Trussler and Ms. Cara Fedick. I am also indebted to Ms. Chrissy Willemse at the Canadian Institute for Health Information for her timely and thorough assistance in providing me with the data that I needed to carry out the final phase of my analysis.

I would also like to thank the fellow doctoral and postdoctoral fellows in the Department, as well as the students, the mentors, and the Program Manger (Mrs. Marilyn Sakiyama), of the CIHR Strategic Training Program - Research in Addictions and Mental Health Policy & Services (RAMHPS). The RAMHPS program gave me the opportunity to meet fellow researchers in my field and be part of a rich network. With members' expertise ranging in epidemiology,

psychiatric epidemiology, statistics, health services and policy, knowledge translation, health economics, and population surveys, it made for a ideal medium for knowledge exchange.

The administrative staff in the Department of Epidemiology and Biostatistics at McGill University has been instrumental in making progress as smooth as possible. Their constant friendly and supportive style makes every student feel at home and for this I am grateful to Katherine Hayden, Laurie Tesseris, Marlene Abrams, Kandace Springer, Suzanne Lariviere, Marielle Olivier and Amber Reeves.

And to my family and friends who supported me along the way – thank you.

This work would not have been possible without the financial support of the CIHR-RAMHPS Fellowship, Statistics Canada Research Stipend, the QICSS Grant Matching Programme, and the McGill Faculty of Medicine Internal Studentship.

Table of Contents

List of Figures

List of Tables

Table 29. Rates of service utilization and unmet needs in 1991 and 2002

List of Appendices

1 Introduction

Major depression is currently the single most disabling disorder worldwide, accounting for one in ten years of life lived with disability [1]. After its associated premature death is taken into account, major depression is still the fourth leading cause of disease burden worldwide and it is continuing to worsen at an alarming rate. Major depression is projected to be the second leading cause of disease burden, following ischaemic heart disease [2] by the year 2020 and suicide fatalities are estimated to rise to 1.5 million [3]. By 2030, the burden of major depression is said to surpass that of ischaemic heart disease and be ranked second following HIV/AIDS [4].

The World Health Organization (WHO) [5] reported that in the year 2000, approximately one million people died from suicide, representing a global mortality rate of 16 per 100,000, or one death every 40 seconds. Around 90% of these suicides are associated with mental disorders, primarily depression and substance abuse. The "unsuccessful" suicide attempts, although much more difficult to approximate, have been estimated to occur at a rate of approximately 20 attempts for every suicide death [6].

Anxiety disorders are among the most prevalent mental disorders [7] and are the most commonly found co-occurring disorder with major depression. About half of the individuals with one of the disorders have the other. Although how the two disorders co-occur is not yet fully understood, the resulting disability, dysfunction and prognosis is significantly worse than having only one disorder [8-11]. Thus in addition to the psychosocial disability of anxiety disorders that is estimated to be at least comparable to that of chronic somatic diseases and depression [12], the impairment associated with comorbid depression and anxiety disorders can be expected to be extremely burdensome. It is therefore understandable that mental disorders have been identified as a major health priority by the World Health Organization [1;13]

Despite such high burden, the evidence has shown that the proportion of individuals with major depression or anxiety disorders who seek treatment is

extremely low worldwide [14-16]. Untreated major depression and anxiety disorder is a concern to society as a whole because the societal and economic burden is extremely high. For example, individuals with anxiety or mood disorders have been shown to use the health care system for other health problems more often than the general population, especially primary care and emergency services [7;17]. In the United States, it was estimated that anxiety disorders cost approximately $68.1 billion annually [18] and depressive disorders cost $77.4 billion in 1990 and $83.1 billion in 2000 (both in 2000 US dollars) [19]. The $83.1 billion is comprised of $26.1 billion in direct health care costs, $5.4 billion for suicide-related costs, and $51.5 billion in workplace costs. In Canada, 1997/98 direct and indirect costs for depression and distress were estimated at $14.4 billion [20], making it Canada's third highest generator of direct health care costs ($6.3 billion) in 1998.

Various changes have taken place during the 1990's in Canada including demographic shifts, changes in the health care delivery system, and the provision of mental health care that warrant comparison of the rate of health service utilization, predictors of use, patterns of use, as well as the rate and reasons for unmet needs between the early 1990's and a decade later. A better understanding of the reasons for the low rates of treatment seeking is necessary to develop strategies to provide services to those who will benefit from treatment. It is also important to determine whether depression and anxiety disorders should be addressed together or separately in the research into treatment seeking.

This thesis work will therefore examine the following questions using population survey data from 1991 and 2002 in Ontario, Canada:

- What are the service utilization rates and predictors of use of health care services for mental health problems among people with depression and/or anxiety in Ontario, and how have they changed over the 10 year period?
- What are the contributions of individual-level and contextual-level factors in predicting service utilization at each time point
- What is the impact of comorbid depression and anxiety on health service utilization compared to only having one of the two disorders?

- What are the patterns of use, such as types, frequency, and setting of care, among service users
- What are the rates and the reasons for unmet needs?

2 Literature Review

2.1 Depression and Anxiety Disorders

Major depression is one of three types of mood disorders (the others being bipolar and dysthymic disorder) and is characterized by symptoms such as feeling worthless, helpless or hopeless, loss of interest or pleasure (including hobbies or sexual desire), change in appetite, sleep disturbances, decreased energy or fatigue (without significant physical exertion), sense of worthlessness or guilt, and poor concentration or difficulty making decisions. In order to meet the DSM-III-R [21] or DSM-IV [22] diagnostic criteria for major depression, an individual must have at least one episode, lasting at least two weeks, of (1) depressive mood or loss of interest in usual activities, and (2) at least five additional symptoms listed above. Depression can be an extremely debilitating disorder, impairing every aspect of social functioning and quality of life [23].

Anxiety disorders are defined as intense and prolonged feelings of fear and distress that occur out of proportion to the actual threat or danger, and that interfere with normal daily functioning. There are six types of anxiety disorders: Post-Traumatic Stress Disorder (PTSD), Generalized Anxiety Disorder (GAD), Specific Phobia, Social Phobia/Social Anxiety Disorder, Obsessive-Compulsive Disorder (OCD), and Panic Disorders. PTSD is characterized by symptoms such as flashbacks, nightmares, depression and feelings of anger or irritability that are caused by the occurrence or threat of a terrifying experience leading to physical harm. Examples of such situations include rape, child abuse, war or natural disasters. Contrary to anxieties associated with a specific event, Generalized Anxiety Disorders are characterized by exaggerated concerns about routine life events and activities that most people would not find worrisome at all. The condition lasts a minimum of six months, during which the affected person is worried most of the time. Symptoms of GAD include nausea, trembling, fatigue, muscle tension and headaches.

Phobias are divided into Specific and Social phobias. As the name implies, specific phobias are fears associated with something specific, such as fear of flying, of animals, or of closed spaces. The fear tends to be overwhelming and out of control. An individual with a social phobia is someone who finds social situations nearly paralyzing, due to fears of being observed or making mistakes in front of other people. They consequently tend to avoid such situations, thereby reducing their ability to lead a normal life.

Obsessive-Compulsive Disorder is a condition, in which individuals experience persistent unwanted thoughts (obsessions) and/or actions (compulsions) that they find difficult or impossible to control. Examples of obsessions include worries about contamination, self-doubt (i.e., worrying about not having turned off the stove before leaving the house), or disturbing religious thoughts. Examples of compulsions include incessant washing, organizing, or counting.

And finally panic disorders are characterized by panic attacks and feelings of terror. An individual having a panic attack may experience chest pain, heart palpitations, dizziness, shortness of breath, and abdominal discomfort. Avoidance of situations that can lead to an attack is a condition referred to as a panic disorder with agoraphobia.

2.2 Disease burden

The burden of disease is often described using the World Health Organization's definition of disability adjusted life years and years lived with disability, both of which are useful because they provide a standardized way of comparing the burden of one disorder to another. Disability adjusted life years, or DALYs, is a measure that represents the sum of the years of life lost due to premature death (YLL) in the population and the years that are lost due to disability (YLD) for incident cases of a particular health condition [24]. One DALY corresponds to one lost year of 'healthy' life and the burden of disease signifies the gap between the current health status and the ideal situation where everyone lives into old age without disease or disability. YLLs are calculated by

multiplying the number of deaths with the standard life expectancy at the age at which death occurs. YLDs by a particular cause in a given time period is estimated by multiplying the number of incident cases in that period with the average duration of the disease and a weight factor that reflects the disease severity on a scale from 0 (perfect health) to 1 (dead). DALYs are calculated by adding the YLLs and YLDs together. Based on these calculations, the WHO periodically publishes the global burden of disease, showing where various disorders lie relative to other disorders in causing disease burden.

Major depression is already the leading cause of life lived with disability (YLD) worldwide (Table 1). By 1990, depression accounted for 10.7% of all years lived with any disability, and 11.9% by 2000. Also noteworthy is that in both 1990 and 2000, four of the ten leading causes of disability years were mental disorders. In addition to depression, alcohol disorders (3.4%), bipolar disorders (3.0%) and schizophrenia (2.6%) were among the ten leading causes of disability, representing 19.7% or one fifth of all causes of years lived with disability in 1990 [2]. Ten years later depression (11.9%), alcohol disorders (3.1%), schizophrenia (2.8%) and bipolar affective disorder (2.5%) totalled to 20.3% [1].

In 1990, major depression was the fourth most burdensome disease, representing 3.7% of the total global burden of disease. This subsequently rose to 4.4% by 2000. By the year 2020, depression is estimated to become the second leading cause of disease burden, accounting for 5.7% of the total burden following ischaemic heart disease (5.9%)[2] (Table 2). By the year 2030, HIV/AIDS is expected to be the only disease worldwide with a higher burden than depression [4].

Table 1. Ten leading causes of years lived with disability (YLDs)

	1990 Estimates	2000 Estimates
1	***Unipolar depressive disorders (10.7)***	***Unipolar depressive disorders (11.9)***
2	Iron-deficiency anaemia (4.7)	Hearing loss, adult onset (4.6)
3	Falls (4.6)	Iron-deficiency anaemia (4.5)
4	***Alcohol use disorders (3.4)***	Chronic obstructive pulmonary disease (3.3)
5	Chronic obstructive pulmonary disease (3.1)	***Alcohol use disorders (3.1)***
6	***Bipolar affective disorder (3.0)***	Osteoarthritis (3.0)
7	Congenital anomalies (2.8)	***Schizophrenia (2.8)***
8	Osteoarthritis (2.8)	Falls (2.8)
9	***Schizophrenia (2.6)***	***Bipolar affective disorder (2.5)***
10	Obsessive-compulsive disorders (2.2)	Asthma (2.1)
	SOURCE: Murray & Lopez 1996 [2]	SOURCE: World Health Report 2001. Mental Health: New Understanding, New Hope p. 27 [1]

Table 2. Change in the WHO-based ten leading causes of disability adjusted life years (DALYs) between 1990 and projections into 2030 for all ages (proportions in brackets).

1990 estimates	**2000 Estimates**	**2002 Estimates**	**2015 Projections**	**2020 Projections**	**2030 Projections**
LRI (8.2)	LRI (6.4%)	Perinatal (6.6)	HIV/AIDS (7.6)	IHD (5.9)	HIV/AIDS (10.3)
Diarrhoeal (7.2)	Perinatal (6.2)	LRI (6.3)	Perinatal (5.3)	*Depression (5.7)*	*Depression (5.3)*
Perinatal (6.7)	HIV/AIDS (6.1)	HIV/AIDS (5.7)	*Depression (5.1)*	Road traffic (5.1)	IHD (4.4)
Depression (3.7)	*Depression (4.4)*	*Depression (4.5)*	LRI (4.3)	CVD (4.4)	COPD (3.8)
IHD (3.4)	Diarrhoeal (4.2)	Diarrhoeal (4.3)	IHD (4.2)	COPD (4.2)	Perinatal (3.8)
CVD (2.8)	IHD (3.8)	IHD (4.0)	CVD (3.5)	LRI (3.1)	CVD (3.7)
TB (2.8)	CVD (3.1)	CVD (3.3)	Road traffic (3.2)	TB (3.0)	Road traffic (3.6)
Measles (2.7)	Road traffic (2.8)	Road traffic (2.6)	Diarrhoeal (3.0)	War (3.0)	Cataracts (2.9)
Road traffic (2.5)	Malaria (2.7)	Malaria (2.3)	COPD (2.7)	Diarrhoeal (2.7)	LRI (2.8)
Cong. Abn. (2.4)	TB (2.4)	TB (2.3)	TB (2.5)	HIV (2.6)	TB (2.5)
SOURCE: Murray & Lopez 1996 [2]	SOURCE: 2001 World Health Report [1]	SOURCE: Mathers & Loncar 2005 [4]	SOURCE: Mathers & Loncar 2005 [4]	SOURCE: Murray & Lopez 1996 [2]	SOURCE: Mathers & Loncar 2005 [4]

* Abbreviations: Cong. Abn.= Congenital abnormalities; COPD = Chronic obstructive pulmonary diseases; CVD = Cerebrovascular diseases; Depression = Major Depression; Diarrhoeal = Diarrhoeal diseases; IHD = Ischaemic heart disease; LRI = Lower respiratory infections; Perinatal = Perinatal conditions; Road traffic = Road traffic accidents; TB = Tuberculosis

2.3 Prevalence rates

Canadian statistics on the prevalence rates of mental disorders and service utilization mainly come from the Mental Health Supplement to the Ontario Health Survey that was carried out in 1991 (OMHS) by the Ontario Ministry of Health and the Canadian Community Health Survey, Cycle 1.2, Mental Health and Wellbeing that was carried out in 2002 by Statistics Canada (CCHS 1.2). Based on the OMHS survey, the prevalence of major depression in a given year ("one-year" or "12-month" prevalence) was approximately 5.5% and the rate of occurrence of major depression at some point in their lifetime ("lifetime" prevalence) was 8-10%. For anxiety disorders, the one-year prevalence was 12% and the lifetime prevalence estimate was 21% (Table 3) [1;25;26].

According to the more recent CCHS 1.2 survey, the 12-month prevalence rates of depression and anxiety disorders for Canada were 4.5% and 4.7%, respectively. The prevalence rates of anxiety disorders in the more recent survey is lower than that of the OMHS survey partly because the CCHS 1.2 survey only collected information on three of the six ty.ppes of anxiety disorders whereas the OMHS included five. The prevalence of panic disorders was 1.1% in 1991 and 1.6% in 2002. The prevalence of agoraphobia was 1.6% in 1991 and 0.7% in 2002. And for social phobia, the prevalence was 6.7% in 1991 and 3.0% in 2002.

Given the high prevalence rates and the high burden on the individual, depression and anxiety disorders also have a significant societal and economic impact. There are direct costs to society, such as primary care visits, hospitalizations, medications and claims on disability insurance, and indirect costs such as loss of productivity in the workplace (through absenteeism and diminished productivity), and individual and family costs (lost income/ unemployment and medical costs incurred to individual or caregiver). The cost to the health care system is substantial, given that individuals with anxiety or mood disorders are high users of general health care services, particularly in primary care and emergency services [17]. In the United States, it has been estimated that anxiety disorders cost approximately $68.1 billion dollars annually [18] and

depressive disorders cost $77.4 billion dollars in 1990 and $83.1 billion dollars in 2000 (both in 2000 US dollars) [19]. The $83.1 billion dollars is comprised of $26.1 billion dollars in direct costs, $5.4 billion dollars for suicide-related costs, and $51.5 billion in workplace related costs.

For Canada, Stephens and Joubert [20] have reported 1997/98 direct and indirect cost estimates of $14.4 billion dollars for depression and distress, making it Canada's third highest generator of direct health care costs ($6.3 billion dollars) in 1998. A more recent report was published that examined the economic costs of mental disorders in Ontario in 2000 [27]. According to the authors of this report, the total economic costs attributable to mental disorders and substance abuse in the province of Ontario in 2000 was $33.9 billion, of which the majority was due to productivity losses. Total costs specific to major depression and minor depression and anxiety disorders were $12,539 million and $7,559 million, respectively. The direct costs that were attributable to these two groups of disorders were $536 million and $418 million, showing that the vast majority of the expenses are due to indirect costs.

Table 3. Prevalence of Mental Disorders (%)* according to 1991 OMHS survey in Canada and NCS survey in the US

	Any anxiety	Any Mood	Any substance	All mental disorders
Canada				
12 month	12.4	4.9	7.9	19.9
Lifetime	21.3	10.2	19.7	37.5
United States				
12 month	17.0	10.7	11.5	29.1
Lifetime	25.0	19.4	28.2	48.6

*Source: WHO 2000 [28]

2.4 Health services and utilization for mental disorders

Treatment for depression, depending on the severity, can range from guided self-help to medication and electroconvulsive therapy (ECT) [29]. Standard care for comorbid depression and anxiety disorders, however, include pharmacological therapy and/or psychotherapy [7;29-39]. There are three broad classes of drugs that

are used for pharmacological therapy, which are Tricyclic Antidepressants (TCAs), such as amitriptyline, clomipramine, imipramine and nortriptyline, Monoamine Oxidase Inhibitors (MAOIs), such as phenelzine and tranylcypromine, and Selective Serotonin Reuptake Inhibitors (SSRIs) such as citalopram, fluoxetine, fluovoxamine, paroxetine and sertraline. SSRIs were the leading class of drugs for depression throughout the 1990's and are considered the first-line agents today [35]. Choice of antidepressants (AD) should depend on the individual's severity of episode, age, ability to comply, suicide risk and impulsivity, previous response and tolerability to antidepressants, presence of comorbid conditions (medical and psychiatric), and the use of concomitant medication [33]. Although there are still mixed results as to which class of medications is the most effective, SSRIs have become the most commonly prescribed medications because they tend to be better tolerated than TCAs or MAOIs [7;29;35]. Canadian clinical practice guidelines recommend the continued use of AD medications for 6 months after recovery from an initial uncomplicated episode [35].

Psychotherapy, typically cognitive behavioural therapy (CBT) or interpersonal therapy (IPT), can help change or alter an individual's negative cognitions and behaviours to a more positive and adaptive form. CBT is a combination of cognitive therapy and behavioural therapy. Cognitive therapy systematically works at changing automatic and maladaptive ways of thinking into more adaptive forms. Behavioural therapy encourages behaviours that provide positive feedback and a sense of mastery. IPT helps improve symptoms by focusing on the interpersonal environment of the individual in facilitating affective expression and improving communication skills. Both CBT and IPT have been shown to be effective in alleviating symptoms of depression and anxiety disorders [29-33;35-40].

In some cases, a combined pharmaco- and psycho-therapy may be given, which can be concurrent (both initiated at the same time), sequential (first treatment is given and then the second is added), or cross over (one is discontinued before the other is started). Combination therapy is often recommended for chronic or recurrent cases [36]. It is often the case that during the

initial acute phases, a pharmacological treatment may be initiated after which time the individual can undergo psychotherapy while gradually reducing the pharmacotherapy [29]. Outcomes of mental disorders have shown to be good when competent physicians provide state of the art care [41].

Despite the availability of potentially effective treatments, however, the overwhelmingly consistent finding worldwide is that approximately two-thirds of people with mental disorders do not seek treatment [14;15;42-45]. These rates differ from one mental disorder to the next. Results from the OMHS survey, for example, showed that 56% of individuals with major depression sought services such as specialty mental health and addiction services, general medical services, care by health professionals, and voluntary support network services compared to 25% of those with anxiety disorders [46] (Table 4). Starkes et al. [47] examined the rate of unmet need for major depression in Atlantic Canada and found that only 40% of respondents with probable depression (based on the Composite International Diagnostic Interview Short Form [48]) sought treatment by a general practitioner or mental health specialist. Results from a community survey, the National Mental Health Survey and Incidence Study (NEMESIS) in the Netherlands showed that 34% of those with one or more psychiatric disorders sought some type of professional care[a]. Broken down by disorder, 64% of those with mood disorders, 41% with anxiety disorders, 18% with alcohol dependence or abuse, 37% with drug dependence or abuse, 47% with schizophrenia, and 64% with eating disorders sought care [43]. More specifically, 45% of respondents with major depression received some form of professional care for their mental health problems, of whom, less than half received antidepressant medication [49]. Yet another study carried out in the east-end of Montreal [14] found that the rate of service use for mental health reasons for individuals with major depression and anxiety disorders were both approximately 46%. Thus, surveys carried out in various countries have shown that the rate of service use may or may not vary according to the mental disorder in question. Nonetheless, they all demonstrate

[a] Some for of care included primary care, informal care, ambulatory mental health care, or residential mental health care.

that the substantial lack of help seeking seems to be fairly consistent across cultures of resource-rich countries [1;28;50-52].

Table 4. Proportion of health service use by mental disorder in Ontario (n=6,261), 1990/91

	Use of services (%)
Mood Disorder	**52.7**
Depression	55.5
Dysthymia	59.4
Mania	37.7
Anxiety Disorder	**25.0**
GAD	60.0
Panic	53.0
Social Phobia	22.8
Simple Phobia	23.8
Agoraphobia	51.0

Katz et al. [46]

Another consistent finding was that among individuals who sought treatment, the majority went to see a family physician. In the OMHS survey, for instance, Lesage and his colleagues [53] examined the types of services used by treatment seekers and found that 35% saw family physicians only, and 25% saw family physicians and specialists. In the NEMESIS survey, the most frequently sought care among those with any psychiatric disorder was in primary care (27%) [43]. The rate of primary care use for those with mood disorders was 54%, and for those with anxiety disorders was 32%. Wang and colleagues [54] also found that among respondents with major depression in the CCHS 1.2 survey, 41% went to general doctors, while 18% sought care from psychiatrists, and 14% went to psychologists.

Also found in the literature was that the rate of service use in primary care settings is increasing. Watson and colleagues [55], for example, examined the pattern of service use in Winnipeg, Manitoba between 1992/93 and 2000/01 for

major and minor mental disorders and found that the rate of mental health practice among family physicians increased from 174 per 1,000 in 1992/93 to 224 per 1,000 in 2000/01. A report published by the Canadian Institute for Health Information on the "Evolving role of Canadian Family Physicians" [56] also found that between 1992 and 2001, there was a 12% increase in the average number of mental health care services provided per family physician.

There may be various reasons for seeing a primary care physician rather than a mental health specialist. If someone has always contacted their family physician for physical health concerns, then they may do the same for mental health concerns. In suburban or rural areas where fewer mental health specialists may be available, family physicians may be the only available option. Furthremore, depending on where one lives, the health care system may be set up such that primary care is the first line of contact to the health care system overall, after which a referral to a specialist may be recommended. General medical practitioners have played a strong 'gate-keeper' function in European countries like Denmark, Finland, Norway, Portugal, Spain, the Netherlands, and the UK. This function is shared with social workers, psychologists and some company doctors in Austria and Ireland, while in Belgium and Luxembourg specialists are fully integrated with primary health care [57].

Since primary care physicians receive less training than specialists in managing mental disorders, it is reasonable to question whether care provided by primary care physicians is adequate. In fact, Kniesner and colleagues [58] in the United States examined the association between provider type and adequacy of care for depression by examining the impact of initial provider on the adequacy of psychotherapy-only treatment, antidepressant treatment, and a treatment that combines the two. Using databases containing standardized medical/prescription claims and insurance claims, the authors found that psychiatrists were significantly more likely to provide adequate treatment compared to primary care providers. However, Sewitch and her colleagues [59] examined predictors of receiving recommended first-line pharmacotherapy in a primary care setting among individuals with late-life depression and found that male sex and having

the same physician for both diagnosis and treatment (continuity of care) were significantly associated with receiving adequate care. The association between provider type and adequacy of care therefore warrants further examination.

Irrespective of the provider of care, there is some evidence suggesting that only a small proportion of those seeking care receive *adequate care* [41;60-65]. Various definitions of adequacy exist but *adequate care* has generally been defined as a combination of receiving antidepressant medication, and having at least four visits with a physician. Katz et al. [60] found that the rate of appropriate management of depression was similar between the United States and Ontario, with approximately one third of users receiving antidepressants in the preceding 12 months, two thirds having had four or more visits with a physician or specialist, and about one quarter receiving both. Using data from the OMHS survey, Parikh and colleagues [62], found that only 18% of the 333 individuals with major depression were prescribed antidepressants. In a telephone survey of 1,636 adults with probable 12-month depression or anxiety disorders in the United States, only 30% were found to have received at least one appropriate treatment (21% appropriate medication, 18% appropriate counselling). Beck and colleagues [66] examined data from the CCHS 1.2 survey and found that approximately 40% of those with past-year major depression, and 25% of those with lifetime major depression, were receiving antidepressants.

However, a study based on data from the NEMESIS survey in the Netherlands suggests that antidepressant use might not be the best approach to caring for individuals with major depression [67]. As reported earlier, the investigators found that among the 45% of individuals with major depression who sought professional care, only 43% received antidepressants. When their clinical outcomes were assessed 12 months later, individuals who did not seek any treatment had the best outcome (no longer met criteria for depression) and those who were treated with antidepressants had the lowest rate of positive outcomes. Given that this was an observational study, there can be numerous explanations for these results. For example, individuals who received antidepressants had characteristics that were prognostically unfavourable compared to those who did

not receive antidepressants (higher rate of unemployment, greater severity of depression, higher rate of comorbidity with anxiety, and greater duration of previous episodes). It is also possible that the implementation of treatment was inadequate or that treatment compliance was poor. Nonetheless, it is a clear demonstration of the discrepancy between receiving treatment and having one's needs met. Patten [68] also discussed the relationship between the use of antidepressants and its impact on population health. He questioned the continuing increase in the prevalence of depression despite the increasing use of antidepressants and other forms of treatment. Such findings however provide further support that depression and anxiety may be chronic conditions rather than acute. Although some consensus on the definition of adequate care is necessary to compare between studies, there is a general trend towards inadequacy of care and it is made clear that just as meeting diagnostic criteria for mental disorders and presence of mental health care needs are not synonymous, neither are use of services and receipt of adequate care.

Reasons for not seeking care have also been studied. Using information from the National Survey of Psychiatric Morbidity of Adults in Great Britain, Meltzer and colleagues [69] examined reasons for not seeking care among those assessed as having a neurotic disorder. They found that about 25% had reported not having gone to see a doctor when he/she should have. The five most common reasons for not seeking care were: did not think anyone could help (28%); should be able to cope by self (28%), did not think it was necessary (17%), thought it would get better on its own (15%), and too embarrassed to discuss with anyone (13%). Surveys examining similar issues have been carried out by Statistics Canada in general health (National Population Health Survey 1994/95 through 1998/99 and Canadian Community Health Survey 2000/01) [70] as well as mental health (Canadian Community Health Survey, 2002) [71] showing that unmet need[b]

[b] Unmet need is defined as persons not seeking or receiving treatment for physical or mental health when they felt that they needed help. In the CCHS 1.1, as well as the NPHS, respondents are asked "During the past 12 months, was there ever a time when [you/first name] felt that [you/he/she] needed health care but [you/he/she] didn't receive it?" In the CCHS 1.2,

is a problem and that barriers such as availability and accessibility of services, as well as acceptability issues play a key role in affecting receipt of care.

2.5 Changes in Ontario during the 1990's

Much of the evidence on the prevalence of mental disorders and mental health service utilization in Canada has been based on surveys carried out in the late 1980's and early 1990's, such as the 1984-89 Edmonton survey [72], Mental Health Supplement of the Ontario Health Survey of 1991 [73], and the Montreal telephone survey of 1992/93 [14]. Since then, many changes have occurred to the Ontario demographic profile, the health care system, as well as the provision of mental health care, which may have an impact on the use and predictors of use of mental health service. New evidence have started to emerge on prevalence of mental disorders and mental health service utilization with the release in 2003 of data from the Canadian Community Health Survey, Cycle 1.2, Mental Health and Wellbeing (CCHS 1.2) carried out in 2002 by Statistics Canada.

2.5.1 The Ontario Population

The Ontario population profile with respect to some of the established predictors of service utilization is not the same between 1991 and 2002. For instance, the median age of Ontario residents increased from 33.6 years in 1991 to 37.2 years in 2001 [74]. A substantial increase was seen among the elderly age group with a 33% increase among the 70-79 year age group and a 39% increase in the 80 and older age group. Between 1991 and 2001, the proportion of residents in the 45 to 64 year age group rose from 19.6% to 23.2% in 2002, and the 65 years and older group increased from 11.6% to 12.5% [75].

Canada's ethnocultural portrait has altered in the last 10 years [76]. Ontario and British Columbia were the two provinces with the highest proportions of foreign-born people in 2001. Approximately 56% of all immigrants during the 1990's were living in Ontario in 2001, which translates to 3 million individuals

---

respondents are asked "During the past 12 months, was there ever a time when you felt that you needed help for your emotions, mental health or use of alcohol or drugs, but you didn't receive it?"

living in Ontario who were born outside of the country. They account for 27% of the total Ontario population in 2001, which was a 3% increase since 1991. The majority of immigrants are settling in urban areas. Of all immigrants to Canada during the 1990s, 94% lived in census metropolitan areas (CMAs)[c]. Furthermore, 73% of all immigrants to Canada during the 1990s lived in three CMAs in 2001: Toronto, Vancouver, and Montreal. Toronto had the largest influx of immigrants, attracting 43% of all immigrants to Canada during the 1990's, and increasing the proportion of visible minorities from 25.8% in 1991 to 36.8% in 2001.

The increase in immigrants during the 1990's has resulted in a shift in the distribution of visible minorities in Ontario. The largest visible minority groups in Ontario in 1991 were Blacks (3.1% of the provincial population), Chinese (2.9%), and South Asians (2.9%). A decade later, these were still the largest groups, but their order had changed: South Asians (4.9% of Ontario's population), Chinese (4.3%) and Blacks (3.6%). Again, given that the majority of immigrants were living in urban areas, these changes are primarily a reflection of changes in urban areas such Toronto, Hamilton, Windsor, and Ottawa. Such changes in the distribution of ethnic groups may have a significant impact on the service seeking patterns within the province.

The education level of Ontarians has also risen dramatically between 1991 and 2001 [78], with 55% of individuals aged 25 and 64 years having either a trade school, college, or a university degree (compared to 45% ten years earlier). Employment also increased in Ontario, with a 13.3% growth between 1991 and 2001. Almost half of the labour force growth were skilled occupations that typically require a university education [79].

Canadians are also increasingly aware and focused on living healthier lifestyles, which appear to extend to psychological wellbeing [80;81]. As such, one would expect that such individuals would be more likely to attend to issues that may arise with respect to their mental health. With readily available information

[c] Census metropolitan area is defined by Statistics Canada as an area consisting of one or more adjacent municipalities situated around a major urban core that has a population of at least 100,000 [77].

on mental health on the internet, interested individuals can find out a variety of information that may change the way they think and feel about mental illnesses and treatment seeking [82-87].

2.5.2 Health Care Provision for Mental Health Problems in Ontario

Similar to patterns in other developed countries [88], the use of antidepressants in Canada has increased significantly over the years, especially since the introduction of selective serotonin reuptake inhibitors (SSRIs) in 1989 [89]. The total number of prescriptions for antidepressants in Canada increased from 3.2 million in 1981 to 14.5 million in 2000 (353% increase), with an average annual increase of 16.8%. By 2000, SSRIs represented the largest market share of all prescribed antidepressants, at 46.3% by volume (6.7 million prescriptions). The total cost of antidepressant pharmacotherapy increased from $31.4 million in 1981 to $543.4 million in 2000, and is expected to exceed $1.2 billion in 2005. Such increased costs are hypothesized to be due to greater availability of new products with increased safety, efficacy, acquisition cost, number of users and increasing cost per prescription. Patten and colleagues [90] also examined the increasing rate of antidepressant use among individuals with major depression and found that the increase was highest among men and in persons aged less than 35 years. The authors also found that there was an increase in the number of people taking multiple medications. In 2000, almost 9% of antidepressant users were taking more than one antidepressant medication, which is 3 times the rate from 1994. Patten et al. also found that among those taking antidepressants, the rate of visits to other services such as nurses, social workers and psychologists had also increased.

The workforce supply in Ontario was compared between 1991/92 and 1997/98 [91] and was found to be relatively stable overall. However, when examined by specialization, the proportion of general practitioners and family physicians had declined by 1.3%, while the number of specialists had increased by 5.2%. According to reports by the Canadian Institute for Health Information [92;93] on the supply, distribution and migration of physicians in Canada, the number

of family physicians in Ontario declined from 98.6 per 100,000 population to 85 per 100,000 population. The number of psychiatrists remained relatively stable from 14.1 per 100,000 in 1992 to 15 per 100,000 population in 2001.

Furthermore, Chan [91] examined the geographic distribution of the health care workforce in Ontario and found that the maldistribution[d] is getting worse. More professionals are practicing in urban settings and the under-serviced rural areas are losing doctors. Consequently, physicians in the more rural areas have higher work loads than those in the urban areas.

Tepper [56] reports that between 1992 and 2001, there was a small increase in the number of family physicians in urban[e] settings (2%), with more significant increases seen in the mid-sized (8%), and rural (18%) areas (page 20). During the ten year period, the average number of mental health care services provided by male and female family physicians increased by 11% and 17%, respectively. Furthermore, the average number of mental health services provided per family physician by geographic area also increased by 11% in urban, 16% in mid-sized, and 14% in rural areas (page 80, Table C8).

As far as mental health care costs are concerned, Lin and Goering [94] compared costs between 1992/93 and 1997/98 and found that the fee-for-service core mental health care costs had increased by 13%. Core mental health care costs include assessment, diagnosis, and treatment of emotional, mental or addiction problems. The main reason for the increase in costs was that increasing numbers of people were using services. Nonetheless, males, adolescents, elderly and rural or Northern Ontarians still continue to be underserved [95]. A subsequent report, extending this comparison to 2001 (Abstract 2003) found that there was a slight decrease in core mental health care costs between 1992 and 2001.

---

[d] Maldistribution refers to the disproportionate allocation of service providers between urban and rural areas. Greater number of services providers practice in urban areas resulting in shortages in the more rural areas.

[e] This report refers to census metropolitan areas (CMAs) as urban, census agglomerations (CAs) as mid-sized, and non-CMA/CA areas as rural communities in accordance with the Statistics Canada definitions of CMAs and CAs (www.statcan.ca).

2.5.3 Mental Health Reform in Ontario

In 1987, the Ontario Ministry of Health created a Working Group to develop a plan for community mental health services delivery in Ontario[96]. In order to develop such a plan, an assessment of the current state was carried out via literature reviews, meetings with service providers, consumers and other stakeholders in all of the regions. What the Working Group found was that many community-based programs[f] had been developed across the province in the preceding 10 years, and that they would form an excellent "base on which to build a fully integrated mental health care system." [96] (pg. 1).

Although their assessment demonstrated that progress had been made since the *Heseltine Report* of 1983 [97], problems persisted in that there was no framework into which the various components of the system could fit (i.e,. lack of clear policy on how to provide services, little coordination, gaps in services, etc.). Furthermore, the proportion of funds allocated towards community mental health services had declined, relative to other areas of spending.

The Graham Report [96] outlined 19 recommendations, which are action plans at both the provincial and local levels, to develop a mental health care system that ensures equal access for all residents of Ontario, and stressed the importance of focusing on providing services to those with severe mental illnesses and their families. They also recommended that patients and families partake in the planning and operation of the mental health services and that they ensure an interconnected system of care. Due to the lack of knowledge about primary prevention in the mental health field, however, focus was taken away from

[f] Community based programs, or community based health services refer to care that includes a variety of "non-institutionalized' programs and services that are tailored to meet local needs. They include services such as housing, case management, treatment, community treatment order coordinators, peer support and self-help programs, crisis services, mobile crisis services, court diversion programs, clubhouses, employment services and any other program or service a particular community may need.
(http://www.ontario.cmha.ca/content/mental_health_system/community_mental_health.asp)

prevention and put towards "enhancing individual capacities and competencies to cope with mental illness" (page 4).

In 1993, the Ontario Ministry of Health released "*Putting People First: The Reform of Mental Health Services in Ontario*" [98], which was a 10-year plan for mental health reform that aims towards a "comprehensive, co-ordinated cost-effective system of services that puts people first" (pg 2). The existing mental health system was found to be a collection of different services that were developed and managed in very different ways. With such a fragmented set of services, it was very difficult for someone to gain access to mental health services in Ontario. The underlying principles behind the mental health reform were to: (1) tailor the services to the individual's needs; (2) provide services that are sensitive to gender, culture and race, and to the specific needs of vulnerable groups; (3) make every effort to keep people with mental health problems in the community, using hospitalization as a last resort, (4) increase provision of community and informal supports and integration with other services, and (5) ensure equitable access to care (page 12). In accordance with the 1988 Graham Report, *Putting People First* also stressed the importance of focusing efforts towards providing services to the severely mentally ill in order to try to relieve the disproportionate amount of mental health services used by this particular population.

The 1993 report also postulated that increasing expenditure on health does not necessarily improve health. It recognized that taking money away from other services that may prevent mental illnesses, such as housing, employment and social supports, would not lead to a better system, and that they cannot pass along the costs to other ministries or organizations. The changes, therefore, were to be made by reallocating resources, both money and people, within the mental health system.

In 1998, however, a report entitled "*2000 and Beyond: Strengthening Ontario's Mental Health System"* [99] was released by the Ontario Ministry of Health, based on consultation led by Dan Newman, MPP. Although the consultation made it evident that there was an overwhelming support for a community-based system, the report noted that "Today, however, at the midpoint

of that 10-year plan it has become evident that the former government failed to provide the necessary dollars and failed to implement the reform necessary to develop a strong mental health system" [99]. The report strongly advised that action needed to be taken right way.

In response to this, "*Making it Happen: Implementation Plan for Mental Health Reform*" was released in 1999 [100]. Its objective was to make sure that "the mental health system works for people, with services that are effectively integrated and coordinated, and based on best practices" (page 3). It outlines the Ministry's strategy to increase the system's capacity for comprehensive and integrated care, rehabilitative and supportive services, with a focus on community care where possible.

There has, therefore, been a consistent and overwhelming endorsement for community based mental health care in Ontario since the 1980's and numerous reports have been released by the Ministry of Health that outline how this should be done. Yet, the transition from planning to implementation has been extremely slow. Furthermore, the focus of all of the above-mentioned reports on mental health reforms has been on individuals with severe mental illnesses and much less attention has been given to those suffering with moderate mental illnesses [101].

Moderate mental illness (MMI) is defined as a condition that is (1) diagnosable; (2) impairing enough to impede functional abilities but is not chronic; and (3) considered to need, or can benefit from, mental health treatment. This categorization places less emphasis on diagnosis alone and focuses on the importance of taking the associated impairment and its duration into account. The most common disorders that fall into the MMI category are anxiety, mood and personality disorders. Three percent of the population is estimated to have severe mental illnesses, while approximately 15% are estimated to have moderate mental illnesses. Although the burden of SMIs are much higher, MMIs are still associated with premature loss of life, increased use of services, substance abuse problems, as well as family and social dysfunction. Dewa and Lin [102] found that mentally ill

individuals experience significantly more partial disability days[g] (on average 2.9 days) and extreme effort days (on average 3.5 days) within the working population. The importance of mental health and mental health promotion, and the need for a better system of providing mental health services is therefore evident.

Changes or stability in the profile of potential predictors of service utilization in Ontario over the 10 years may therefore have significant policy and planning implications, and may influence mental health outcomes. No previous study, to my knowledge, has examined change in use and predictors of use of services for depression and anxiety disorders over time. Obtaining information on the effectiveness and efficiency of the current health delivery system and determining ways to improve mental health service delivery will allow better identification and management of individuals with unmet mental health care needs for depression and anxiety disorders. If major depression does indeed become the second leading cause of disease burden by the year 2020, then it is imperative that the mental health care system be ready to better detect and manage comorbid depression and anxiety disorders.

Given the changes in the population, the changes in the mental health care provisions, and the mental health reform in Ontario, this thesis sets out to examine whether or not the Ontario mental health care system has improved in meeting the needs of individuals with mental health problems between the early 1990's and early 2000. The Ontario Mental Health Supplement and the Canadian Community Health Survey, Cycle 1.2 Mental Health and Well-being 2002 (CCHS 1.2) provide a unique opportunity to examine this question. The comprehensive collection of data in the two surveys allows assessment of the utilization rate and predictors of use of mental health services among Ontario residents with depression and/or anxiety disorders at the two time points.

---

[g] Disability days were determined based on the number of days respondents were "completely unable to function normally (*total disability* days), partially unable to function normally (*partial disability* days), or able to function normally only with extreme effort (*extra effort* days)" (pg. 44) in the previous 30 days. Source of difficulty was not restricted to mental or physical distress, and the three categories are mutually exclusive.

2.6 Determinants of utilization of mental health services: theoretical model

As a result of the findings that the rates of health service utilization among individuals with mental disorders are low, the body of research examining the predictors of health care service utilization for mental health problems has been growing. Various theoretical models have been used to explain behaviours with respect to health care access and utilization. Health behaviour models such as the Health Belief Model [103], Transtheoretical Model [104], Theory of Reasoned Action [105;106], and Social Learning Theory [107;108], have addressed health behaviour changes ranging from preventive to treatment behaviours [109]. Very few models have been applied to health care services for mental disorders.

Rosenstock [103;110;111] developed one of the first models to address the predictors of health service utilization in the late 1950's and focused on psychological-motivational determinants. The model stressed that the emotional rather than the cognitive factors of a person are critical in understanding utilization. The Rosenstock model was a precursor to the Health Belief Model [103] which incorporated the individual's belief that (1) he/she is susceptible to a particular disease, (2) the disease is serious, (3) he/she can improve the situation by taking a particular action (i.e., seeking care), (4) this action is less troublesome than the disease itself, and (5) he/she is capable of behavioural change.

Suchman's model (mid 1960's) [112] added socio-cultural and environmental determinants to the study of health care utilization. In addition to personal motivations, this model emphasized the influence of social networks, which they describe as the 'person(s) of influence' that an individual can approach in making his/her decision to seek or not to seek professional care. Such a network includes family and friends and the 'lay referral system'. The health knowledge, including attitudes toward illness and awareness of treatments, among the people in whom they confide is therefore an important component of this dimension.

In 1968, Andersen [113] proposed a model that attempted to explain utilization behaviour in terms of three categories of factors: predisposing, enabling/impeding, and needs. Factors that *predispose* a person toward utilization include age, sex,

family composition (family size and marital status), social structure (occupations, social class, education, and ethnicity) and health beliefs, including attitudes to physicians, health care and disease. Factors that *enable* the use of services include resources in terms of income, savings, insurance and access to regular sources of care, as well as the requisite resources within the community in which they live. And finally, the *need* for using services is triggered by the onset of disease in question. Unlike Suchman's model, Andersen's model did not emphasize social network and social interaction. And although Andersen included the availability of resources as a predictive component, not as much attention was given to it relative to the individual characteristics. Nonetheless, this model represents the complex nature in which decisions about treatment seeking is made by taking into account various personal, social, as well as, environmental factors.

Building on the Andersen model, Gross subsequently proposed a regression model that operated within a 'behavioural' framework [114]. In this model, accessibility variables are included as well as the predisposing, enabling, and need components and the 'relative' explanatory powers of each concept are assessed. Pescosolido and colleagues [115-117] present a model that integrates and brings to the foreground the role of social networks in treatment seeking. The inclusion of the influences of social networks moves way from the individualistic or isolated model and allows for the examination of the dynamics of an individual's response to illness in the context of time, social, psychological, economic, cultural, medical and system factors. This model acknowledges that treatment seeking is not necessarily due to personal choice; it can be through coercion or indirect routes such as treatment seeking for other illnesses. This model has not been tested fully yet.

Aday and Andersen [118-120] subsequently proposed a framework for the study of access that takes the initial Andersen model and incorporates "the system" as a modifier. This model takes health policy into account when viewing a health care delivery system for a given population at risk. The INPUTS in the model are health policy, delivery system and population at risk characteristics. The OUTPUTS of the model are health service utilization and consumer satisfaction.

The Aday and Andersen model is a framework with which to understand health service utilization and examine the health delivery system. It incorporates the various dimensions that contribute to the treatment seeking behaviour of an individual with a given illness. Although this model has been used frequently for medical care, it has only started being applied to mental health services utilization in the 1980's and early 1990's since the recognition and acknowledgement of the problem of low treatment seeking among the mentally ill. [121;121-124]

The 'Emerging Model – Phase 4'[120] which emphasizes the "dynamic and recursive nature of health services' use" (Figure 1) depicts the multiple influences on health service use and subsequent health outcomes. The health outcome then, in turn, can affect subsequent predisposing and enabling factors, thereby creating a feedback loop. A modified version of this emerging model was subsequently presented by Phillips and colleagues [125]. This modified model places greater emphasis on the context of health care utilization (Figure 2). Here, the *health care system* refers to characteristics such as policies, resources, organization and financing issues, all of which underpin accessibility, availability and acceptability of services. The *external environment* refers to the economic climate, relative wealth, politics, levels of stress and violence, and prevailing norms/society. These two environmental characteristics have a bidirectional relationship with the population characteristics, which in turn have a bidirectional association with health behaviour (personal health choice and use of health services). The difference between the population characteristics in the previous model and the new one is that the new one has, in addition to individual characteristics, incorporated provider-related and community enabling factors. The *provider-related* characteristics include descriptions of the providers (i.e., area of specialty, sex, age, etc.) as well as whether or not an individual has a regular family physician, or whether or not they have used services in the past. The *community-level* enabling variables are community attributes such as availability of services. Thus this model is much more sophisticated than the previous models in being able to examine the multiple levels of influences on service utilization, and some of the temporal influences can also be accounted for by using feedback loops.

Nonetheless, a few modifications to this model can further advance our ability to better account for the various influences of health care utilization (Figure 3). First, the outcomes component of the Emerging model should be included into the newer model since the outcomes of seeking treatment would certainly have an influence on whether one returns for more treatment for the particular condition. The outcomes of treatment for one health condition can have an impact on treatment seeking for other conditions as well. Thus the outcomes component would loop back and influence both the Population Characteristics, in terms of enabling and need factors, as well as the Health Behaviour. Also, there is a need to take the influence of time into consideration. Over time, population profiles change for various reasons such as migration, better education, better social services, better health care, and change in economic status. These changing factors can either be encompassed under the external environment label or depicted as a separate component with a bidirectional relationship with the Health Care System and with the Population Characteristic components. This modified model (Figure 3) will be able to incorporate changing predictors of service use, which may have significant policy and planning implications. Thus for this thesis, the modified Andersen model (Figure 3) will be used to investigate the predictors of service utilization.

Figure 1. Andersen's Emerging Model (from Andersen 1995)

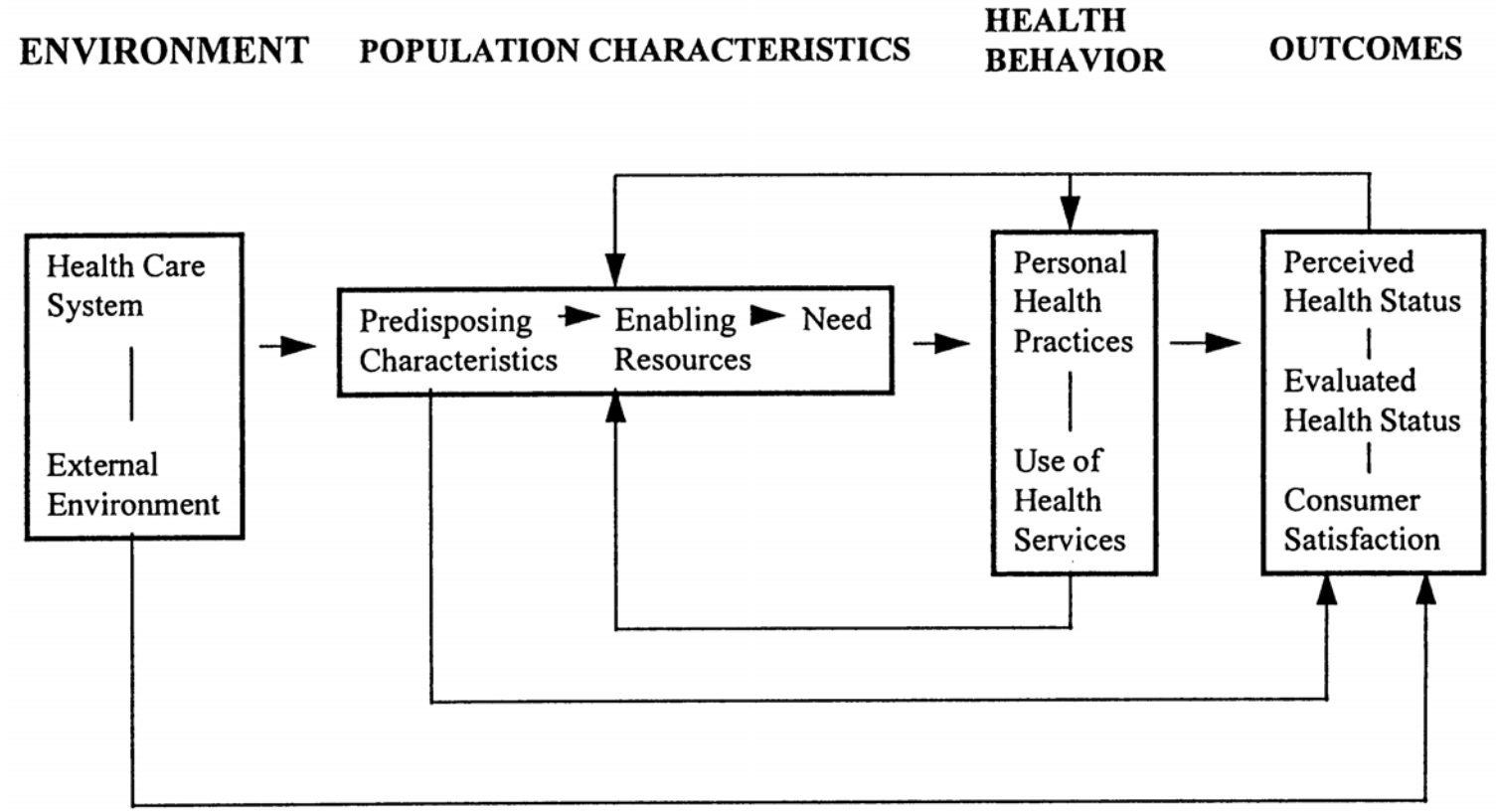


Figure 2. Utilization Model by Phillips, Morrison, Andersen and Aday (1998)

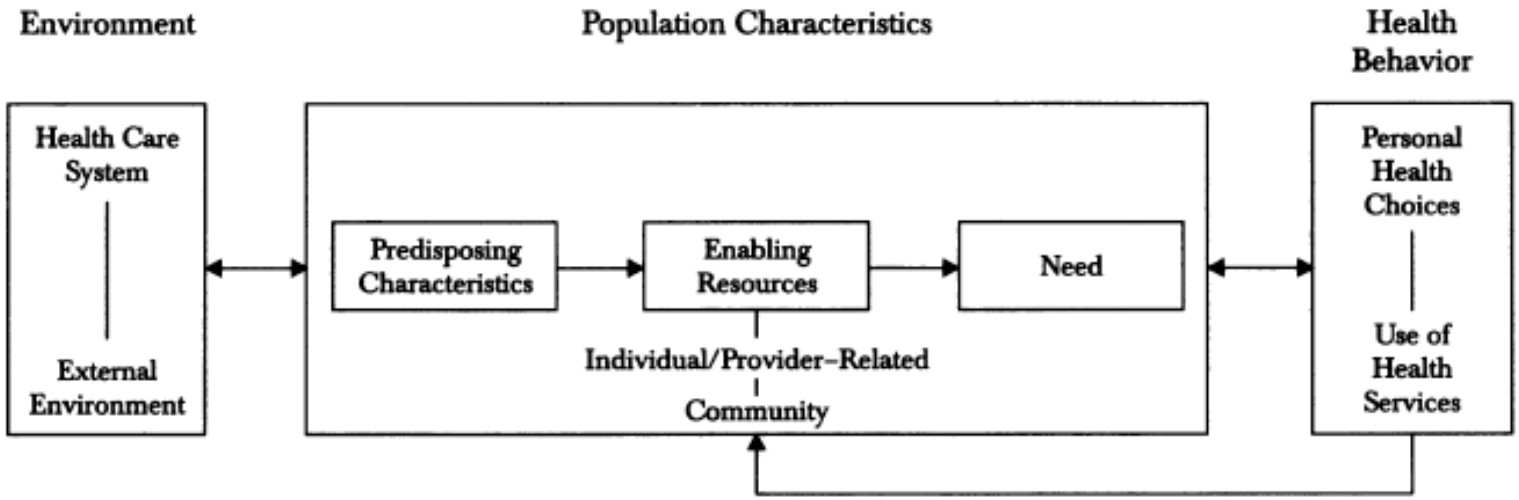
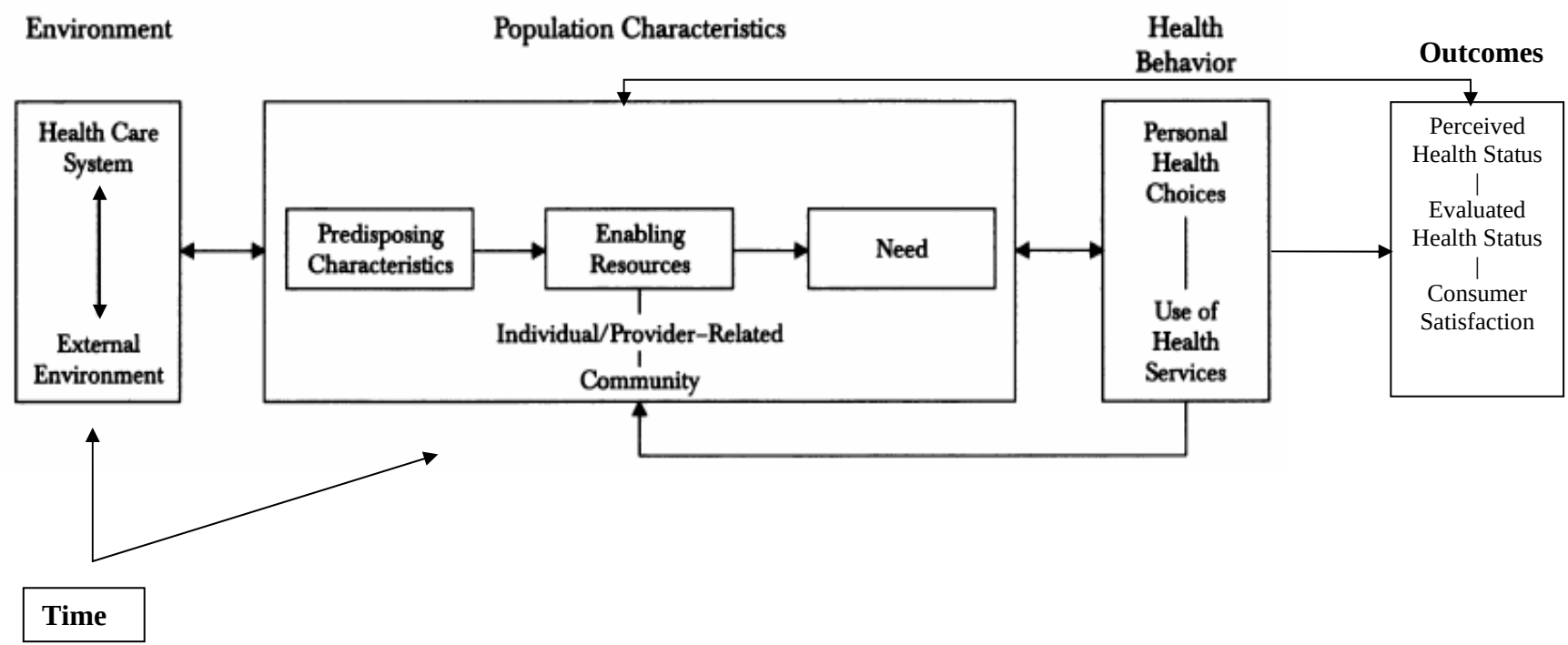


Figure 3. Modification of Utilization Model by Phillips, Morrison, Andersen and Aday (1998)



The following section describes the existing literature on the various components that fall into the Adersen Model and their association with use of health services for mental health reasons. Predisposing factors include gender, age, marital status, cultural background and education level. Enabling/impeding factors include availability of social network, income, employment, rural/urban residential area. The community-level enabling factors are the contextual characteristics. And need factors include the presence of depression and/or anxiety disorders, comorbid mental health conditions, comorbid physical conditions, disability, self-perceived health and mental health, level of daily stress, and level of life satisfaction.

2.6.1 Predisposing factors

2.6.1.1 Sex

Women have consistently been found to be about twice as likely as men to make an outpatient mental health visit annually [14;15;51;126-132]. In the OMHS survey conducted in 1990/1991, female sex was found to be associated with self-reported mental health service use even after adjusting for past year diagnosis of mental disorder, age, marital status, urbanicity and receiving public assistance [133]. The adjusted odds ratio for use of mental health services was 1.7 (95% confidence interval 1.2-2.5). The recent CCHS 1.2 survey results [134] also showed that among Ontario respondents, women were more likely to seek care for mental health reasons than men. However, as Drapeau and colleagues demonstrated using the CCHS 1.2 survey data, the magnitude of the association between sex and mental health service utilization is influenced by social anchorage, which is a concept that encompasses the social roles of parent, spouse and work status. The analyses revealed that there was no statistically significantly higher rate of service use among women in the following situations: (1) single parents; (2) single and unemployed; (3) unemployed parents; and (4) single, unemployed, and non-parent. Thus the evidence for the association between sex and service utilization is very strong, but it is also important to keep in mind that this association is partly dependent on the social roles taken on by the individuals.

2.6.1.2 Age

There is strong evidence demonstrating the differential utilization patterns of health services by age groups. The age group with the highest rate of utilization of mental health services has been found to be the 25 to 44 year age group [45;51;126;135-138]. Despite the higher prevalence rate, the 15 to 24 year old age group has had the lowest rate of service use for emotional, mental or substance use problems [126], while the highest rate of use has been found in the 25 to 44 year age year age groups [51;126;135-138]. Thus it appears that the age group with the highest needs are the ones who are getting the least care. Among the 7.3% of individuals with 12-month depression in Atlantic Canada, older individuals (aged 65+) were less likely to receive mental health treatment than individuals aged 20-44 years [139]. The subsequent CCHS Cycle 1.2 survey also found that age, though direction of the association not given, was a significant determinant of service utilization for mental health reasons [140].

There are numerous possible explanations for the differences in both prevalence and service use by age. Two likely explanations are the lack of ability to appropriately recognize a problem and the lack of information as to where to seek help. Burns and Rapee [141] for example, found that adolescents aged 15 to 17 years in Australia were not reliably able to recognize and label depression when presented with various scenarios. Biddle and colleagues [142] found that young adults in the UK did not consider general practitioners as a source of help for mental disorders or distress, suggesting that education is likely to play a key role in improving treatment seeking in these individuals.

2.6.1.3 Marital Status

Past studies have consistently shown an association between marital status and service utilization for mental health care [41;50;51;53;126;143-150]. Married individuals have shown the lowest utilization rates, while those who have been separated, divorced or widowed have had the highest rates, with single/never married persons falling somewhere in between. The experience of a separation, divorce or bereavement may bring forth an occasion for seeking professional care

to cope with the difficult situation but it may also increase the likelihood of subsequent visits for other emotional, mental health or substance use problems. However, in some studies, the statistically significant association between marital status and use of services disappears once other factors such as age, sex, education, comorbidity, presence of physical problems and personality factors are taken into account [51;143]. The association between marital status and mental health service utilization is therefore yet unclear.

2.6.1.4 Cultural determinants

Cultural or ethnic background, however defined, has been shown to influence the experience of depression at all levels from the presentation of symptoms, recognition of an illness, decisions about treatment, interaction between patient and health care provider, to likelihood of outcomes [45;151;152]. Existing studies provide evidence of certain disparities in utilization of mental health services across cultural/ethnic groups. Although many studies have shown ethnic minorities to have lower rates of utilization of services relative to white non-ethnic populations, the overall results have been somewhat mixed.

The 2001 report of the US Surgeon General on Mental Health [153;154] stated that African Americans, American Indian/Alaskan Native, Asian Americans/Pacific Islanders, and Hispanic Americans with mental health needs are all less likely than white non-ethnic Americans to seek treatment. If treated, minority populations are more likely to have sought help in primary care, i.e. less likely to receive mental health specialty care than white non-ethnic Americans. A review of the literature by Snowden [155] showed that African Americans and Native Americans have consistently been found to be over-represented in both inpatient settings and in psychiatric emergency rooms. The quality of mental health care has also been shown to differ, with African Americans and Latinos being less likely than Caucasians to receive treatment consistent with practice guidelines [41]. Wang and colleagues [156] examined the adequacy of care for seriously mentally ill patients in the United States and found a disproportionately greater number of African Americans with severe mental illness who did not receive minimally adequate treatment. In a separate national survey examining

ethnic disparities in unmet need for alcoholism, drug abuse, and mental health care, prescriptions patterns were examined. Both African Americans and Hispanics with perceived or actual need were less likely to received care in general. They were also less likely to be prescribed psychotropic medications compared to Caucasian Americans even after adjusting for health status and sociodemographic characteristics such as income, insurance status, education, age and marital status[157].

Further investigation into these differences in use revealed that the reasons varied across ethnic groups [153;154]. For instance, African-Americans were less likely to seek treatment for economic reasons; many African-Americans could not afford to get help. African Americans were also more likely to attribute mental illness to religious or supernatural causes than non-African Americans. Hispanic Americans had a greater tendency to associate mental illness to religious causes (as opposed to medical causes) than non-Hispanic Americans and therefore were more likely to deal with mental illness by religious acts such as praying. Among the Asian-Americans, there is a higher tendency to consider mental illness as a family embarrassment and hence something to be dealt with within the family [153;154]. Leong and Lau [158] found that the underutilization of services among Asian Americans was associated with their tendency to favour strategies that employ willpower and avoidance of morbid thoughts and to recognize mental illness only when social harmony is disrupted. There is also a greater tendency for shame and stigma to be barriers for care in the Asian community, with the protection of the family reputation being more important than individual wellbeing.

In a multi-centre study carried out in London, UK [159], White European and South Asian patients were asked about their reasons for their visit to their general practitioner, as were the general practitioners for patients scoring above a particular cut-off with respect to non-psychotic psychiatric illnesses. Although they did not find any difference in the presentation of symptoms, they did find that South Asians scoring above the cut-off were more likely to report having visited a general practitioner for a physical rather than a mental problem. The

physicians were also more likely to report having consulted for mental health issues among White European patients than among South Asian patients.

In a study of UK students, Horne and colleagues [160] looked at the impact of self-reported cultural background on beliefs and attitudes about medications (modern pharmaceuticals) and personal sensitivity to potential adverse effects of taking medications. The study found that there was a significant difference in beliefs about the benefits and dangers of medication use between South Asian and European students, with the South Asian students having a more negative perception about medication use, even after controlling for age, gender, experience of taking prescribed medication, and chosen degree course. More specifically, the South Asian students were significantly more likely to perceive medications as harmful, addictive and therefore should be avoided. This seems to be due to their traditional beliefs that illnesses should be managed through herbal remedies.

Similarly, Cooper and colleagues [161] surveyed 829 adult patients of African American, Hispanic, and Caucasian background from primary care practices across the United States who met diagnostic criteria for major depressive episode. The respondents were asked about their attitudes towards antidepressant medication and individual counselling. Both African Americans and Hispanics were more likely to find antidepressants unacceptable compared to Caucasians, even after adjusting for sociodemographic variables. African Americans were also less likely to find counselling acceptable while Hispanics were more likely to find it acceptable compared to Caucasians. Despite such differences, there was no significant difference in the acceptability of depression treatment, suggesting that cultural issues should be considered when deciding treatment modalities.

Furthermore, cultural differences in the conceptual models of depression were examined by Karasz [162], who presented a vignette describing depressive symptoms to South Asian immigrants and Americans of European decent in New York City. A subsequent semi-structured interview revealed that the South Asian immigrants were more likely to interpret the symptoms as social or moral issues that could be self-managed or handled by lay referral strategies. The European

Americans, on the other hand, interpreted the symptoms in more biological terms or reactions to stressful life events, leading them to recommend more pharmaceutically-oriented treatment.

In the Canadian context, a study in Montreal found that the style of clinical presentation had an important impact on the recognition rates of distress by clinicians and that immigrant groups were much less likely to use or be referred to mental health services [163]. However, there have also been Canadian studies that found no significant difference in the utilization of mental health-related services across ethnic groups [126;164-166]. Although these studies found that utilization rates by Caucasians are uniformly higher than ethnic minorities, the differences were not statistically significant.

Thus disparities in utilization of mental health services have been seen across cultural/ethnic groups, with the strongest evidence noted in the United States. Not only were there differential uses of services, there were also differences in the reasons for not seeking care by cultural groups. Despite economic barriers to care being less of an issue in Canada relative to the United States, not all services for mental disorders are covered by Medicare, particularly with respect to alternative types of care. There is also the possibility of linguistic barriers or lack of faith in the system to provide care for ethnic minorities that may reduce the likelihood of treatment seeking. Some cultures have stronger community interactions than others that may provide a greater social support network, which in turn has been shown to be associated with mental health service utilization [115;167].

2.6.1.5 Education

The evidence on the association between education and service utilization has been somewhat mixed. A Dutch study found that lower education is associated with an increased likelihood of utilization and that education is also associated with types of utilization: people with more education were more likely to use specialty mental health care while those with less education were more likely to use primary care [128;168]. A National Health Survey in Spain [169] found that higher education was associated with health services utilization only among those

who perceived their health to be poor or very poor. In the study by Starkes and colleagues [170] on service utilization among individuals with major depression in Atlantic Canada, individuals with lower education were found to be significantly less likely to receive treatment for mental health problems in either primary or specialty care. Although the details regarding the magnitude and direction of the association were not specified, Vasiliadis and colleagues [171] also reported that education was significantly associated with service utilization for mental health reasons. Better educated individuals may be more informed of the different types of care available and therefore may be more likely manage their problems with a caregiver other than a family physician.

2.6.2 Enabling/Impeding factors

2.6.2.1 Social Network

As is the case for social support and physical health [172;173], having a good social support network can be protective against mental illnesses by moderating the psychological effects of stressful situations [45;174;174-177]. It can be a system within which an individual with mental health problems may be able to resolve a situation before it affects their health, or be able to minimize its impact such that professional care would be required only for the more disabling circumstances. In fact, there are several studies that show that the perception of the availability of support may be more important than the actual support received in helping people cope with mental disorders [176;178-181].

Consistent with these findings, a population survey in the Netherlands has found that low social support was associated with greater utilization of mental health services and was also found to have an interaction effect with the presence of mental disorders [182]. Similarly, in a population study in the United States, Sherbourne [183] found that individuals with low social support, when defined as social resources, were more likely to seek care than those with higher social support. Among people with severe mental illnesses, smaller and less well-developed social networks were associated with more frequent utilization [184]. And indirectly, studies examining mental health resource utilization by certain ethnic

groups, e.g. Hispanic Americans and Canadian Italians, have suggested that they may utilize specialized mental health services less than the white non-ethnic population as a result of having greater access to larger and more supportive social networks [115;167]. Therefore, various types of studies suggest that social networks play a key role in whether or not an individual uses mental health services when necessary.

The ambiguity of where social support fits within the Andersen model is noteworthy. Insofar as it can act as a 'substitute' for treatment for depression and anxiety, it is a need factor. On the other hand, to the extent that it can encourage or discourage treatment seeking, it is an enabling/impeding factor. Thus, depending on its role, social support could be either an enabling or need factor, or both.

2.6.2.2 Income

The association between income and health service utilization has been examined by various researchers worldwide, and the results are quite mixed. An international examination of the role of income on use of mental health services in persons with psychiatric disorders comparing the United States, the Netherlands and Canada found no significant association [128;185]. However, a significant difference was found among countries in the association between income and type of mental health care. In the United States, income was positively associated with the use of specialty care such as a psychiatrist, psychologist, psychotherapist, or any professional caregiver in a mental health care setting. On the other hand, income was negatively associated with the human services sector, which included mental health care provided in a social or welfare service agency or by a social worker or counsellor other than in a specialty setting. Similarly, in the Netherlands, those in the higher income bracket were less likely to use the human service sector relative to those in the lower income bracket. No difference was found, however, in Ontario. Other Canadian studies have been consistent with the Ontario study in observing no association between income and mental health service utilization [51;145;186]. Young and colleagues [41] in the United States, on the other hand, found that among more than 1600 adults with probable 12-month

anxiety or depression, lower family income was significantly associated with higher use of services. Results from the German National Health Interview and Examination Survey (GHS) carried out in 1997-99 also found that individuals in lower income groups were more likely to be high users of mental health services [132].

The impact of income on use of services appears to be very much related to the type of health care system of the target population. In Canada, the universal access to care is aimed at preserving access based on need rather than ability to pay. It is therefore not surprising not to find any influence of income on utilization of services within the Canadian context. However, income is positively associated with education levels, which in turn has been shown to be predictive of the types of services sought, as mentioned above. If individuals with higher education are more likely to seek specialty services than primary care, then one could argue that those with higher income might display the same pattern of utilization. This has in fact been shown to be the case in the United States and the Netherlands. Higher income individuals were more likely to seek specialty care, while lower income individuals were more likely to see a family physician or general practitioner [185]. Furthermore, a recent study by Steele and colleagues [187] in Ontario found that there was in fact a significant impact of income on service utilization. Using outpatient billing claims and neighbourhood socioeconomic status information, they compared rates of mental health visits to family physicians and psychiatrists across socioeconomic quintiles. Individuals from highest income quintiles were 60% more likely to visit psychiatrists than those from the lowest income group. No such difference was found for visiting family physicians. Income levels may also be reflective of the availability of services. Lower income areas may have fewer services available, particularly specialty care. This can then reduce their options for the type of care that could be sought, mirroring the case with lower income countries where services are provided largely through primary care.

2.6.2.3 Employment

Mixed results have been found with respect to the association between employment and service utilization. Those not working are more likely to seek

care according to Drapeau's work on social anchorage [188]. Although employment status was associated with high use of services (Employed=13% vs. Unemployed/disabled=29%; OR=1.9; 95% CI=1.5-2.6) [43], paid employment was not found to be associated with 'incident' use of services in the NEMESIS survey [128]. A possible explanation for the higher use of services among the unemployed is that perhaps they are unemployed because they are not well enough to work. Employment status can therefore be an indicator of the degree of functional impairment caused by mental illnesses.

2.6.2.4 Rural/urban differences

Differences in the use of mental health services have been found for Canadian rural and urban residents [189-191]. Urban areas tend to have concentrations of specialists [189;190;192;193] while rural areas are served primarily by general physicians [194]. The US National Comorbidity Study found rural residents more likely to have unmet needs for treatment than urban residents [195]. Wang [196] examined rural-urban differences in the prevalence of major depression and associated impairment in Canada using the 1998/99 National Population Health Survey and found that the prevalence of depression was lower in rural areas (3.2%) than in urban areas (4.6%), even after controlling for the effects of race, immigration status, working status and marital status. Wang also found that although there was no difference between rural and urban participants in the impairment associated with depression, rural participants were less likely to have contacted health professionals for their mental health problems (4.9% versus 6.7%, p=0.003). Both the OMHS and Canadian Community Health Survey, Cycle 1.1 found higher utilization rates in urban areas [197;198], supporting the idea that rural areas are underserved.

2.6.2.5 Contextual effects

Contextual effects on health have increasingly been gaining attention in epidemiological research in the past decade or two with many studies recognizing the fact that certain characteristics about the area in which one lives, can have an impact on health [199-215] and utilization of health services [211;214]. Very few studies

have looked at mental health outcomes [216-218] and mental health services [219-221]. Based on a population survey carried out in the United States among young adults aged 18-30 years, Henderson and colleagues [216] examined the association between individual level socioeconomic characteristics, area socioeconomic status, area ethnic characteristics, and depressive symptoms. Area socioeconomic status was based on income/wealth, education, and occupation information of census-defined blocks status. Ethnic composition was defined as the percentage of black and the percentage of white individuals. When adjusted for individual level socioeconomic characteristics (income and education), neither area socioeconomic status nor ethnic composition was found to be associated with depressive symptoms. Kubazansky and colleagues [222] examined the association between area characteristics (based on census tracts) and the onset or maintenance of depressive symptoms among an older community sample (aged 65 years and older) in the United States. Area characteristics examined were area poverty, area affluence, residential stability, racial/ethnic heterogeneity, and elderly concentration. Residing in a poor area was significantly associated with higher level of depressive symptoms even after adjusting for individual characteristics.

Furthermore, Silver and colleagues [223] examined the impact of individual and area level characteristics on the prevalence of mental disorders. The socioeconomic disadvantage measure at the census tract level was a reflection of the proportion of household receiving public assistance income, proportion of families that are husband-wife, proportion of persons living under the poverty line, the rate of adult unemployment, proportion of female-headed households, the proportion of adults working in executive/managerial jobs, and the proportion of families with annual incomes above $30,000. The area level mobility measure was a reflection of the proportion of persons who moved homes in the preceding five years and the proportion of person who are renting their homes. And finally, racial/ethnic heterogeneity measure was based on whether or not at least 90% of residents in the area were Caucasian or non-Caucasian. The authors found that both area disadvantage and neighbourhood residential mobility were significantly

associated with higher rates of major depression and substance abuse disorder after controlling for individual level characteristics.

Studies are now emerging in health services research examining the impact of contextual factors, such as sociodemographic characteristics and regional service delivery and availability, on treatment seeking for general health. Yip and colleagues [214], for instance, investigated the roles of individual and neighbourhood socioeconomic characteristics on health care utilization. They linked the 1990 Nova Scotia Nutrition Survey with 1991 Canadian Census data, as well as the provincial health care databases and vital statistics. At the individual level, they looked at age, gender, household income and education. At the enumeration area level, they assessed income, dwelling value, education, unemployment rate and proportion of single mother families. Multilevel analyses of these variables showed that neighbourhood income had a statistically significant impact on physician use, with individuals living in neighbourhoods with an average income of $30,000-$45,000 being approximately 25% less likely to seek care than those in neighbourhoods with an income of less than $30,000.

Veuglers and colleagues [211] also examined the geographic variation in health service utilization using Nova Scotia data from 1996 to 1999. Using multilevel methods, they found moderate variation in the use of family physicians and significant variation in the use of specialists and hospitals. Larger urban areas were significantly more likely to use specialist and hospital services than the provincial average. This would be expected if such services are more available in urban areas. They also found that areas with greater use of family physician services and less use of specialist and hospital care were associated with better health.

Litaker and Love [224] examined the impact of health care system characteristics and other contextual social and economic characteristics on an individual's ability to meet health care needs for medical, mental or dental health problems in the United States. Health care system characteristics were: number of primary care physicians per 10,000 residents; proportion of physicians in country practicing primary care; number of dentists per 10,000 residents; number of

psychiatrists per 10,000 residents; presence of physician training program; and designation of area as high medical under-service by the Bureau of Health Professions. Social and economic characteristics of the area were also examined: income, education, occupancy of housing stock, and urban/rural setting. In examining the influence of individual and contextual factors on meeting health care needs, health service characteristics were not found to have any statistically significant association with meeting needs but the individual and social/economic factors were. With respect to the social and economic factors, individuals in low income areas were more likely to have unmet needs whereas those in high education areas were less likely to experience unmet needs. More education may be a reflection of their being better informed about mental disorders, their treatment options and where such treatments can be sought. It can also suggest that being better informed reduced the stigma associated with mental disorders and thereby increased acceptability of their presence as well as treatment seeking.

Area disadvantage has also been shown to be associated with health service utilization in the context of mental disorders, such as major depression and substance abuse disorder. Drukker and colleagues [221] examined the association between social environment and mental health service use. The four area level variables examined were socioeconomic deprivation, residential instability, informal social control, and social cohesion and trust. The measure of socioeconomic deprivation represented factors such as single parent families, ethnicity, non-voters, unemployment, unemployment for over one year, social security, social security of more than 3 years, mean income, mean income for persons employed for 52 weeks per year, proportion of high and low incomes, and proportion of economically inactive persons. Residential stability was a measure of single persons and various mobility factors. Informal social control measures the willingness to intervene in hypothetical neighbourhood-threatening situations. The social cohesion and trust variable measures bonds and trust among the residents of the neighbourhood. The analyses showed that all four neighbourhood variables were associated with mental health service utilization. Use was higher among more deprived, more unstable, neighbourhoods with lower levels of social

capital. However, once individual level factors were added into the model, all four neighbourhood variables were no longer statistically significantly associated with service use.

Overall, research connecting contextual characteristics and mental health and mental health service utilization is still in its infancy. Availability of services in particular is a concept that has not been looked at in very much detail thus far with respect to mental health service utilization in Canada or elsewhere. Characteristics about the neighbourhoods in which people live such as resource volume (i.e., number of physicians, psychiatrists, inpatient beds, per capita) and distance to care may have an impact on service utilization and subsequent health. And from an intervention perspective, changes can be implemented more easily at the contextual level than at the level of the individual. Multilevel analyses have their challenges [225-230], ranging from defining the most appropriate and meaningful 'neighbourhood' and obtaining the desired data at that level, to making causal conclusions about the impact of neighbourhood variables on individual outcomes. Nonetheless, given the existing body of evidence suggesting that neighbourhood characteristics play a role in the health and health service utilization, multilevel analyses are tools that allows some untangling of the complex relationship between individual-level and contextual-level factors. such that effective strategies for interventions can be developed.

The benefit of using the Andersen model to examine determinants of health services utilization is its ability to incorporate both contextual and individual level information simultaneously. The community-level enabling factors refer to community attributes such as sociodemographic variables and availability of services within a defined geographic area. Multilevel analysis can be used to determine the independent impact of such factors on mental health services utilization while adjusting for individual predisposing, enabling and need characteristics.

2.6.3 Needs

2.6.3.1 Mental Disorders

Katz and colleagues [46] found, not surprisingly, that the presence of a psychiatric disorder was the strongest predictor of health service use, especially affective disorder. Very consistent results have been found across Canada and internationally that the presence of a mental disorder is significantly associated with utilization of mental health services, yet approximately half to three-quarters of individuals with a current mental disorder have not consulted services in the previous year [51;126;132;145;231-235]. As described earlier, the study in Montreal showed that less than half of those with depression or anxiety sought care for their problems, while in the OMHS study, just over half of those with depression and only a quarter of those with anxiety disorders consulted a health care professional. An examination of the temporal relationship between depression and anxiety disorders in Germany [236] found that anxiety disorders, with the exception of panic disorders, almost always preceded depression, and over time, the rates of comorbid depression and anxiety increased substantially resulting in increased impairment and disabilities.

Utilization rates have also been found to differ by specific mental disorders. The greatest likelihood of utilization has been found among individuals with depressive disorders, followed by those with panic disorders. Those with other anxiety disorders are the next likely group of individuals to seek care whereas those with substance disorders are associated with low rates of utilization [51;147]. The GHS study also found that both affective and anxiety disorders were significantly associated with higher use of services [132]. The recent CCHS 1.2 survey results were consistent with these findings, showing that among Ontario respondents, those with current depression were more likely to use services than those without current depression (OR=4.2, 95% CI=3.4-5.3), as were those with panic disorders compared to those without panic disorders (OR=1.8; 95% CI=1.6-2.5)[237].

2.6.3.2 Comorbid mental disorders

A study carried out in the United States showed that 79% of all mental disorders were comorbid [238], with depression and anxiety disorders being one of the most common comorbid conditions [10;239-241;241-243]. In the European setting as well, a recent study of six countries (ESEMeD) found that mood and anxiety disorders had the highest association (OR 13.4; 95% CI 11.0–16.3) among the three groups of disorders (mood, anxiety and substance disorders) [244]. The presence of comorbid mental disorders or substance use disorders has also been shown to increase the likelihood of utilizing mental health-related services [43;51;132;145]. The consequential increase in the interference with daily activities is likely to make the need for care (by self or by others) more evident. In examining the relationships of past and present mental disorder diagnoses to utilization, Lefebvre and colleagues [145] showed that the adjusted odds ratio for past year utilization was 6.1 for one current disorder and nearly doubled to 11.0 for two or more concurrent disorders.

Galbaud du Fort and colleagues [245] examined the impact of comorbid psychiatric diagnoses in the treatment seeking behaviours of 1,348 Edmonton residents with lifetime depressive illness. Their multivariate analyses revealed that comorbid mania (OR=9.5, 95% CI=1.2-75.9), comorbid panic disorder (OR=3.0, 95% CI=1.4-6.5), and comorbid drug/alcohol (OR=0.6, 95% CI=0.4-1.0) were statistically significantly associated with treatment seeking for depression.

2.6.3.3 Comorbid physical conditions

Mental disorders have also been linked with various physical disorders, even after controlling for key determinants such as age and poverty. One study of psychiatric patients found that half suffered from a known medical condition, while another 35% had an undiagnosed medical disorder [246]. The presence of one or more chronic conditions [247], particularly circulatory conditions, respiratory conditions, and cancers [248-254] have been found to increase the likelihood of seeking care.

2.6.3.4 Disability

Disabilities can be an important indicator of mental health care needs [255;256]. Goering and colleagues [257] showed, in a community survey, that individuals with a psychiatric disorder reported significantly greater functional difficulties than those without a disorder, and that affective and comorbid disorders were associated with greater disability than anxiety and substance abuse disorders. Using the same survey, Lin and colleagues also found disability to be associated with the use of services for mental health reasons [126;255]. Similarly, a national prospective survey (NEMESIS) carried out in the Netherlands in the late 1990's found that mental disorders were associated with increased disability in social, emotional and physical domains in life with mood disorders showing the lowest level of functioning [258]. ten Have and colleagues [259] showed that greater severity of functional impairment was associated with an increased likelihood of utilization and mediated the effect of mental disorder on services use.

2.6.3.5 Self-Perceived Mental and Physical Health

Several studies have shown an association between self-perceived mental health and service utilization: individuals with poorer perceived mental health tend to have greater use of services than do those who perceive their mental health to be good or excellent, independent of diagnostically determined mental health problems [46;46;145;260;260-263]. Using data from the United States National Comorbidity Study and the OMHS survey, Katz and his colleagues [46] revealed greater use of services among individuals with fair/poor self-rated mental health relative to those who perceived their mental health to be excellent/very good (OR=3.0, 95% CI=2.1-4.2). In the OMHS survey, Lin and Parikh [260] found that among depressed individuals, those who did not seek treatment were less likely than treatment seekers to feel they had a mental health problem (52% vs. 79%).

Self-perceived physical health has also been similarly associated with health service utilization: poorer perceived physical health leads to greater use of services. [264-267]. Connelly and colleagues [254], for instance, found that approximately 20% of adult primary care patients reported health perceptions that

were lower than expected based on their physical health. This low perceived health was associated with higher utilization of health care. Furthermore, a population-based cohort study carried out by Kapur and colleagues [268] in the UK found that negative illness attitudes (defined by the Illness Attitude Scales) were independently associated with consultation with primary care services over a five year period. Another follow up study in Denmark [267] using the Illness Perception Questionnaire found that in the two years of follow up, patients with lower perceptions of their physical health had higher use of services. Studies on self-perceived physical and mental health have therefore consistently shown that lower perception of health is associated with higher use of health care services, independent of actual health status.

2.6.3.6 Level of stress in life

Level of stress in one's life, if high enough, can be quite disruptive unless coping mechanisms are in place to manage the stress. Over a quarter of Canadians described their days as being "quite stressful" or "extremely stressful", and an additional 40% described them as 'a bit stressful" [177]. There has been consistent evidence suggesting that high stress can pose a threat to mental health [269;270], which may make coping difficult. In a longitudinal study of population-based study of adults enrolled in the RAND Health Insurance Experiment in the United States, Sherbroune [183] found that stressful life events were predictive of use of services and that chronic types of life events are more predictive of use of mental health services than acute types.

2.7 Summary of literature

Although there are many studies examining predictors of health service utilization for mental health problems, the majority of them examine the impact of mental disorders as a global entity rather than each disorder separately [126;271;272]. Lin and colleagues [126], for example, defined mental diagnosis as any psychiatric disorder in the preceding 12 months, while Kessler and colleagues [127] categorized mental disorders into having one psychiatric disorder, having two or more disorders, not having a current disorder but with a history of disorder, and not

having a current nor history of disorder. Furthermore, among studies that examine the impact of individual disorder categories, only a few addressed comorbidity. When addressed, they either (i) looked at individual mental disorders and multiple disorders, such as affective, anxiety and substance disorders and more than one disorder [51]; or (ii) focused on one disorder, such as affective disorders and any other additional disorder [132]; or (iii) simply examined the number of concurrent disorders [127;273].

Specific mental disorders are associated with different burden as well as different patterns of utilization of health care services. For example, results of the OMHS survey showed that 56% of individuals with major depression sought care for their conditions, compared to 23% of those with simple phobia or social phobia, and 60% of persons with generalized anxiety disorders [46]. Thus to gain a clearer understanding of the determinants of service utilization, they should be examined separately. Comorbidity is expected to have different effects on service utilization depending on which disorders are comorbid. Depression and anxiety disorders both have high burden and often occur together [236;239-241;274-277]. Treatment seeking rates have been shown to differ between these two disorders [46;239] and the reasons for this may be better understood if the role of comorbidity between these two disorders is examined. Thus distinguishing between depression, anxiety, and comorbid depression and anxiety disorders will allow investigation into the unique influence of depression and anxiety on service utilization, as well as the burden of having both disorders relative to having only one.

We also need to consider that, since the early 1990's, the diagnostic criteria have changed. The current criteria are based on the Diagnostic and Statistical Manual of Mental Disorders, Version IV, which was released in 1994 [22]. Ten years earlier, version DSM-III-R was being used. The difference between the two versions is that the DSM-IV places more emphasis on the need for clinical significance of the disorders than past versions [22]. This slight change in diagnostic criteria may have an impact on estimating service utilization because the population of interest is different. The DSM-IV has been criticized for being over-

inclusive [278;279]. It does not delineate distinct boundaries between disorder and non-disorder but rather opts for fuzzy concepts where arbitrary boundaries must be drawn. Consequently, many people without a mental disorder may be falsely identified as cases and thereby appear to have needs that are not met by mental health care services. On the other hand, individuals who do not meet the criteria for a disorder may have needs for care. These latter individuals may in fact be milder cases of mental disorders that, if treated now, would prevent the condition from progressing to a more severe case.

Given this perspective, providing services at a milder stage of a disorder might be a more cost-effective approach, as argued by Kessler and his colleagues [280]. It is therefore important to recognize that the presence of DSM-criteria-defined disorder and the need for mental health care are not the same thing. Identification of other factors to help distinguish those with needs from those without needs is necessary to determine who should be seeking mental health care.

There is also evidence of the effect of stigma towards psychiatric disorders on treatment seeking. Barney and colleagues [281] recently examined the impact of stigma towards depression on health seeking intentions in the Australia context. They found that self-embarrassment and concerns about possible negative reactions by others were significantly associated with their likelihood of help-seeking from professional sources. However, there has also been evidence showing that attitudes towards treatment seeking for mental health problems are changing. Angermeyer and Matschinger [282] found that over the course of the 1990s, the likelihood of the German public seeking treatment for psychiatric conditions such as schizophrenia and depression increased by approximately 20% between 1990 and 2001.

There have been very few studies so far that examined the relationship between contextual characteristics and mental health service utilization. However, how health services are delivered differs form one country to the next, and in Canada, from one province to the next. In Ontario, the closing down of hospitals and the shift towards community based mental health care during the 1990's meant that, increasingly, more individuals with mental disorders were in the

community using outpatient care. This situation makes accessibility to mental health services all the more important. Specialized mental health care providers tend to be concentrated in urban areas, which necessitates the provision of mental health care by family physicians/general practitioners in the areas where specialty care is not available; this increase in mental health care by family physicians has previously been reported [55;56]. And if contextual characteristics, such as socioeconomic disadvantage, are associated with the risk of developing mental disorders, then these associations, together with the neighbourhood sociodemographic and service availability factors, need to be examined to determine how they contribute towards mental health service utilization.

Until recently, there had also been inadequate up-to-date research in the Canadian setting to understand how treatment seeking behaviours are affected by various factors. The CCHS 1.2 survey administered by Statistics Canada in 2002 has provided rich data for Canadian researchers to examine mental health and service utilization in the Canadian context. In Ontario, a similar survey was carried out in 1991, (OMHS survey) from which much of what is currently known about mental health and mental health service in Ontario comes. The presence of these two population surveys, approximately 11 years apart, in the province of Ontario provides a unique opportunity to examine how mental health service utilization and determinants of use has change and may provide information on how best to optimize mental health service provision in the province.

2.8 Objectives

The objectives of this thesis are as follows:

1. To describe the rate, type, frequency, and setting of service utilization for depression, anxiety, and comorbid depression and anxiety in Ontario, for 1991 and 2002;
2. To elucidate the role of individual and contextual factors on mental health service utilization, including disorder, comorbidity, disability, gender, age, marital status, ethnicity, education, chronic conditions, social support,

income, rurality, self-perceived mental health, self-perceived physical health, and contextual characteristics;

3. To examine the impact of comorbidity of depression and anxiety on utilization;
4. To evaluate the change in utilization of services as well as the stability or change in determinants of utilization across the 11 year period; and
5. To describe the rate of unmet need and reasons for not receiving care in these circumstances in Ontario for each time point.

2.9 Hypotheses

With these objectives, the OMHS and CCHS 1.2 will provide data to test the following hypotheses:

1. Based on the added burden of having both, and the prior evidence that individuals with depression have had higher rates of utilization relative to those with anxiety disorders, *the utilization rate is hypothesized to be highest among those with comorbid depression and anxiety, followed by depression, and lowest among those with anxiety disorders without depression.*
2. In the 1990's more individuals with depression used mental health services than individuals with anxiety disorders. This fact, combined with the evidence of increased prescriptions of antidepressant medications and increased mental health promotion efforts, suggests that *the increase in the number of people using services across the 11 year period will be greater among individuals with depression than among those with an anxiety disorder alone*
3. With increasingly more types of services available for various health conditions, including mental health conditions, *the types of services used is hypothesized to have changed with a shift in use from medical services to other professional and non-professional alternative types of services*.
4. With the mental health promotion efforts that were undertaken in the 1990's in Ontario, and increasingly more people were being educated

about mental disorders, it is possible that beliefs about mental health and mental health care changed in a way that influenced decisions about treatment seeking or reasons for not seeking care. *The distribution of the barriers to care will have changed across the 11 year period such that acceptability barriers are expected to have declined.*

5. Given that both individual- and contextual- level factors play a role in treatment seeking behavior generally, *we expect contextual factors, such as availability of health care service and other aggregate sociodemographic characteristics to have an impact on mental health service utilization*

3 Methods

3.1 Design

This study was based on data from two reasonably comparable surveys: the Ontario Health Survey 1990 (OHS), Ontario Health Survey - Mental Health Supplement 1990/91 (OMHS) and the Ontario sub-sample of the Canadian Community Health Survey, Cycle 1.2 Mental Health and Well-being 2002 (CCHS 1.2). Census profile data available through Statistics Canada were used to provide the data for geographic areas. Parallel analyses were carried out, one for the 1990/1991 data and the other, for the 2002 data, to address the research questions.

3.2 Source population for 1991

The OHS is a province-wide survey administered by the Ontario Ministry of Health involving a community sample of about 61,000 Ontario residents from approximately 35,000 dwellings, designed to examine (i) health status; (ii) determinants of major causes of morbidity and mortality; (iii) social, economic, demographic, and geographic variations in health; (iv) awareness of high-risk behaviours such as smoking, drinking, nutrition and exercise; (v) health service utilization; (vi) description of health units/district; and (vii) information comparable to measures in the Canada and Quebec Health Surveys. Data on self-perceived physical health, level of stress in life, and social support was included in the OHS survey.

The survey covers community residents aged 15 years and older (Foreign Service personnel, the homeless or people living in institutions are not included in the sampling frame). Aboriginals on reserves and residents in extremely remote areas were also excluded. Respondents were selected through stratification and multi-stage probability sampling to define geographic areas and household dwellings. Individuals in the 15 to 24 year age group were over-sampled to ensure adequate numbers of individuals to provide more precise estimates in this age group (these individuals had three times the probability of being selected as those in the other age groups). One respondent per household was selected at random to

participate in the face-to-face interview. The response rate for the interviewer component of the survey was 87.5% and that for the self-administered component was 77.2%.

The OMHS is a subset of the OHS sample, involving 9,953 Ontario residents, designed to (a) generate reliable estimates of the prevalence of mental disorders in the general Ontario population; (b) compare severity levels among different categories of mental disorder by investigating the extent of comorbidity and their strengths of association with disability; (c) assess the association between mental disorder and both mental health service utilization and potential risk factors; and (d) to examine the geographic and social correlates of mental disorder to provide a rational basis for planning resource allocations [283]. The response rate for this survey was 76.5%.

Respondents aged 65 years and older who made more than 10 errors on the Mini-Mental State Examination [284] were excluded from the remainder of the interview (5%). Furthermore, the diagnostic section of the interview was shortened for those aged over 64 years due to concerns over the burden of the lengthy interview. Eligible respondents were only screened for dysthymia, major depression, and substance abuse. Moreover, the prevalence rates of these mental disorders were too low to provide precise prevalence estimates [25]. As such, the age range of respondents included in the analyses of this thesis study is 15 to 64 years.

3.3 Source population for 2002

The CCHS 1.2 [42] is a national population survey carried out by Statistics Canada involving a community sample of approximately 38,500 Canadians, and designed to provide information on (a) prevalence of mental disorders; (b) factors and determinants associated with mental well-being; (c) disability associated with mental health problems to both individuals and society; (d) links among mental health and social, demographic, geographic, cultural and economic characteristics; and (e) utilization of mental health care services. The mental disorders were selected for inclusion in the survey if their anticipated prevalence rate would be at

least 1%, if they could be measured with a validated instrument that was widely recognized, and if they were amenable to intervention [285]. The mental health disorders selected for study were depression, mania, panic disorder, social phobia, and agoraphobia.

The survey covers persons 15 years of age or older living in private occupied dwellings in the ten provinces. One respondent was selected per household. Excluded from the survey are those living in the three territories, and people living on Indian Reserves or Crown lands, residents of institutions, full-time members of the Canadian Armed Forces, and residents of some remote areas. Data collection involved face-to-face interviews using a computer-assisted interviewing method and took place between May and December 2002. The response rate for the survey was approximately 78% across Canada [286].

The sample was selected from an area probability frame. This area frame, as designed for the Canadian Labour Force Survey (LFS), covers almost the entire country, from which a sample of dwellings is selected under a multistage stratified cluster design. For those areas selected in the first stage of the design, a list of dwellings was prepared and maintained in the field. A sample dwelling was then selected at the second stage from each list. The households in the selected dwellings then form the sample of households. To get a base sample of 38,500 responding households, approximately 54,000 dwellings were selected from the area frame to account for vacant dwellings and non-response. The base sample was allocated to the provinces using the root-N approach with the exception of allocating 1,000 sample units to the province of Prince Edward Island. Ontario and Nova Scotia provided additional funds in order to obtain a larger sample of dwellings. This was done so that reliable estimates can be computed at a sub-provincial level of geography.

In order to make valid comparisons with the OMHS data, this thesis focused on the Ontario subset of the CCHS 1.2 sample, aged 15 to 64 years. The response rate for the Ontario sub-sample was 73.4%, which comprised approximately 14,500 respondents.

3.4 Census Data

The source of the higher-level data that were used to carry out the multilevel analyses was Canadian Census data for 1991 and 2001 from Statistics Canada. They provide profiles for geographic areas of various units, including enumeration (now dissemination) areas, census subdivisions, census tracts, and federal electoral districts. These data have been used to examine the contextual effects of local communities and include sociodemographic information such as demographic structure, ethnic composition, geographic employment and income [287]. They are available for researchers through Statistics Canada and the university libraries.

In order to examine the presence of contextual effects on health service utilization, distribution of age, gender, marital status, visible minorities, unemployment, and low income were examined at the census subdivision scale. Census subdivisions are defined as municipalities or areas that are deemed to be equivalent to municipalities for statistical reporting purposes (i.e., Indian reserves).

3.5 CIHI Data

The Canadian Institute for Health Information (CIHI) maintains several databases on health human resources in Canada [288]. The National Physician Database contains socio-demographic, payment and service utilization information on fee-for-service physicians in Canada, starting in 1989/90 to present. The Scott's Medical Database, which was formerly called the Southam Medical Database, contains information on supply, distribution and migration of physicians in Canada, and has data from 1980 to present. CIHI also maintains a nursing database, which provides comprehensive data on supply and distribution of the regulated nursing workforce in Canada (licensed practical nurses, registered nurses and registered psychiatric nurses).

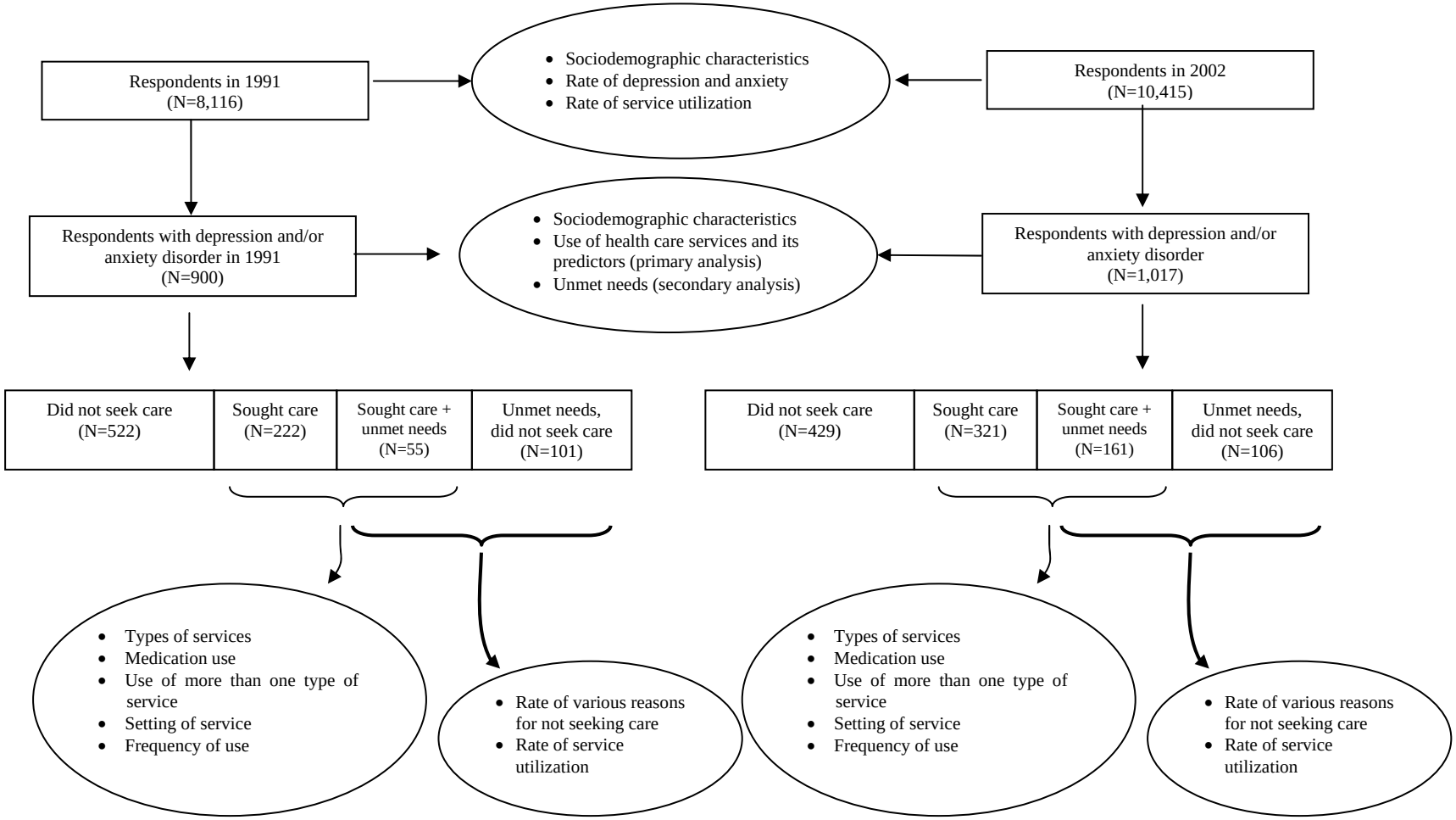
Data were requested from CIHI on human resources at the census subdivision level. This request was made so that the impact of the availability of services at the census subcdivision level on mental health service utilization could

be assessed to some degree. Details about the data obtained from CIHI are described below in section 4.10.2.5 on contextual effects.

3.6 Selection of samples for analyses

Analyses were carried out in four sets of samples. Data from all of the Ontario respondents were used to assess descriptive results, such as overall prevalence of mental disorders, rate of service utilization and sociodemographic factors. There were a total of 8,116 respondents aged 15 to 64 years in the OMHS survey, and 10,415 respondents in the CCHS 1.2 survey. The primary, and therefore the majority of the analyses were carried out on the Ontario respondents who met diagnostic criteria for major depression and/or anxiety disorders (panic disorder, social phobia, agoraphobia) in the preceding 12 months. In the OMHS survey, there were 900 individuals and in the CCHS 1.2 survey, there were 1,017 individuals who were included in these analyses. Subsequently, the secondary outcomes (described below) were analysed among the depressed and/or anxious subjects who responded as having sought care for their emotions, mental health and/or alcohol/drug use. There were 277 such individuals in the OMHS survey and 482 such individuals in the CCHS 1.2 survey. And finally, the rates of the reasons for not seeking care and rates of service utilization were explored among the respondents who, at some point in the preceding 12 months, felt the need for care but did not seek it. There were 156 and 267 individuals with self-perceived unmet needs in the OMHS survey CCHS 1.2 surveys respectively.

Figure 4. Flow chart of Ontario sample and the corresponding outcomes for analysis (oval)



3.7 Overlapping Survey Contents – Comparability

Comparison of the results can only be made on items that were included in both surveys. Since the two surveys were developed and administered independently of each other, the contents of the two surveys are slightly different. Details of potential differences are elaborated in the Variable Definitions section (section 4.10). Nonetheless, there is sufficient overlap between the two surveys to allow examination into the research questions of this study. These include sociodemographic characteristics, income, general health, presence of chronic conditions, depression, panic disorder, social phobia, agoraphobia, alcohol dependence, illicit drug use and dependence, mental health service utilization and medication use.

3.8 Identification/definition of comparison groups

Depression and anxiety disorders were defined in accordance with DSM-III-R diagnostic criteria for 1991 and DSM-IV diagnostic criteria for 2002 and were assessed using their respective Composite International Diagnostic Interview (CIDI) instrument [289]. The CIDI is a structured interview that maps the symptoms elicited during the interview onto the diagnostic criteria and determines whether or not the diagnostic criteria are satisfied [290]. Twelve-month prevalence rates of depression or anxiety disorders were assessed. The term "twelve-month prevalence" is used when subjects meet the diagnostic criteria for a disorder during the preceding twelve months, whereas the term "lifetime prevalence" is used to describe those who have met the criteria at any time during the individual's lifetime. The CIDI has been field-tested in over 30 centres worldwide and was found to be acceptable, appropriate and reliable across cultures and settings [291]. The University of Michigan version of the CIDI (UM-CIDI) was developed for the National Comorbidity Study [292;293], which was an epidemiological investigation into the prevalence, course, and consequence of mental morbidity and comorbidity in the United States [291]. The UM-CIDI instrument was used for both the OMHS and CCHS 1.2 surveys, with the CCHS

1.2 survey having used a later version that was developed by the same group of researchers.

Comparability of the DSM-III-R and DSM-IV were examined by assessing the prevalence of depression and/or anxiety by applying the DSM-III-R criteria for both samples. Lifetime prevalence remained the same and twelve-month prevalence changed negligibly (less than 0.2%). Furthermore, it has been reported that despite some sensitivities of slight diagnostic criteria on prevalence, the associated risk factors have remained relatively stable [294]. Though taking caution in interpreting the results, it was felt that criteria were comparable enough to use the available measures.

Use of mental health services was compared between individuals who, in the preceding twelve months, met diagnostic criteria for (i) major depression but not anxiety disorders; (ii) anxiety disorders but not major depression; and (iii) both major depression and anxiety disorders. Since the analyses are limited to data collected in both the OMHS and CCHS 1.2 surveys, only three anxiety disorders could be included in the definition of anxiety disorders: agoraphobia, panic disorders and social phobia.

3.9 Definition of outcomes

Using *rate* to refer to the proportion of the sample, the primary outcome variable is the rate of health service utilization for "emotions", mental health or alcohol/illicit drug use in the preceding twelve months (yes/no). Secondary outcomes are the type(s) of services used, rate of medication use, use of multiple types of services, setting in which contact occurred, the frequency of use among service users, and reasons for not getting care among the affected individuals who reported having felt the need for care but did not get it.

3.9.1 Use of health services

Using mental health services was defined as having seen any of the following professionals for his/her emotions, mental health or use of alcohol or drugs in the preceding twelve months (coded as '1') or not (coded as '0'): hospital, psychiatrist, family doctor/general practitioner, other medical doctors such as

cardiologist, gynaecologist or urologist, psychologist, nurse, occupational therapist, social worker, counsellor, psychotherapist, herbalist, natural therapist, faith healer, or a religious or spiritual advisor such as a priest, chaplain or rabbi, telephone hotline or self help group. In the CCHS 1.2, respondents were also asked if they used an internet support group, which was not the case for the OMHS survey. The slight difference in the questioning method is that in the CCHS 1.2, respondents were asked whether they used these resources for mental health or use of alcohol or drugs in the twelve months prior to the interview, whereas in the OMHS, respondents were asked when the most recent time (if ever) the respondent sought help for mental health reasons from any type of service. Those who had responded having sought services in the "past month," "past 1-6 months" or "past 7-12 months" were then identified as having seen a professional in the past twelve months.

3.9.2 Types of services used

Among individuals who replied having sought professional help for their emotions, mental health or use of alcohol or drugs in the preceding twelve months, an examination into whether the respondents sought care from a hospital, a psychiatrist, a family physician, a psychologist, other medical doctor, a nurse, a social worker, a religious worker, other professional, self help group, internet support group (for CCHS 1.2 only), and/or telephone hotline was carried out. Dichotomous variables were created for each type of service and then examined.

The types of services were also categorized into broader categories: hospital, specialty mental health services, general medical services, other professionals, and voluntary support networks [14]. Specialty mental health services included psychiatrists and psychologists. General medical services represent general practitioners and other medical specialists. Other professionals include nurses, social workers, religious advisors and other professionals such as acupuncturists, chiropractors, dieticians, and other such allied health professionals. Voluntary support networks include internet support group/chat room, self-help groups and telephone hotlines.

3.9.3 Medication Use

The utilization rate of antidepressant or anxiety-reducing medications were examined among those with depression and/or anxiety. In the OMHS, the respondents were asked “Did you take any anti-depressant medication (e.g., Prozac, Elavil, Lithium) while under the supervision of a doctor?” and “Did you take other tranquilizers (e.g., Ativan, Valium) while under supervision of a doctor?” In the CCHS 1.2, three relevant and comparable questions were asked: (1) (In the past 12 months,) did you take mood stabilizers (such as Lithium, Tegretol or Epival)? (2) (In the past 12 months,) did you take anti-depressants (such as Prozac, Paxil or Effexor)? And (3) (In the past 12 months,) did you take any medication to reduce anxiety or nervousness (such as Ativan, Valium or Serax)? We examined the rates of use of antidepressants or anxiety-reducing drugs in the preceding 12 months across disorders, in 1991 and 2002.

Furthermore, the CCHS 1.2, unlike the OMHS, included mood stabilizing medications as separate from antidepressants, of which lithium is a part. The OMHS included lithium in the antidepressant category. Since the example medications (that being Tegretol or Epival) are mainly used to treat manic or bipolar disorders, it was deemed inappropriate to combine mood stabilizers and anti-depressants into one group of medications. To address the impact of including or excluding lithium from the analysis, the utilization rate of antidepressants and the rate of combined antidepressants and mood stabilizers were examined. Since the differences in rates were less than 1%, the results are presented for the antidepressants without mood stabilizers in the CCHS, as appropriate for comparison with the data from the OMHS survey.

3.9.4 Use of more than one type of service

Based on the various types of services described in section 3.9.2, respondents were categorized as either “sought treatment from only one type of service (i.e, family physician only) in the previous year” or “as having sought multiple types of services (i.e., family physician and psychiatrist)”. To generate this variable, dichotomous variables were initially created for each type of

services and then subsequently summed to obtain a continuous variable representing the number of types of services used. This derived variable was then categorized as use of one service or multiple services. As mentioned previously, the CCHS 1.2 survey also included internet chat as a possible service type such that the possible service types include the hospital, psychiatrist, family physician, psychologist, other physician, nurse, social worker, religious worker, telephone hotline, social support group, and internet chat. The OMHS survey included all of the same services minus the internet chat. We explored the types of services used among one-type users and among multiple-type users where possible.

3.9.5 Frequency of use of services

Respondents were also asked how frequently they had sought care from each of the above-mentioned professionals within the preceding twelve months for their emotions, mental health or use of alcohol or drugs and then their replies were summed to obtain the overall frequency of use. In the CCHS 1.2 survey, if respondents said that they saw a particular type of health care provider in the preceding year, a psychiatrist for example, they were then asked to think of the psychiatrist they talked to the most (if there were multiple psychiatrists). They were then asked how many times they saw that particular psychiatrist. The same questions were asked about any other types of care sought. In the OMHS, on the other hand, respondents were simply asked if they had ever gone in their lifetime to see any professionals for problems with their emotions, nerves, of their use of alcohol or drugs, and if so, when it was that they last saw that person. If it was in the past year, they were asked how many times, in the past twelve months, they saw that person for these problems. The frequencies of service use were then categorized into having used services up to five times, or more than five times in the preceding year. We used an arbitrary cut off of five because we wanted to examine frequent users versus few or infrequent users. Although the initial intention was to examine those who used services once or twice versus more than twice, the sample size did not allow for this option. The sample size limitation still persisted at a cut off of three or four. As such, we felt that five times was still

few enough to call those below that cut off 'infrequent' users and those above it 'frequent users'.

Worth noting for this variable is that the questions were slightly different between the two surveys. The OMHS respondents, if they had seen multiple professionals of the same type of care (for example, one psychiatrist once and a second psychiatrist 4 times), could have simply replied with the sum of the number of times they saw each professional (frequency of seeing a psychiatrist = 5). In the CCHS 1.2, however, the respondents were asked to respond only for the professional they saw the most within each type of care, such that given the same example above, the frequency of seeing a psychiatrist would be four. Thus, if respondents sought care from more than one health care provider of the same type in the preceding year, then the frequency of service use for those people will be an underestimation. There is, however, no reason to believe that this would be systematically different across disorder groups.

3.9.6 Setting of service provided

The setting in which services were provided was also assessed. In the CCHS 1.2 survey, following the questions on frequency of utilization of services, respondents were asked where this contact took place. The response options included: hospital (as an inpatient), health professional's office (including doctor's), hospital emergency room, psychiatric outpatient clinic, drug or alcohol outpatient clinic, other hospital outpatient clinic (e.g. day surgery, cancer), walk-in clinic, appointment clinic, community health center, at work, at school, at home, telephone consultation only, church or other place for religious assembly and other.

In the OMHS survey, respondents were asked "The next question asks about the places you went for help. Which of these places have you ever gone to in your lifetime for problems with your emotions, nerves, or your use of alcohol or drugs?". The possible responses were: hospital emergency room, psychiatric outpatient clinic, drug or alcohol outpatient clinic, doctor's private office, social service agency or department, or some other program for people with problems

with emotions or nerves, or with alcohol or drugs, such as drop-in centres, or social clubs. For each of the settings to which they replied, “yes”, respondents were asked when the last time they used those services for their problems: past month, past 6 months, past year, or more than a year ago.

The only overlapping services between the two surveys were hospital emergency room, psychiatric outpatient clinic, drug or alcohol outpatient clinic and a doctor’s office. Due to insufficient sample sizes, however, the rate of use of hospital emergency room, psychiatric outpatient clinics, and drug or alcohol outpatient clinics could not be estimated with confidence. Given that each of these settings are very different, we did not feel that combining these settings would be appropriate. As such, the only reportable results for this thesis, with respect to the setting of services were the doctor’s office.

3.9.7 Reasons for not using service and unmet need

Respondents were asked whether or not, in the previous twelve months, they ever felt a need for health care services for their emotions, mental health or alcohol/drug use but did not receive it (CCHS 1.2) or did not go (OMHS), irrespective of whether or not they actually sought services in that time period. Those who responded “yes” to this question were identified as having unmet needs and were subsequently asked the reasons for not receiving or seeking care. Possible answers were: preferred to manage on one’s own, didn't know how or where to get help, didn't think anything more could help, afraid to ask for help or of what others would think, couldn’t afford to pay / too expensive, problems i.e. distance/ transportation, childcare or scheduling, professional help not available when required (e.g., doctor on holidays, inconvenient hours, long wait), and/or language problems. Since these questions were asked irrespective of their response to whether or not they had sought care in the previous twelve months, it is possible for those who sought treatment to still report an unmet need.

3.10 Definition of Covariates

3.10.1 Predisposing Variables

The definitions of predisposing variables between 1991 and 2002 were the same and therefore appropriate for the comparison of their associations with service utilization.

3.10.1.1 Age, Gender, and Marital Status

Age was categorized into three age groups: 15 to 24 years, 25 to 44 years, and 45 to 64 years, and gender defined as male or female. Marital status was categorized as (1) married or common-law; (2) separated or divorced; (3) widowed; and (4) single/never-married.

3.10.1.2 Education

In the OMHS survey, respondents were asked what the highest level of education he/she had completed: no formal schooling; some primary school; primary school; some secondary or high school; completed secondary or high school; some community college, technical college, CEGEP, or nursing program; completed community college, technical college, CEGEP, or nursing program; some university (not completed); or university degree (completed) Bachelor, Masters, PhD. In the CCHS 1.2 survey, respondents were asked what the highest degree, certificate or diploma he/she has obtained: no post-secondary degree, certificate or diploma; trade certificate or diploma from a vocational school or apprenticeship training; non-university certificate or diploma from a community college, CEGEP, school of nursing, etc.; university certificate below bachelor's level; Bachelor's degree; or University degree or certificate above bachelor's degree. Based on these questions, education variable was categorized into 4 categories: less than high school, completed high school, some post-secondary education, and completed post-secondary education.

3.10.1.3 Cultural/Ethnic group

The sample sizes in both surveys prevented detailed examination into impact of cultural background on service utilization, and therefore in this study, it was assessed using two variables that measure different concepts: Canada-born versus non-Canada born and Caucasian versus non-Caucasian. Canada-born, defined as being born in Canada, was included in the analysis to examine the impact of being an immigrant on service utilization.

Respondents were categorized as Caucasian if, in the OMHS, they responded to their ethnic or cultural identity as being: French, English, German, Scottish, Irish, Italian, Ukranian, Dutch, Jewish, Hungarian, Polish, Portuguese, or Canadian. In the CCHS 1.2, respondents were asked "People living in Canada come from many different cultural and racial backgrounds. Are you:[Mark all that apply]. Individuals who had replied "yes" to being White, and "no" to Chinese, South Asian (e.g., East Indian, Pakistani, Sri Lankan), Black, Filipino, Latin American, Southeast Asian (e.g., Cambodian, Indonesian, Laotian, Vietnamese), Arab, West Asian (e.g., Afghan, Iranian), Japanese, Korean, Aboriginal (North American Indian, Métis or Inuit), or Other, were identified as being Caucasian. All others were identified as being non-Caucasian.

3.10.2 Enabling/Impeding Variables

Although less clear than the predisposing variables, efforts were made to ensure that the enabling/impeding variables were as similar as possible between the 1991 and 2002 survey data to allow comparisons.

3.10.2.1 Social Support

There are insufficient data on social support in the two surveys being used to fully address its impact on service utilization among the depressed and/or anxious individuals. However, there are questions that were able to provide some indication of its role in treatment seeking behaviour. Each survey posed a question as to whether or not the respondent had someone in whom to confide. In the OMHS, the respondent was asked "Among your friends or in your family, is there someone you could confide in to talk to freely about your problems? [Yes/No/Not

Applicable/Not Stated]". In the CCHS 1.2, "How often is each of the following kinds of support available to you if you need it?... … someone to confide in or talk to about yourself or your problems? [None of the time/A little of the time/Some of the time/Most of the time/All of the time/Don't Know/Refusal/Not Stated]". Individuals having replied to some, most or all of the time were categorized as having someone to confide in.

3.10.2.2 Income

In the OMHS survey, household income was categorized into two groups based on household size and urbanicity. In urban areas, an individual was identified as coming from a low income household if the household income was either: (1) < $12,000 regardless of family size; (2) < $12,000 - $19,999 if 2 or more people; or (3) <$20,000 - $29,999 if 4 or more people. In rural areas, an individual was identified as coming from a low income household if the household income was either: (1) < $12,000 regardless of family size; (2) < $12,000 - $19,999 if 3 or more people; or (3) <$20,000 - $29,999 if 7or more people.

In the CCHS 1.2, household income was categorized into two groups based on household income and household size: low or middle/high income. A respondent was identified as low if the total household income was either: (1) < $15,000 if 1 or 2 people; (2) < $20,000 if 3 or 4 people; or (3) < $30,000 if 5+ people. Alternatively, a respondent was categorized as coming from a middle or high income background if the total household income was either: (1) >= $15,000 if 1 or 2 people; (2) >= $20,000 if 3 or 4 people; or (3) >= $30,000 if 5+ people.

3.10.2.3 Employment in preceding year

In the OMHS Survey, an individual was identified as having worked in the past year if he or she described the main thing he/she did as (1) working for pay or self-employed (include sick or paternity/maternity leave); or (2) going to school; or (3) working for pay and being a homemaker for one or more years.

Employment in the past year in the CCSH 1.2 was defined as follows: The participant either responded to having worked at a job or a business last week

(including part-time jobs, seasonal work, contract work, self-employment, baby-sitting and any other paid work, regardless of number of hours worked) and having replied as having worked at a job or a business for 52 weeks (including paid vacation leave, paid maternity leave, and paid sick leave) OR that they were currently not working because he/she was carrying for his or her own kids or was in school on education leave.

3.10.2.4 Rural/urban residence

An urban area is defined by Statistics Canada, to be an area with a population concentration of at least 1,000 and a population density of at least 400 persons per square kilometre based on the census population count. All areas that do not meet this definition are classified as being rural.

3.10.2.5 Contextual effects

The distribution of sociodemographic factors was examined within each census subdivision (CSD). Age distribution was defined as proportion of CSD population in age groups 0-14, 15-24, 25-44, 45-64 and 65 years and older. Marital status distribution was described as the proportion of the CSD population who are single, married/common-law, separated or divorced, and widowed. Citizenship and visible minority distributions were defined as the proportion of individuals in the geographic area with Canadian citizenship and identified as visible minorities, as defined by Statistics Canada. Furthermore, the unemployment rate and rate and incidence of low income (proportion of CSD population below low income cut-off) [h] for each CSD areas were assessed.

With respect to service availability measures, the data were very limited. Most information regarding health care services was not available at both 1991 and 2001 time points, either because the data were not collected, or geographic codes (ie., postal codes) were not available to categorize them by any geographic area. One measure of availability of services was obtained from the Canadian

[h] Statistics Canada defines "low income cut-off' as "Income levels at which families or unattached individuals spend 20% more than average on food, shelter and clothing" (pg. 146)[77]

Institute for Health Information, which was the list of all physicians in Ontario and their contact information. The postal code conversion file[i], developed by Statistics Canada, was used to convert the postal codes from the physicians' contact information into the corresponding CSD codes. Once these data were linked with the CSD demographic data, a variable for the number of physicians per 100,000 population within each CSD was derived.

3.10.3 Need

3.10.3.1 Comorbid mental disorders or substance use

The impact of co-occurring mental disorders in addition to depression and/or anxiety disorders on treatment-seeking was also examined. These include the presence of mania, alcohol dependence, and illicit drug dependence in the twelve months preceding the survey.

3.10.3.2 Comorbid physical conditions

The impact of the three groups of chronic conditions most associated with increased use of services was examined: circulatory conditions, respiratory conditions, and cancers [248-250;252;253;296]. In the OMHS, respondents were identified as having a chronic condition if he or she had cancer, respiratory problems or circulatory problems for which a health care professional was consulted in the preceding twelve months. In the CCHS 1.2, respondents having cancers, respiratory problems or circulatory problems that were diagnosed by a health professional in the preceding twelve months, were identified as having a chronic condition.

[i] Postal code conversion files are produced by Statistics Canada [295] which link the 6-character postal code with the standard Census geographic areas, such as dissemination areas (previously known as enumeration areas), municipalities, census tracts, and census subdivisions. The geographic area codes can then be used to link data from various sources.

3.10.3.3 Disability

Disability was measured as the presence or absence of disability in the 14 days preceding the interview. In the OHS/OMHS, respondents were asked whether or not they stayed in bed all or most of the day, or cut down on things they usually do because of their health during the 14 days prior to the interview. In the CCHS 1.2, respondents were asked whether or not they stayed in bed at all or cut down on things they normally do because of illness or injury.

In the CCHS 1.2, respondents were also asked about the preceding two weeks. Here, individuals who stayed in bed, who cut down on things or required extra effort to perform at usual level because of illness or injury due to emotional or mental health or use of alcohol or drugs during the preceding 14 days were classified as having had disability due to mental health problems.

Disability was not asked for the same 12 month period about which questions regarding service use and prevalence of depression and/or anxiety are being posed and thus interpretations as to which preceded the other cannot be made. Nonetheless, it was felt that disability is relatively stable over time and that adjusting for the two week period would be preferable to not adjusting for it at all.

3.10.3.4 Self-perceived mental and physical health

In the OMHS, respondents were asked if, in general, compared to other persons their age, they considered their mental health to be excellent, very good, good, fair or poor. Individuals having responded to having “fair” or “poor” mental health were categorized as having poor self-perceived mental health. Those who responded with “excellent”, “very good” or “good” health were categorized as having good self-perceived mental health. The same questions were asked for their physical health and handled the same way. That is, individuals having responded to having “fair” or “poor” physical health were categorized as having poor self-perceived health, while the others were categorized as having good self-perceived physical health

In the CCHS 1.2, individuals were asked if, in general, they would say their mental health is excellent, very good, good, fair or poor. Individuals having

responded “fair” or “poor” were categorized as having poor self-perceived mental health, while those replying “excellent”, “very good”, or “good” were identified as having good self-perceived mental health. Responses to the same questions regarding physical health were handled in the same way to obtain a dichotomous variable for self-perceived physical health.

3.10.3.5 Level of stress in life and life satisfaction

In both surveys, respondents were asked how stressful their lives were in general on a scale from not at all to extremely stressful. More specifically, in the OMHS, respondents were also asked “As a whole, would you describe your life as very stressful, fairly stressful, not very stressful, or not at all stressful”. In the CCHS 1.2, the respondents were asked “Thinking about the amount of stress in your life, would you say that most days are not at all stressful, not very stressful, a bit stressful, quite a bit stressful or extremely stressful?” Those who responded with “very stressful” or “fairly stressful” in the OMHS survey and those who responded “quite a bit stressful” or “extremely stressful” in the CCHS 1.2 were identified as having high stress.

Respondents were also asked how satisfied they were with their lives in general. In both the OMHS and CCHS 1.2 surveys, they phrased their question in exactly the same way: “How satisfied are you with your life in general?” Response options for the OMHS were: extremely satisfied, quite satisfied, fairly satisfied, fairly dissatisfied, quite dissatisfied and extremely dissatisfied. In the CCHS 1.2, response options were: very satisfied, satisfied, neither satisfied nor dissatisfied, dissatisfied, or very dissatisfied. Those responding “fairly dissatisfied”, “quite dissatisfied” or “extremely dissatisfied” in the OMHS and those who reporting being “dissatisfied” or “very dissatisfied” were categorized as having low life satisfaction.

3.11 Covariates that could not be included in the analyses

There are various data that could not be included in this study for one reason or another, as described below. For example, a few variables were not included in both surveys, thereby precluding examination into how they have changed

between 1991 and 2002. There are also factors that were simply not included in either of the surveys.

3.11.1.1 Language

Poor proficiency in English or French has been well documented as a barrier to accessing both general and mental health care in Canada [297-299]. Lack of comfort in the language necessary to communicate health care needs can be discouraging, particularly if seeking care involves the need to effectively communicate emotionally distressing experiences. Language in which the interview was conducted could not be assessed. Although the CCHS 1.2 directly asked if they preferred to be interviewed in English or French, an equivalent question was not asked in the OMHS. Even in the CCHS 1.2, the proportion of individuals who chose to conduct the interview in French was less than 2% which precluded any meaningful analysis with this variable. The closest variable was the language most often spoken at home. When we examined the language spoken at home in the OMHS survey, there were simply not enough numbers (less than 5%) to properly analyse this variable. Therefore, this study was not able to assess the impact of language on treatment seeking.

3.11.1.2 Family history of mental disorders

Family history of mental disorders and the treatment seeking behaviour of the family member with mental disorders may have a strong impact on the recognition, by self or someone else, of a mental disorder, of the need for care, and the subsequent treatment-seeking behaviour [300-302]. Individuals with a family history of mental disorders are more likely to be informed about the various disorders and symptoms, as well as the various types of care that are available for such conditions. Furthermore, the experience of an affected family member may also contribute, in that having a family member with a positive experience will likely encourage a person who suspects himself or herself as having a problem, to seek treatment than having an affected family member who either did not seek care or had a negative experience with the care that he/she received.

Unfortunately, these data were only collected in the OMHS survey and therefore cannot be addressed in this doctoral thesis.

3.11.1.3 Stigma

Another key issue when studying mental disorders and use of services is the impact of stigma. Mental disorders have been associated with negative feelings such as shame, embarrassment, and fear for a very long time and it is only recently that this has started to change. An individual with a mental illness is more likely to seek treatment if there was less stigma toward mental disorders in general [281;303-307]. The degree of stigma however, is likely to be both mental disorder-specific as well as culture/time-specific. The preferred method of collecting information about stigma is to ask individuals directly about their attitudes towards mental illness and seeking treatment for mental or emotional issues if they were to experience such a condition. Unfortunately, only one of the two surveys addressed this issue and therefore we cannot examine its impact on service utilization directly. However, we can use the information on reasons for not seeking care to obtain some insight into the possible stigma that people face in considering seeking treatment in the face of mental illness.

3.11.1.4 Religiosity/Spirituality

Religion or spirituality can act in various ways to impact a person's decision to use mental health services [308]. Belonging to a religious community can provide social support and comfort and thereby lessen the need to seek care. Different religions may shape people's attitudes toward mental disorders and mental health care providers that may encourage or discourage the use of services. Two questions on religiosity and spirituality were asked in the CCHS 1.2 survey: (1) do spiritual values play an important role in your life?; (2) In general, would you say that you are very religious, religious, not very religious or not religious? Since comparable questions were not posed in the OMHS survey, we were unable to examine this variable in this study.

3.11.1.5 Having a regular source of health care

A factor that has not been examined in detail in Ontario but has been shown to have some associations elsewhere is having or not having a regular source of health care. There is some evidence suggesting that the presence of a regular source of care, especially a family physician, is directly associated with health services utilization [55;309-311]. There is an increasing number of new physicians who specialize in Ontario. The consequential shortage of family physicians may lead to an increasing number of people without a family physician. If the process of seeking care is more difficult than the disease itself, as described in the health belief model, then the likelihood of seeking care is greatly diminished. Having a family physician would greatly facilitate this process by either getting help directly or getting a referral to another health care provider. Data on this however, are not available and therefore cannot be addressed in this study.

3.12 Data Linkage

In order to carry out the multilevel analysis, the OMHS and CCHS 1.2 databases were linked with their respective 1991 and 2001 census profiles data available through Statistics Canada, as well as the physician count data from CIHI. Since enumeration area codes[j] can change from one Census to the next, Statistics Canada produces conversion files that translate these codes between Censuses. The files include enumeration area codes for the preceding census, enumeration codes for the current census, as well as census division, census subdivision, census metropolitan area, and census tract codes for the current census. These conversions files were used to link the OMHS data to the 1991 contextual data and the CCHS 1.2 data to the 2001 contextual data.

[j] Enumeration area is defined as a small geographic area consisting of one or more neighbourhood blocks, which is used by Statistics Canada to distribute questionnaires to household sand dwellings. Federal Electoral District is an area represented by one member of Parliament elected to the House of Commons [77].

3.12.1 Data Files for 1991

A pictorial representation of the merging of files for the OMHS data is shown in Figures 5. Four datasets needed to be linked in order to carry out all of the analysis for this study: OHS, OMHS, 1991 CSD[k] level profile data ('CSD profile 1991'), and CIHI data containing the number of physicians per 100,000 at the CSD level in 1991 ('Physician counts 1991'). Since the OMHS respondents were a subset of the OHS survey, the subject identification number were the same for each dataset. Linking of these two data sets was done using these identification codes.

In order to add the contextual data to the OHS/OMHS data files, geographic information for each person was necessary. A separate dataset containing the enumeration area (EA) and federal electoral district (FED) information for each of the OMHS respondents ('Geog data' file) was therefore linked to the OHS/OMHS using the subject identification number.

The geographic codes that were used in the geographic data file were based on the 1986 Census data which meant that the 1986 EA needed to be converted to 1991 EA codes in order to match the EA codes used in the 1991 CSD-level profile data. The 1986 EA code in the 'Geog data' file was then linked to the 1986 EA code in the '1986 to 1991' file, which is the conversion file that translated the 1986 code to the 1991 code. When this file was linked, the 1991 code in the '1986 to 1991' file was linked to the 'CSD profile 1991' data.

The linking of the OHS/OMHS file to the 'Physician counts 1991' file required different conversion files. CIHI provided CSD-level data based on the 2001 CSD codes. This is because they produced the aggregated CSD-level data based on the postal codes of the physicians in Ontario in 1991. They used the latest version of the postal code conversion file for converting the postal codes, which are constant over time, into 2001 geographic codes. As such, the 1986 EA codes in the 'Geog data' file needed to be converted to 2001 codes to be able to

[k] Statistics Canada defines a Census Subdivision (CSD) as the general term for municipalities (as determined by provincial legislation) or an area that is deemed to be equivalent to a municipality, for statistical reporting purposes [77].

link the physician counts data for this study. There was no conversion file that directly converted the 1986 to 2001 codes, so two files were used to make this link. The 1986 EA codes were converted to 1996 EA codes using the ’1986 to 1996’ file. The 1996 EA codes were then used to link the ’1986 to 1996’ file with the ’1996 to 2001’ file. The 2001 CSD codes in this file were then linked to the 2001 CSD codes found in the ‘Physician counts 1991’ file.

3.12.2 Data Files for 2001

A pictorial representation of the merging of the 2001 data files is presented in Figure 6. The linkage of the data sets for 2001 was much simpler because there were fewer inter-census conversions involved. Three datasets needed to be linked: CCHS 1.2, 2001 CSD level profile data (‘CSD profile 2001’), and CIHI data containing the number of physicians per 100,000 at the CSD level in 2001 (‘Physician counts 2001’). The EA and CSD codes included in the CCHS 1.2 data set were based on the 1996 Census. The two CSD level data sets used 2001 codes. The EA codes from the CCHS 1.2 data were therefore linked to the 1996 codes in the ‘1996 to 2001’ file to convert them to 2001 CSD codes. The 2001 CSD codes in the ‘1996 to 2001’ file were linked to 2001 CSD codes in the ‘CSD profile 2001’ file, and the 2001 CSD codes in the ‘Physician counts 2001’ file.

Figure 5. Merging data files to allow multilevel analysis for 1991, arrows indicate which variables were matched

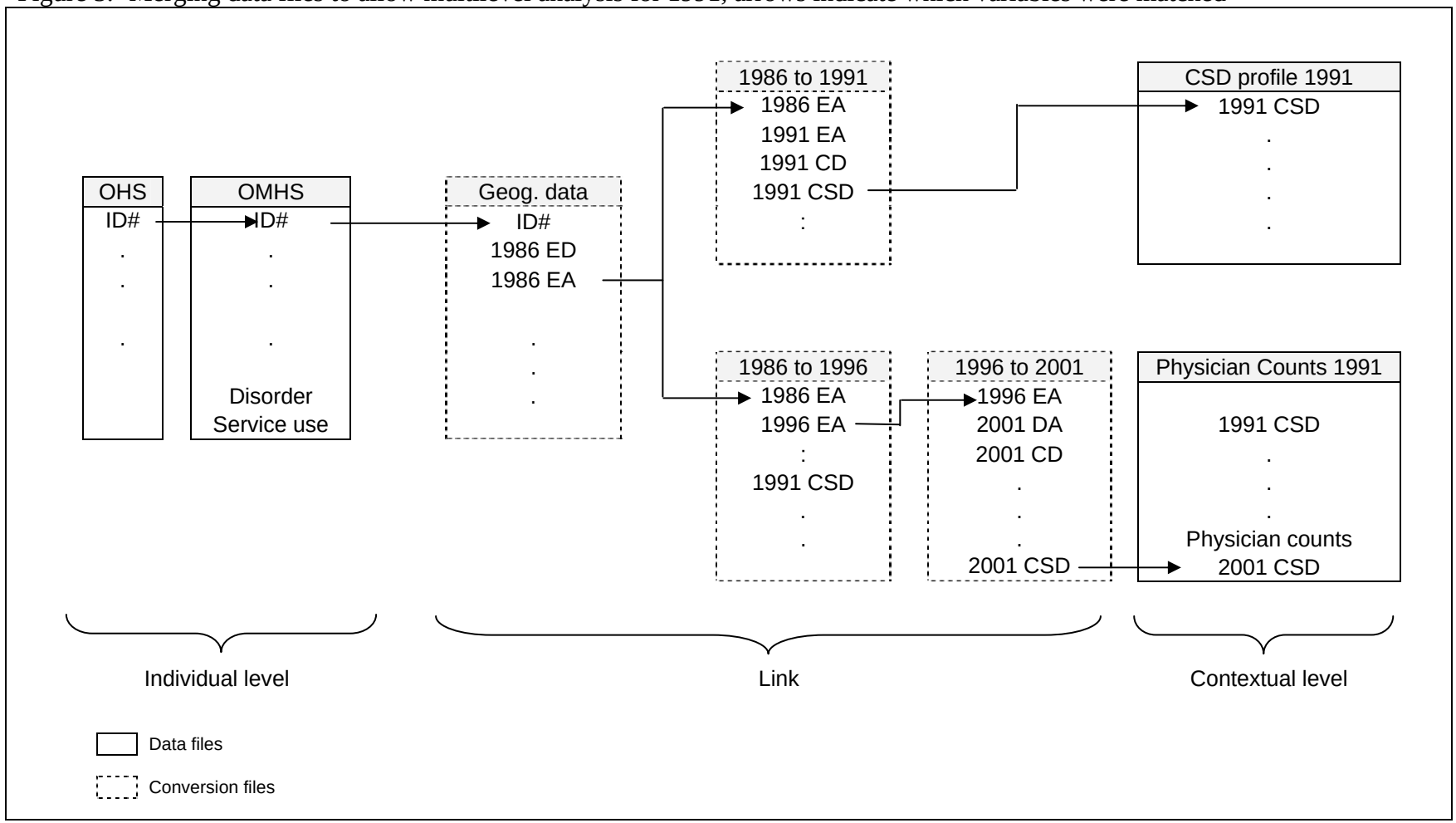
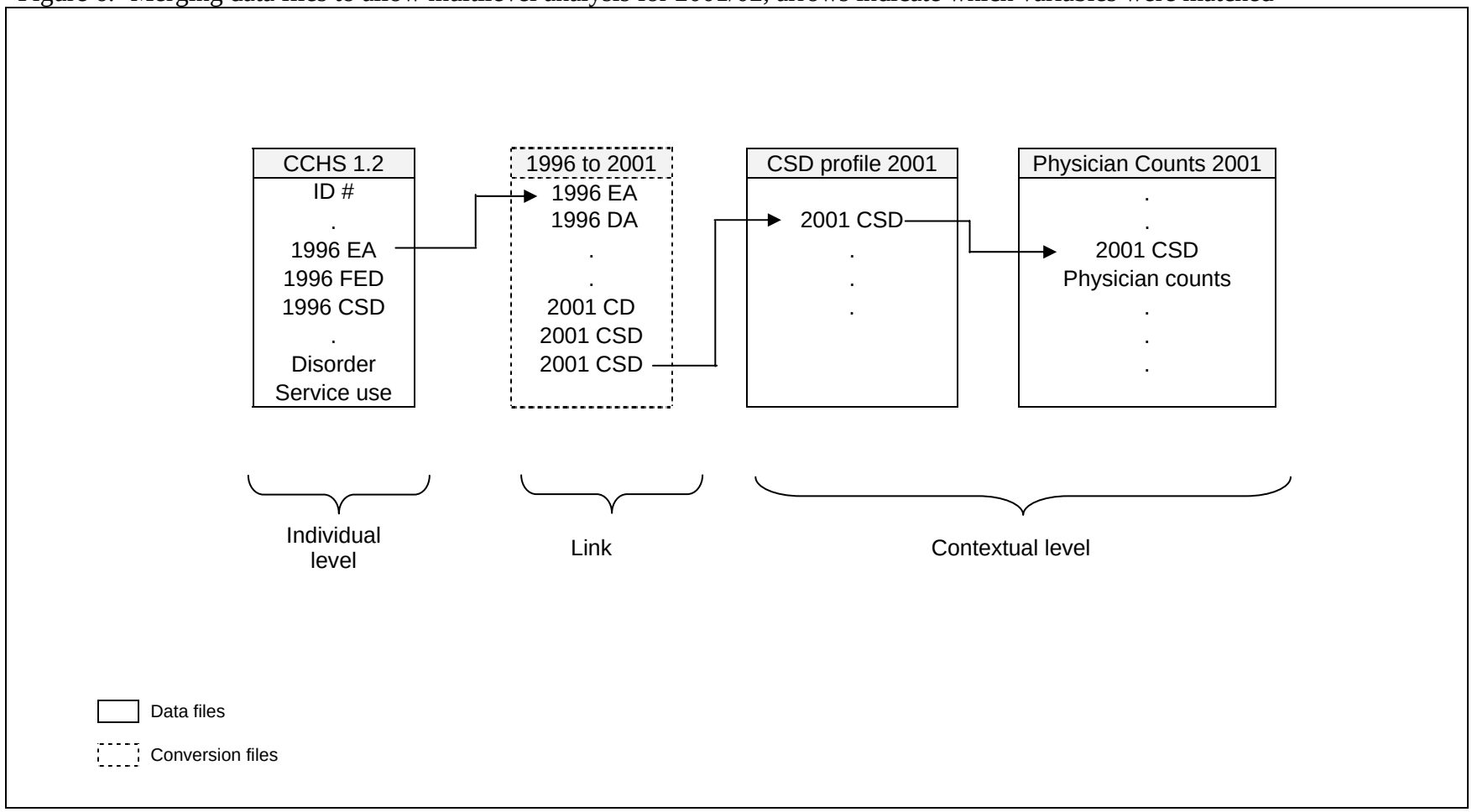


Figure 6. Merging data files to allow multilevel analysis for 2001/02, arrows indicate which variables were matched



3.13 Statistical analysis

All of the analyses for this thesis project were carried out using the SAS software version 9.1 for Windows. All univariate, bivariate, multivariate as well as multilevel analyses were conducted separately but in parallel for the two time points.

3.13.1 Univariate and bivariate analyses

Among the entire Ontario sample aged 15 to 64 years, as well as the sub-sample of individuals with depression and/or anxiety disorders, data on the utilization of services, utilization of the types of services and frequency of services, as well as the above-mentioned covariate variables are reported with means, proportions and their confidence intervals for both time points.

Bivariate analyses were then carried out between utilization of services in general and for specific providers and settings with the above mentioned variables to compute crude odds ratios and confidence intervals.

Descriptive and bivariate analyses by themselves will provide a good profile of the utilization characteristics by the hypothesized determinants between the three depression and/or anxiety disorder groups. Given the extant association between many of the potential predictors, however, it is imperative that a multivariate analysis approach be taken in order to adjust for the other variables to examine the impact of the hypothesized determinants on service utilization and type of services used.

For the OMHS data, the PROC UNIVARIATE, PROC FREQ and PROC LOGISTIC procedures were used to carry out the analyses, applying weights generated by the Ministry of Health. For the CCHS 1.2 data, the BOOTVAR procedure was used to run the analyses. The BOOTVAR procedure is the standard method for applying bootstrap weights generated by Statistics Canada for their surveys.

3.13.2 Multivariate Regression analyses

Among individuals with depression and/or anxiety disorders in the preceding twelve months, multivariate logistic regression modeling techniques were employed to examine the impact of the predisposing, enabling/impeding and need factors on mental health service utilization at the two time points. Results of the two parallel analyses (OMHS and CCHS 1.2 survey data) were compared to determine the change in utilization of services as well as the stability or change in determinants of utilization across the eleven year period. For the OMHS data, the PROC LOGISTIC procedures were used to carry out the analyses. The CCHS 1.2 data, the BOOTVAR procedure was used to run the analyses.

Multilevel modeling techniques were used to analyse the impact of CSD level characteristics on treatment seeking [229;312]. GLIMMIX and NLMIXED procedures were used to carry out this analysis in SAS version 9.1. Both procedures are capable of carrying out multilevel modeling. The NLMIXED procedure, however, appears to be the more accepted method for analysing binary outcome data, with the main advantage of the NLMIXED being that there is greater flexibility in the way the model is specified and parameterized [313]. In order to specify the starting values for each of the parameters in the model, the multilevel models were run using the GLIMMIX procedures, and the parameter estimates and the covariance parameter estimates from the resulting model were used as the starting values for the NLMIXED procedure. Given the complexity of the models in this study, such specifications were necessary to ensure that the models converged properly. Various models were run to determine whether or not the neighbourhood characteristics were associated with treatment seeking.

3.13.3 Secondary outcomes

Analysis of the secondary outcomes (types of services used, medication use, use of more than one type of service, service setting, frequency of use of services, and reasons for not using services) were restricted to bivariate analyses. The main reason for this is that the size of the subgroups that were analyzed for these outcomes were small and carrying out comprehensive multivariate analyses were

either not possible or the results were unstable. As such, the results of the secondary analyses were intended to provide some insight into the possible trends and suggestions for directions for further research in the future.

3.13.4 Coding

All of the individual level factors were made into dichotomous variables for the analysis, primarily due to the use of the BOOTVAR programme, which is unable to handle categorical variables with more than two categories. The variable 'female' was created for the factor gender, with a code of '1' for women and '0' for men, for example. Similarly for marital status, four variables were created: married, separated/divorced, widowed, and single, each coded as '1' for the appropriate status, and as '0' otherwise. This was done for all of the variables. With regards to missing variables, the number of missing values and whether or not they systematically differed by the outcome or disorder group was checked. Since there were no noticeable systematic differences, the missing values were coded as '0'. The only two variables for which we excluded those with missing values were the disorder group and service utilization.

3.13.5 Weights

For the OMHS data, the weights provided by the Ontario Ministry of Health were used to properly account for the sampling frame for this data and obtain the appropriate estimates. The weights were calculated by Statistics Canada to adjust for household non-response to the OHS, person-level non-response of the OMHS, as well as adjusting the public health unit level age and gender distribution of the sample to match the age and gender distribution of the population in 1990, and the cluster sampling design. Normalized weights were used to estimate the appropriate variance for this population.

To account for the complex sampling design of the CCHS 1.2, population weights derived by Statistics Canada researchers were used to obtain the proper estimates for the univariate, bivariate and multivariate analyses. The variance estimates were derived using bootstrap weights within the BOOTVAR program (Appendix 2), which uses a repeated sampling technique to ensure the correct

variance estimation. Statistics Canada guidelines were followed for divulging results.

3.14 Ethical issues

Ethics approval was obtained from the McGill Faculty of Medicine Institutional Review Board on October 2, 2003 prior to analysis of the data (Appendix 3). All analyses of the data were carried out on site at the head office of Statistics Canada in Ottawa or the Research Data Centre in Montreal, thereby ensuring adherence to the security checks and procedures in place and under jurisdiction of Statistics Canada to safeguard the confidentiality of the data.

4 Results

4.1 Demographic characteristics of entire Ontario respondents

Table 5 shows the demographic characteristics of the OMHS and CCHS 1.2 survey respondents. The proportions of individuals in the 45 to 64 year age group were 29% in 1991 and 35% in 2002. Almost half of both the 1991 sample (49%) and 2002 sample (46%) fell in the 25 to 44 year age group and approximately one fifth of the 1991 sample (22%) and 2002 sample (19%) fell in the 15 to 24 year age group. With respect to marital status, 5% of the 1991 smaple and 7% of the 2002 sample were separated or divorced and almost one third of the both samples were single (27% in 1991 andd 29% in 2002). The proportions of individuals who were born in Canada were 74% in 1991 and 68% in 2002.

The 2002 respondents were more formally educated than the 1991 respondents. There were fewer individuals with less than high school education with 32%, compared to 20% in 2002. The proportion of individuals with post-secondary education was 28% in 1991 and 50% in 2002. Fewer people are in the lower income categories with 8% in 1991 to 7% in 2002. And, the proportion of people who had social support was 69% in 1991 and 95%in 2002.

The prevalence of depression and/or anxiety disorders was 10% in 1991 and 9% in 2002. Separately, however, 4% of the 1991 and 5% of the 2002 respondents met the crieteria for depression, and 8% of 1991 and 5% of 2002 respondents met the criteria for anxiety disorders. When the two disorders were examined as mutually exclusive groups, 3% of the 1991 and 4% of the 2002 respondents had depression (without anxiety) and 6% of the 1991 and 4% of the 2002 respondents had anxiety disorders (without depression). There was no significant difference in the rate of having comorbid depression and anxiety disorders between the two time points.

Since age has been shown to be associated with mental illnesses, it is likely to play a significant role in the difference in prevalence seen between the two time points. As reported above, the 2002 sample was older than the 1991 sample,

which is consistent with Census data, where the median age of Ontario residents increased from 34 to 36 years between 1991 and 2001 [74], and the proportion aged 45-64 years increased from 20% in 1991 to 23% [75]. With age being strongly associated with psychiatric morbidity, all multivariate analyses were adjusted for age. What also needed to be considered when examining these numbers was that only the three anxiety disorders that were included in both surveys (panic disorder, social phobia, agoraphobia) were included in these estimates.

The rate of substance dependence, both for alcohol and illicit drugs has declined from 4% in 1991 to 3% in 2002, whereas the prevalence of mania was slightly higher in 2002 (1.0%) than in 1991 (0.6%). Although the rate of disability was not different between 1991 and 2002, the rate of chronic conditions was. In 1991, the proportion of individuals with cancers, respiratory or circulatory conditions was 18%, while in 2002, 22% had these conditions. Again, the older age in the 2002 sample is likely to have an impact on these rates and therefore needs to be adjusted for in the multivariate analyses.

The rate of high self-reported life stress was higher in the 1991 sample at 46% than in the 2002 sample, in which 26% of the respondents reported high life stress. With respect to self-perceived health, there was a greater rate of low self-perceived mental health in the 2002 respondents (7%) than the 1991 respondents (4%). On the other hand, the rate of self-perceived physical health showed the opposite pattern with there being a lower rate of low self-reported physical health in the 2002 sample (11%) than the 1991 sample (24%).

The rate of service utilization for emotions, mental health or use of drugs or alcohol in the preceding year increased from 8% in 1991 to 10% in 2002 survey respondents. With respect to the types of services used, the rate of use of specialty services such as psychiatrists and psychologists increased from 2.7% to 3.5% in 2002. There was also an increase in the use of general physicians (general practitioners and other medical specialists) from 4.0% in 1991 to 6% in 2002.

Table 5. Descriptive characteristics of all Ontario respondents aged 15 to 64 years, 1991 vs. 2002 (Weighted estimates)

	OMHS (N=8,116)	CCHS 1.2 (N=10,415)
PREDISPOSING FACTORS		
Age 15 - 24 years (%)	21.5 (20.6-22.4)	19.2 (19.2-19.2)
Age 25 - 44 years (%)	49.1 (48.0-50.2)	46.1 (46.1-46.2)
Age 45 - 64 years (%)	29.4 (28.4-30.4)	34.7 (34.6-34.8)
Female (%)	50.2 (49.1-51.3)	50.1 (50.1-50.2)
Married (%)	66.4 (65.4-67.5)	62.9 (61.9-63.9)
Widowed (%)	1.4 (1.2-1.7)	1.2 (0.98-1.5)
Separated, divorced (%)	4.6 (4.2-5.1)	7.0 (6.4-7.6)
Single (%)	26.9 (26.0-27.9)	28.8 (28.1-29.6)
Canadian born (%)	74.4 (73.4-75.3)	68.1 (66.8-69.3)
Caucasian (%)	77.5 (76.6-78.4)	76.6 (75.1-78.0)
< high school education (%)	31.5 (30.5-32.5)	20.2 (19.2-21.2)
High school education (%)	25.2 (24.3-26.1)	20.2 (19.1-21.3)
Some post secondary education (%)	14.5 (13.8-15.3)	9.0 (8.3-9.8)
Post-secondary education (%)	27.8 (26.8-28.7)	49.9 (48.5-51.4)

(*continued*)

Table 5 (continued) Descriptive characteristics of all Ontario respondents aged 15 to 64 years, 1991 vs. 2002 (Weighted estimates)

	OMHS (N=8,116)	CCHS 1.2 (N=10,415)
ENABLING FACTORS		
Presence of social support (%)	69.2 (68.2-70.2)	95.1 (94.5-95.7)
Low income (%)	8.4 (7.80-9.01)	6.8 (6.2-7. 5)
Employed for past year (%)	62.6 (61.5-63.6)	64.0 (62.8-65.3)
Urban Residence (%)	87.0 (86.3-87.8)	82.9 (80.7-85.1)
NEED FACTORS		
Mental disorders (%)		
Depression (%)	4.0 (3.6-4.4)	5.3 (4.8-5.9)
Anxiety disorders (%)	7.8 (7.2-8.4)	5.3 (4.7-5.9)
Depression and/or anxiety disorders (%)	10.4 (9.8-11.1)	8.9 (8.2-8.5)
Depression without anxiety (%)	2.6 (2.3-3.0)	3.5 (3.1-4.0)
Anxiety disorders without depression (%)	6.4 (5.9-7.0)	3.8 (3.3-4.2)
Comorbid depression and anxiety (%)	1.4 (1.1-1.6)	1.5 (1.2-1.9)
Mania (%)	0.6 (0.4-0.8)	1.0 (0.8-1.2)
Alcohol dependence (%)	3.6 (3.2-4.1)	2.9 (2.5-3.2)
Illicit drug dependence (%)	1.1 (0.8-1.3)	0.7 (0.5-0.9)
Substance dependence (%)	4.3 (3.8-4.7)	2.9 (2.5-3.3)

(*continued*)

Table 5 (continued) Descriptive characteristics of all Ontario respondents aged 15 to 64 years, 1991 vs. 2002

	OMHS (N=8,116)	CCHS 1.2 (N=10,415)
Chronic conditions (%)	17.6 (16.8-18.5)	22.2 (21.1-23.2)
Disability (%)	12.5 (11.8-13.3)	13.8 (13.0-14.7)
Low life satisfaction (%)	16.4 (15.6-17.2)	16.9 (15.9-17.8)
High stress in life (%)	46.1 (45.0-47.2)	25.9 (24.8-27.0)
Low self-perceived mental health (%)	3.8 (3.4-4.2)	7.3 (6.6-8.0)
Low self-perceived physical health (%)	24.0 (23.0-24.9)	11.3 (10.5-12.1)
OUTCOME		
Used mental health services – 12 mo. (%)	7.7 (7.1-8.3)	9.5 (8.8-10.2)
Specialty mental health (%)	2.7 (2.4-3.1)	3.5 (3.1-4.0)
General MD (%)	4.0 (3.6-4.4)	5.8 (5.3-6.4)
Other professional (%)	2.9 (2.5-3.2)	3.6 (3.2-4.1)
Voluntary (%)	1.4 (1.2-1.7)	1.8 (1.5-2.1)

4.2 Demographic characteristics of depression and/or anxiety disorder (DEPANX) subsample

Tables 6 and 7 show the characteristics of the individuals with depression and/or anxiety disorders (DEPANX sample) overall, as well as those broken down by the three mutually exclusive disorder groups. Similar to the Ontario sample, there were some differences in the demographic profiles of the individuals with depression and/or anxiety disorders between 1991 and 2002. Consistent with the Ontario population in 1991 and 2002, the DEPANX sample was older in 2002 than the 1991 DEPANX sample, with 29% of the sample falling in the 45 to 64 year age group, compared to 21% in 1991. When broken down by disorder, there was a greater proportion of respondents in the 15 to 24 year age group among those with anxiety disorders (33%) compared to those with depression (22%) as well as to those with comorbid depression and anxiety disorders (25%) in 1991. On the other hand, in 2002, there was a greater proportion of respondents with comorbid depression and anxiety disorders in the 25 to 44 year age group (64%) than those with anxiety disorders (47%). Among the anxiety disorders group, there was also a decline in the proportion of those in the 15 to 24 year age group from 1991 to 2002 (33% in 1991 vs. 23%).

Women made up approximately 63% of the DEPANX sample in both surveys. With respect to marital status, there were fewer individuals who were married in 2002, with 57% being married in 1991 compared to 47% in 2002. The proportion of respondents who were separated or divorced also increased from 6% in 1991 to 13% in 2002. Such an increase was also seen among those with depression from 8% in 1991 to 17% in 2002. Within the 2002 survey, there was also a difference in the rate of separation/divorce by disorder with a higher rate found among those with depression (17%) than among those with an anxiety disorder (8%).

The DEPANX sample in 2002 was also more educated compared to 1991, with the proportion of individuals with postsecondary education having increased from 22% to 45%. This roughly 20% increase is consistent for those with

depression (27% in 1991 vs. 49% in 2002), anxiety (20% in 1991 vs.41% in 2002), and comorbid depression and anxiety disorders (19% in 1991 vs. 44% in 2002). These changes mirror those seen in the Ontario population as a whole [78].

Although there was no difference between the two time points with regards the rate of employment in the preceding year, low income, or urban residency, there was an increase in the presence of social support from 67% in 1991 to 90% in 2002. This difference was consistent among those with depression (70% in 1991 vs. 92% in 2002) as well as among those with anxiety (65% in 1991 vs. 94% in 2002), but not among the respondents with comorbid depression and anxiety disorders. This may perhaps be due to the slight difference in the way the question was asked in the two surveys. As mentioned earlier, the 1991 survey measures social support as having someone to confide in and talk to about his or her "problems". In the 2002 survey, respondents with social support are those who have someone to confide in or talk to about his or her problems "*some, most, or all of the time"*. The difference is small enough to not expect differing interpretations, but it is difficult to know how the individuals who responded as having someone to confide in *some* of the time in the 2002 survey would have responded, if it had been a yes/no question (as was the case in the 1991 survey).

The proportion of individuals with chronic conditions (i.e. cancers, respiratory, or circulatory problems) increased from 19% in 1991 to 29% in 2002. When disaggregated by disorder, however, the increase was only seen among the anxious, from 18% in 1991 to 30%, and among comorbid depressed and anxious from 17% in 1991 to 40% in 2002. In the 2002 survey, the rate of chronic conditions was higher among individuals with comorbid depression and anxiety disorders (40%) than with depression only (23%).

Although the rate of low life satisfaction was similar between 1991 and 2002 overall, there were some differences when disaggregated by disorder. In the 1991 sample, both depressed and comorbid depressed individuals had greater rates of low life satisfaction (61% and 68%, respectively) compared to those with anxiety (30%). In the 2002 sample, the anxiety group had a similarly lower rate of

low life satisfaction (37%) compared to those with comorbid depression and anxiety (62%) or depression (50%).

There was a slight difference in the rate of respondents who reported having high life stress with 63% having had high life stress in 1991 and 55% in 2002. When broken down by disorder, the rates of high stress was also lower among those with depression (59% in 2002 vs. 76% in 1991) and anxiety (42% in 2002 vs. 56% in 1991) in 2002 but not among those with comorbid depression and anxiety. Between disorders, there was a higher rate of high life stress among the depressed (77%) compared to the anxious (56%) in 1991. In 2002, there was a difference between all three disorder groups with the comorbid group having the highest rate (77%), followed by the depression group (59%) and then the anxiety group (42%).

Although the rate of self-perceived physical health was relatively stable over time, there were disorder-specific differences within each time point. In 1991, respondents with comorbid depression and anxiety had a higher rate of low self-perceived physical health (38%) than either the anxious (25%) or depressed (23%). In 2002, again the comorbid group had the highest rate of low self - perceived physical health at 47%, followed by the anxiety group at 28% and then the depression group at 20%.

On the other hand, there were differences in the rates of low self-perceived mental health between 1991 and 2002 as well as between disorder groups. Overall, the proportion of respondents reporting low self-perceived mental health was 13% in 1991 and 34% in 2002. When broken down by disorder groups, the proportion with low self-perceived mental health among depressed, anxious and both comorbid depressed and anxious in 1991 were 19%, 7% and 33%, respectively. In 2002, the corresponding rates were 30%, 21% and 75%. There greater number of individuals with low self-perceived mental health in 2002 may be due to the slight difference in the phrasing of the question. Whereas the CCHS 1.2 survey asked respondents if, in general, their mental health was excellent, very good, good, fair or poor, the CCHS 1.2 survey asked the same question “compared to other persons their age”. The explicit request to compare their mental heath status to

others may have influenced how respondents rated their mental health status. For example respondents may have felt that their mental health status was poor, but not more so than average for their age group.

With respect to comorbid mental disorders, there was no difference between the two time points in the prevalence of mania in the DEPANX sample overall. There was, however, a difference among the 1991 respondents with the comorbid group having the highest prevalence rate at 13%, followed by the depression group at 9% and then the anxiety group at 2%. The rate of substance dependence (both alcohol and illicit drug use) among the DEPANX sample was higher among the 1991 respondents at 11% than the 2002 respondents (7%). A similar difference was only seen among the comorbid group when broken down by disorder (27% in 1991 vs. 7% in 2002). Within the 1991 sample however, the prevalence was higher in the comorbid group (27%) compared to the depression (13%) or anxiety group (7%).

In the DEPANX sample, the rate of service use, as expected, was greater in 2002 (41%) than in 1991 (32%). However, when broken down by disorder, such an increase was only seen among those with anxiety disorders, with 17% of the 1991 anxiety group having sought treatment in the preceding year compared to 28% in the 2002 anxiety group. Between disorders, however, the anxiety disorder group had a lower rate of service use (17%) compared to both the depression group (56%) as well as the comorbid depression and anxiety group in 1991 (58%). Despite the increase in the use of services in the anxiety group in 2002, this group still had a lower rate of service utilization (28%) compared to the comorbid group (66%) as well as the depression group (45 %) in 2002.

The rates of use of the types of services differed as well. Between 1991 and 2002, there was an increase in the use of specialty services overall from 13% to 20%. There was also an increase in the use of general health services from 19% to 31%. A disorder-specific difference was only found among the anxious group with their rate of use of general health services having increased from 8% in 1991 to 21% in 2002.

There were differences between disorder groups within both the 1991 and 2002 samples. In 1991, the rate of use of specialty mental health services was lower among the anxiety group at 6% compared to the depression group at 23% and the comorbid group at 27%. A similar pattern was also found in the use of general health services as well as those having used professional care other than specialty mental health or general health services. Only 8% of the anxiety group used general health services, compared to 39% in the depression group and 37% in the comorbid group. For other professional care, 6% of the anxiety group used these services, compared to 22% in the depression group and 19% in the comorbid group. For voluntary care, a greater proportion of respondents with comorbid depression and anxiety used these services (15%) than those with anxiety (4%).

In 2002, the rate of use of specialty mental health services was different between all three groups with the anxiety group being the lowest (10%), followed by the depression group (22%), and then the comorbid group (42%). Use of general health services was lower among the anxiety group at 21%, compared to the depression group at 33% and the comorbid group at 49%. The proportion of respondents in the anxiety group who used other professional care was also lower at 12% than the comorbid group at 26%.

Table 6. Descriptive characteristics of Ontario population with depression or anxiety disorders, aged 15 to 64 years in 1991

	Overall (N=900)	Depression (N=207)	Anxiety (N=560)	Both (N=133)
PREDISPOSING				
Age 15 - 24 years (%)	28.2 (25.3-31.2)	22.1 (16.4-27.8)	32.6 (28.7-36.5)	19.3 (12.5-26.1)
Age 25 - 44 years (%)	50.6 (47.4-53.9)	52.5 (45.6-59.3)	46.9 (42.8-51.1)	64.6 (56.4-72.9)
Age 45 - 64 years (%)	21.1 (18.5-23.8)	25.4 (19.5-31.4)	20.5 (17.1-23.8)	16.1 (9.8-22.4)
Female (%)	62.9 (59.7-66.0)	67.3 (60.9-73.8)	61.0 (56.9-65.0)	63.3 (55.0-71.6)
Married (%)	56.8 (53.6-60.1)	56.1 (49.3-63.0)	58.2 (54.1-62.3)	51.9 (43.3-60.5)
Widowed (%)	2.2 (1.2-3.1)	4.6 (1.7-7.5)	1.3 (0.4-2.2)	1.6 (-0.6-3.8)
Separated, divorced (%)	6.2 (4.6-7.7)	7.7 (4.1-11.4)	4.6 (2.8-6.3)	10.6 (5.3-15.9)
Single (%)	34.8 (31.7-37.9)	31.5 (25.1-37.9)	35.9 (32.0-39.9)	35.8 (27.6-44.1)
Canadian born (%)	78.9 (76.3-81.6)	80.6 (75.2-86.1)	77.4 (73.9-80.9)	82.8 (76.4-89.3)
Caucasian (%)	79.4 (76.8-82.1)	81.6 (76.2-86.9)	78.2 (74.8-81.6)	81.1 (74.3-87.8)
< high school education (%)	37.4 (34.2-40.6)	28.7 (22.5-34.9)	40.5 (36.4-44.6)	39.2 (30.8-47.6)
High school education (%)	22.4 (19.6-25.1)	24.4 (18.5-30.2)	23.3 (19.8-26.8)	14.1 (8.1-20.0)
Some post secondary education (%)	17.9 (15.4-20.4)	19.8 (14.3-25.3)	15.3 (12.3-18.3)	26.6 (19.0-34.3)
Post-secondary education (%)	21.6 (18.9-24.3)	26.9 (20.8-32.9)	20.0 (16.7-23.4)	19.1 (12.4-25. 9)

(continued)

Table 6 *(continued)* Descriptive characteristics of Ontario population with depression or anxiety disorders, aged 15 to 64 years in 1991

	Overall (N=900)	Depression (N=207)	Anxiety (N=560)	Both (N=133)
ENABLING				
Presence of social support (%)	67.0 (63.9-70.0)	70.4 (64.1-76.6)	65.4 (61.5-69.4)	67.6 (59.5-75.7)
Low income (%)	14.6 (12.3-16.9)	15.8 (10.8-20.9)	13.5 (10.7-16.4)	17.3 (10.8-23.8)
Employed in preceding year (%)	53.1 (49.8-56.4)	51.3 (44.5-58.2)	53.3 (49.2-57.5)	55.4 (46.9-64.0)
Urban Residence (%)	88.4 (86.3-90.5)	90.4 (86.3-94.4)	87.5 (84.7-90.2)	88.8 (83.4-94.2)
NEED				
Chronic conditions (%)	19.2 (16.6-21.8)	24.4 (18.5-30.4)	17.6 (14.4-20.8)	16.8 (10.4-23.2)
Disability (%)	22.0 (19.3-24.7)	27.2 (21.1-33.4)	19.9 (16.6-23.2)	21.8 (14.7-29.0)
No life satisfaction (%)	42.6 (39.4-45.8)	61.0 (54.3-67.7)	29.8 (26.0-33.6)	67.6 (59.5-75.6)
High stress level in life (%)	63.0 (59.8-66.2)	76.3 (70.5-82.2)	56.4 (52.3-60.5)	68.5 (60.5-76.5)
Low SP physical health (%)	26.0 (23.1-28.8)	22.9 (17.2-28.7)	24.6 (21.0-28.2)	38.2 (29.9-46.6)
Low SP mental health (%)	13.4 (11.2-15.6)	18.6 (13.2-23.9)	7.1 (5.0-9.2)	33.3 (25.2-41.4)
Other Mental disorders (%)				
Mania (%)	5.1 (3.7-6.5)	9.4 (5.4-13.4)	1.6 (0.5-2.6)	13.4 (7.6-19.3)
Alcohol dependence (%)	8.7 (6.9-10.6)	11.3 (6.9-15.6)	5.1 (3.3-6. 9)	21.1 (14.1-28.1)
Illicit drug dependence (%)	3.2 (2.1-4.4)	4.0 (1.3-6.7)	1.8 (0.7-3.0)	8.3 (3.6-13.1)
Substance dependence (%)	10.8 (8.7-12.8)	12.5 (8.0-17.1)	6.7 (4.6-8.7)	26.9 (19.2-34.5)

(continued)

Table 6 *(continued)* Descriptive characteristics of Ontario population with depression or anxiety disorders, aged 15 to 64 years in 1991

	Overall (N=900)	Depression (N=207)	Anxiety (N=560)	Both (N=133)
OUTCOME				
Use of health services – 12 mo. (%)	32.1 (29.0-35.1)	55.9 (49.0-62.7)	16.9 (13.8-20.1)	57.9 (49.4-66.4)
Specialty mental health (%)	13.0 (10.8-15.2)	22.6 (16.9-28.4)	6.1 (4.1-8.1)	27.3 (19.6-35.0)
General MD (%)	19.4 (16.8-22.0)	38.8 (32.1-45.5)	7.9 (5.6-10.1)	36.5 (28.2-44.8)
Other professional (%)	11.7 (9.6-13.8)	22.4 (16.7-28.1)	5.8 (3.9-7.7)	19.0 (12.2-25.7)
Voluntary (%)	6.1 (4.5-7.6)	5.7 (2.5-8.9)	4.4 (2.7-6.1)	14.5 (8.4-20.6)

Table 7. Descriptive characteristics of Ontario population with depression or anxiety disorders, aged 15 to 64 years in 2002

	Overall (N=1,017)	Depression (n=404)	Anxiety (N=412)	Both (N=201)
PREDISPOSING				
Age 15 - 24 years (%)	24.6 (21.1-28.1)	26.0 (20.2-31.7)	23.1 (17.6-28.6)	25.0 (16.0-34.1)*
Age 25 - 44 years (%)	46.5 (42.4-50.5)	44.1 (37.7-50.5)	50.6 (44.3-56.8)	41.7 (31.0-52.5)
Age 45 - 64 years (%)	29.0 (25.0-32.9)	29.9 (23.8-36.0)	26.4 (20.7-32.0)	33.2 (20.3-46.2)*
Female (%)	63.9 (59.8-68.1)	67.1 (61.2-73.1)	63.5 (57.4-69.5)	57.8 (45.4-70.3)
Married (%)	46.9 (42.5-51.4)	44.2 (37.4-50.9)	49.8 (43.0-56.6)	46.3 (34.0-58.6)
Widowed (%)	2.4 (1.0-3.7)*	S	S	S
Separated, divorced (%)	13.3 (10.9-15.7)	17.0 (12.5-21.5)	7.5 (4.9-10.0)*	S
Single (%)	37.4 (33.4-41.5)	34.9 (28.6-41.2)	41.3 (34.5-48.1)	33.7 (23.9-43.4)
Canadian born (%)	75.3 (71.2-79.4)	73.5 (67.0-80.1)	81.6 (76.7-86.4)	64.0 (51.2-76.8)
Caucasian (%)	82.9 (78.9-87.0)	83.6 (78.3-88.9)	83.9 (78.0-89.8)	79.1 (65.8-92.4)
< high school education (%)	24.6 (20.8-28.3)	21.9 (16.3-27.5)	26.3 (20.3-32.3)	26.5 (17.4-35.6)*
High school education (%)	19.1 (15.8-22.5)	16.5 (11.6-21.4)	21.2 (16.2-26.2)	19.9 (11.6-28.2)*
Some post secondary education (%)	11.4 (8.8-14.0)	12.5 (7.9-17.1)*	11.5 (7.6-15.4)*	8.7 (3.8-13.7)*
Post-secondary education (%)	44.6 (39.9-49.3)	48.7 (41.5-55.8)	41.0 (34.3-47.7)	43.9 (31.3-56.4)

(continued)

NOTE: Data with a coefficient of variation (CV) from 16.6% to 33.3% are identified by an * and should be interpreted with caution. Data with a coefficient of variation (CV) greater than 33.3% were suppressed due to extreme sampling variability and are identified by an 'S'.

Table 7 (continued) Descriptive characteristics of Ontario population with depression or anxiety disorders, aged 15 to 64 years in 2002

	Overall (N=1,017)	Depression (n=404)	Anxiety (N=412)	Both (N=201)
ENABLING				
Presence of social support (%)	90.3 (87.7-92.9)	92.1 (88.4-95.7)	94.1 (91.2-97.0)	77.0 (67.6-86.4)
Low income (%)	11.2 (9.3-13.2)	10.9 (7.5-14.3)	9.7 (6.8-12.6)	15.8 (10.1-21.5)*
Employed in preceding year (%)	50.9 (46.5-55.3)	54.5 (47.7-61.3)	50.6 (44.2-56.9)	43.5 (30.5-56.5)
Urban Residence (%)	85.1 (81.2-89.0)	86.0 (80.5-91.5)	88.4 (84.5-92.4)	75.1 (61.1-89.0)
NEED				
Chronic conditions (%)	28.9 (25.2-32.6)	23.3 (17.9-28.7)	29.6 (23.6-35.5)	40.2 (29.4-51.1)
Disability (%)	30.9 (27.0-34.8)	30.7 (24.6-36.7)	27.7 (22.1-33.4)	39.0 (28.6-49.3)
No life satisfaction (%)	46.5 (42.3-50.7)	49.7 (43.3-56.1)	37.4 (31.1-43.6)	61.5 (49.3-73.8)
Stress level in life (%)	54.9 (50.4-59.4)	59.3 (52.3-66.3)	41.7 (35.2-48.1)	77.4 (69.9-84.8)
Low SP physical health (%)	27.9 (23.9-31.8)	19.9 (15.3-24.5)	27.6 (21.4-33.8)	46.8 (34.8-58.8)
Low SP mental health (%)	34.1 (30.0-38.3)	30.0 (24.0-36.0)	21.2 (16.3-26.0)	75.2 (66.2-84.2)
Other Mental disorders (%)				
Mania (%)	7.6 (5.8-9.4)	6.9 (3.9-9.8)*	4.2 (2.0-6.4)*	17.8 (11.0-24.5)*
Alcohol dependence (%)	5.8 (4.0-7.5)	5.2 (2.8-7.6)*	6.2 (3.3-9.0)*	6.2 (2.5-9.9)*
Illicit drug dependence (%)	2.3 (1.2-3.4)*	S	S	S
Substance dependence (%)	6.7 (4.8-8.5)	6.20 (3.6-8.8)	7.0 (3.9-10.1)*	7.0 (3.0-11.0)*

(continued)

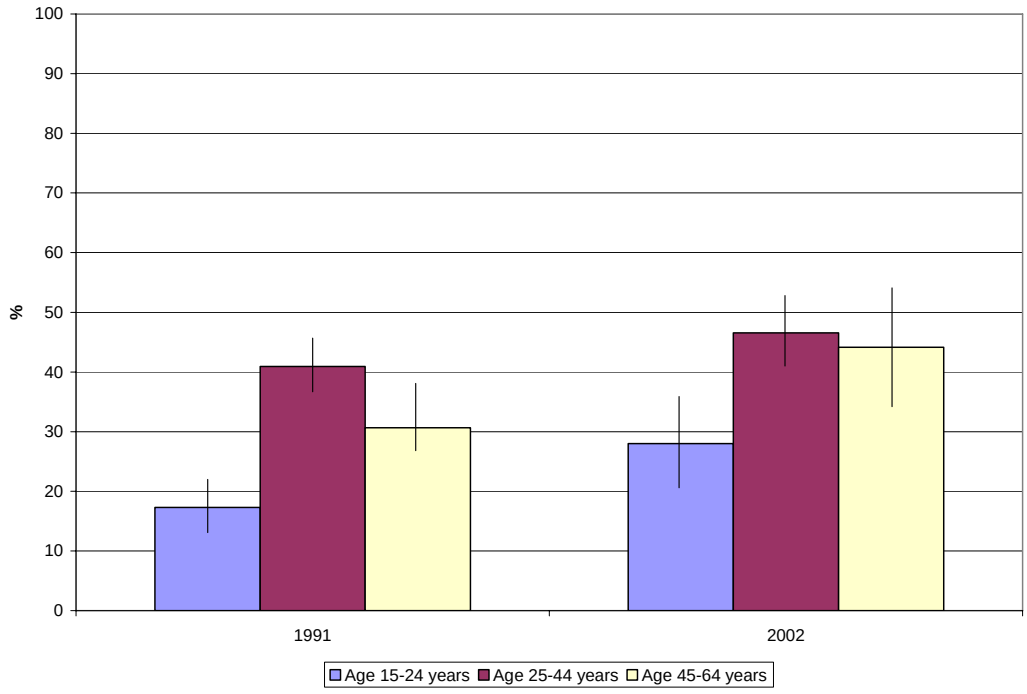
NOTE: Data with a coefficient of variation (CV) from 16.6% to 33.3% are identified by an * and should be interpreted with caution. Data with a coefficient of variation (CV) greater than 33.3% were suppressed due to extreme sampling variability and are identified by an 'S'.

Table 7 *(continued)* Descriptive characteristics of Ontario population with depression or anxiety disorders, aged 15 to 64 years in 2002

	Overall (N=1,017)	Depression (n=404)	Anxiety (N=412)	Both (N=201)
OUTCOME				
Use of health services – 12 mo. (%)	41.3 (36.9-45.7)	45.1 (38.2-52.1)	27.9 (22.0-33.7)	65.6 (52.3-78.9)
Specialty mental health (%)	20.3 (17.1-23.4)	21.9 (16.6-27.2)	10.0 (6.8-13.2)	41.8 (30.9-52.7)
General health (%)	30.7 (26.5-34.9)	33.4 (26.9-40.0)	20.9 (15.3-26.5)	48.5 (36.4-60.6)
Other professional (%)	17.9 (14.7-21.1)	20.4 (14.5-26.4)	12.3 (8.7-15.8)	25.7 (17.4-34.0)
Voluntary (%)	6.6 (4.9-8.4)	6.0 (3.4-8.5)*	6.1 (3.3-8.9)*	9.3 (5.0-13.6)*

NOTE: Data with a coefficient of variation (CV) from 16.6% to 33.3% are identified by an * and should be interpreted with caution. Data with a coefficient of variation (CV) greater than 33.3% were suppressed due to extreme sampling variability and are identified by an 'S'.

Figure 7. Proportion of respondents with depression and/or anxiety who sought mental health care in the preceding year, in 1991 and 2002, by age distribution

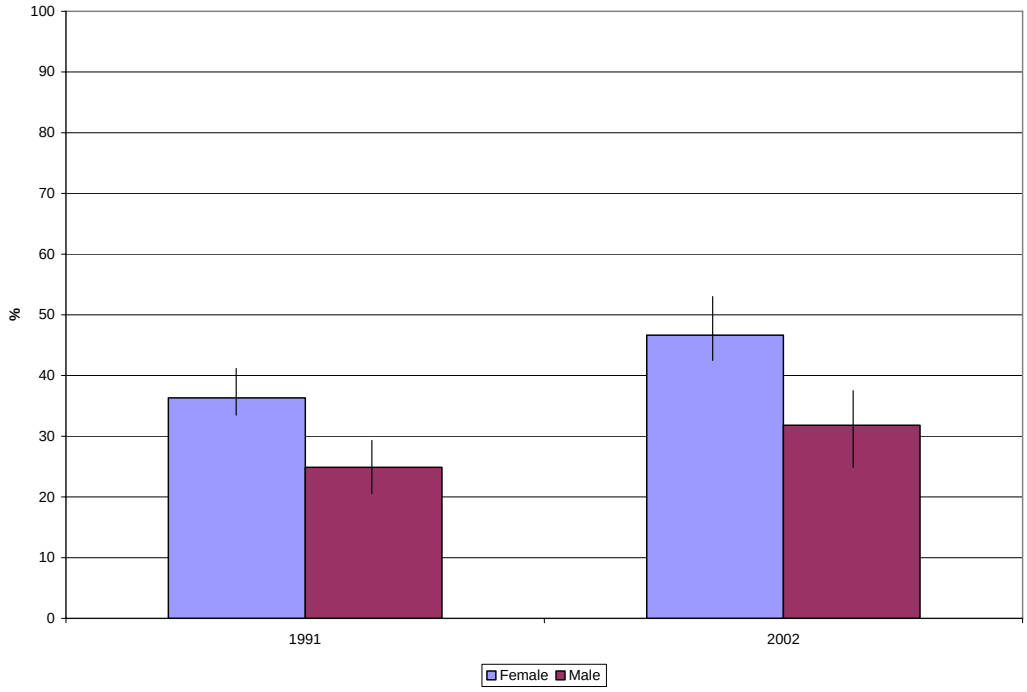


4.3 Use of services based on sample characteristics

The unadjusted associations between the various predisposing, enabling and need factors and use of health services in the preceding 12 months for mental health reasons were examined in the DEPANX samples for both 1991 and 2002. The results are shown in Tables 8 through 13, and depicted in Figures 7 to 12. The increase in service utilization was highest in the youngest and eldest age groups.

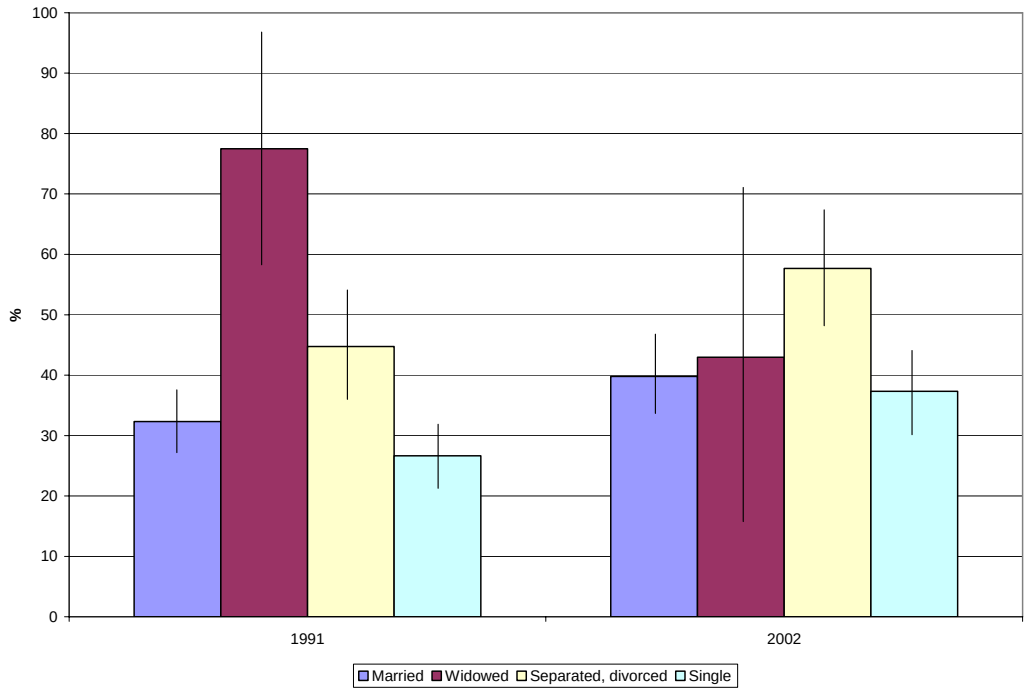
The association between age and service utilization changed slightly between 1991 and 2002. As shown in Tables 8 and 9 as well as Figure 7, the proportion of respondents who sought treatment was highest in the 25 to 44 year age group (41% in 1991 vs. 47% in 2002), followed by the 45 to 64 year age group (31% in 1991 vs. 44% in 2002) and lowest among the youngest age group (17% in 1991 vs. 28% in 2002).

Figure 8. Proportion of respondents with depression and/or anxiety who sought mental health care in the preceding year, in 1991 and 2002, by gender



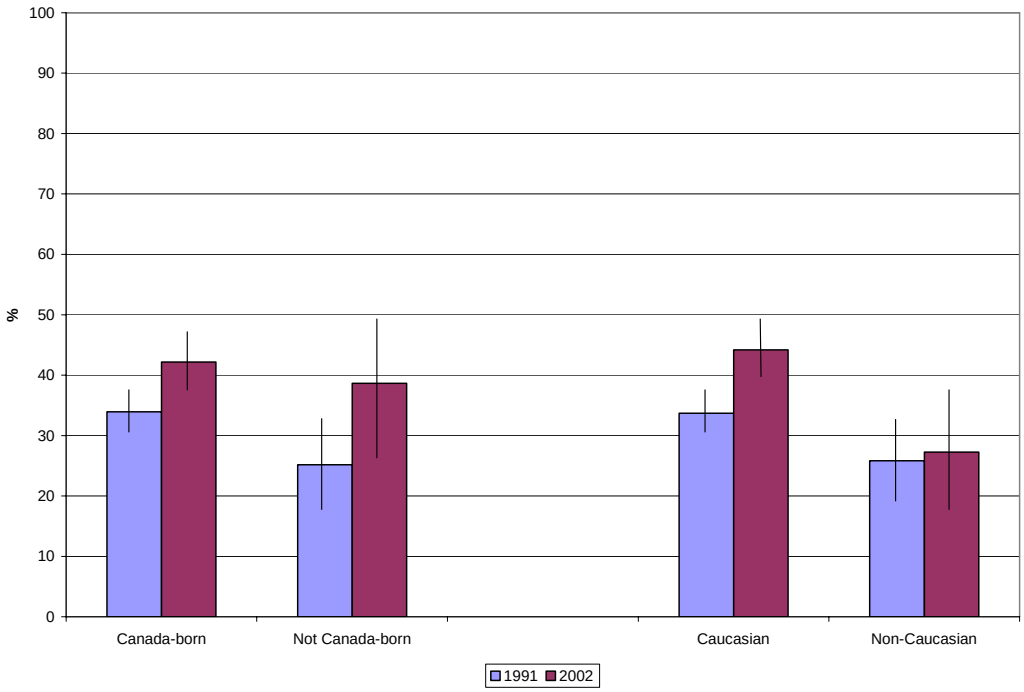
As expected, women were using services more than men in both 1991 and 2002 (Figure 8). In 1991, 36% of women with depression and/or anxiety disorders sought health care, while 25% of men with the same problems sought treatment, showing that women were over 70% more likely to seek treatment than men (OR=1.7). Eleven years later, there was no differential increase between men and women (both groups increased by approximately 30%), and the difference between men and women persisted. Almost half (47%) of the women and 32% of the men with depression or anxiety disorders were seeking care for their problems. Women were therefore 90% more likely than men to seek mental health care (OR=1.9). Furthermore, the increase in the service use between 1991 and 2002 among women was from 36% to 47%.

Figure 9. Proportion of respondents with depression and/or anxiety who sought mental health care in the preceding year, in 1991 and 2002, by marital status



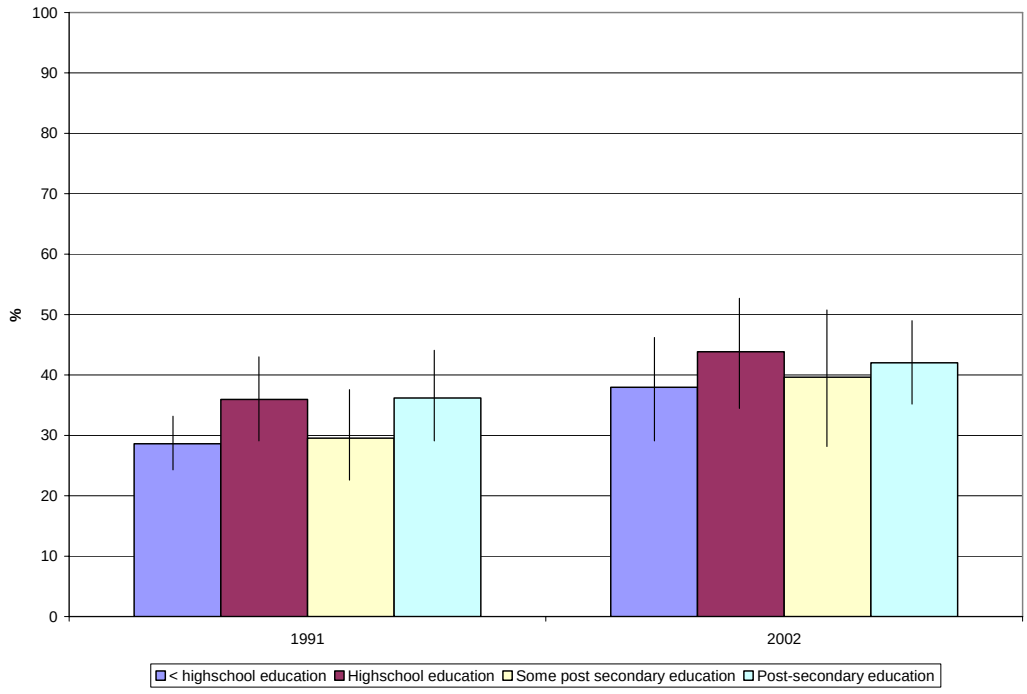
The pattern of use of services was relatively stable between 1991 and 2002 with respect to marital status (Figure 9), with the exception of the widowed respondents. Individuals who were widowed had a higher rate of utilization (78%) than the other three groups in 1991 (32% for married, 45% for separated or divorced, and 27% for single). Compared to married respondents, the widowed individuals were seven times more likely to seek care (OR=7.2). In 2002, individuals who were separated or divorced sought treatment more at 58% than married individuals at 40% such that the separated/divorced were over twice as likely to seek care (OR=2.1).

Figure 10. Proportion of respondents with depression and/or anxiety who sought mental health care in the preceding year, in 1991 and 2002, by ethnic background



Concerning cultural background, Canada-born respondents with depression and/or anxiety disorders were 50% more likely to seek care than those born elsewhere (OR=1.5%) in 1991. Although there was a significant increase in the rate of service utilization in 2002 (34% in 1991 vs. 44% in 2002), the association between country of birth and health service utilization was not significant in 2002 (Figure 10). Similarly, Caucasian individuals with depression and/or anxiety disorders were 46% more likely to seek care than non-Caucasian respondents (OR=1.5). This difference was also found in the 2002 sample with 44% of Caucasian respondents having sought treatment compared to 27% of non-Caucasians (OR=2.1).

Figure 11. Proportion of respondents with depression and/or anxiety who sought mental health care in the preceding year, in 1991 and 2002, by education



No significant difference was found in service utilization based on education level between disorder groups (Figure 11).

With respect to enabling factors (Tables 8 and 9), individuals living in urban settings were 70% more likely to seek services than those living in rural areas (OR=1.7), but this difference diminished by 2002, with approximately 40% of individuals with depression and anxiety disorders seeking treatment in both settings. Concerning income, there was a significantly higher rate of use among those in the lower income category at both time points. At both 1991 and 2002, respondents with depression and anxiety disorders in the low income category were approximately twice as likely to seek treatment as their higher income counterparts (OR=2.1 in 1991, OR=1.8 in 2002).

With regards to the presence of social support, its association with mental health service utilization was not significant in 1991 but was associated with a lower likelihood of seeking care in 2002 (OR=0.5). Between 1991 and 2002, there was a significant increase in the use of services. Among those without someone to confide in, the rate of service use increased from 34% in 1991 to 57% in 2002.

Among the respondents who had social support, the rate of service utilization rose from 31% in 1991 to 40% in 2002. An increase in the rate of service utilization was also seen among those who were not employed in the preceding year with 33% seeking care in 1991 and 48% in 2002.

Table 8. Rate of service utilization by predisposing and enabling factors, 1991

	Service use (%) (N=900)	P-value[1]	OR (95% CI)[2]
PREDISPOSING			
Age 15 - 24 years[3]	17.3 (12.7-21.9)	<.0001	0.34 (0.24-0.49)
Age 25 - 44 years[3]	40.9 (36.4-45.4)	<.0001	2.31 (1.73-3.09)
Age 45 - 64 years[3]	30.7 (23.6-37.7)	0.64	0.92 (0.65-1.30)
Male	24.9 (20.0-29.7)	---	1.00
Female	36.3 (32.4-40.2)	0.0004	1.72 (1.27-2.33)
Married	32.3 (28.1-36.5)	---	1.00
Widowed	77.5 (58.5-96.4)	0.0003	7.21 (2.46-21.16)
Separated, divorced	44.7 (34.8-54.7)	0.06	1.70 (0.97-2.97)
Single	26.6 (21.6-31.6)	0.09	0.76 (0.56-1.04)
Non-Canada born	25.2 (17.6-32.8)	---	1.00
Canadian born	33.9 (30.6-37.3)	0.02	1.52 (1.06-2.19)
Non-Caucasian	25.8 (18.7-33.0)	---	1.00
Caucasian	33.7 (30.3-37.1)	0.04	1.46 (1.01-2.10)
< high school education	28.6 (24.1-33.1)	---	1.00
High school education	36.0 (29.2-42.7)	0.08	1.40 (0.96-2.03)
Some post secondary	29.5 (21.9-37.2)	0.84	1.04 (0.69-1.58)
Post-secondary	36.2 (28.7-43.8)	0.07	1.41 (0.97-2.06)
ENABLING			
No social support	33.6 (27.7-39.5)	---	1.00
Presence of social support	31.3 (27.8-34.9)	0.50	0.90 (0.67-1.21)
Middle & high income	29.6 (26.3-32.8)	---	1.00
Low income	46.8 (39.0-54.6)	0.0001	2.10 (1.44-3.05)
Unemployed in preceding yr	33.2 (28.9-37.5)	---	1.00
Employed in preceding yr	31.1 (26.7-35.4)	0.49	0.91 (0.69-1.20)
Rural Residence	22.9 (17.3-28.5)	---	1.00
Urban Residence	33.3 (29.7-36.8)	0.03	1.68 (1.04-2.71)

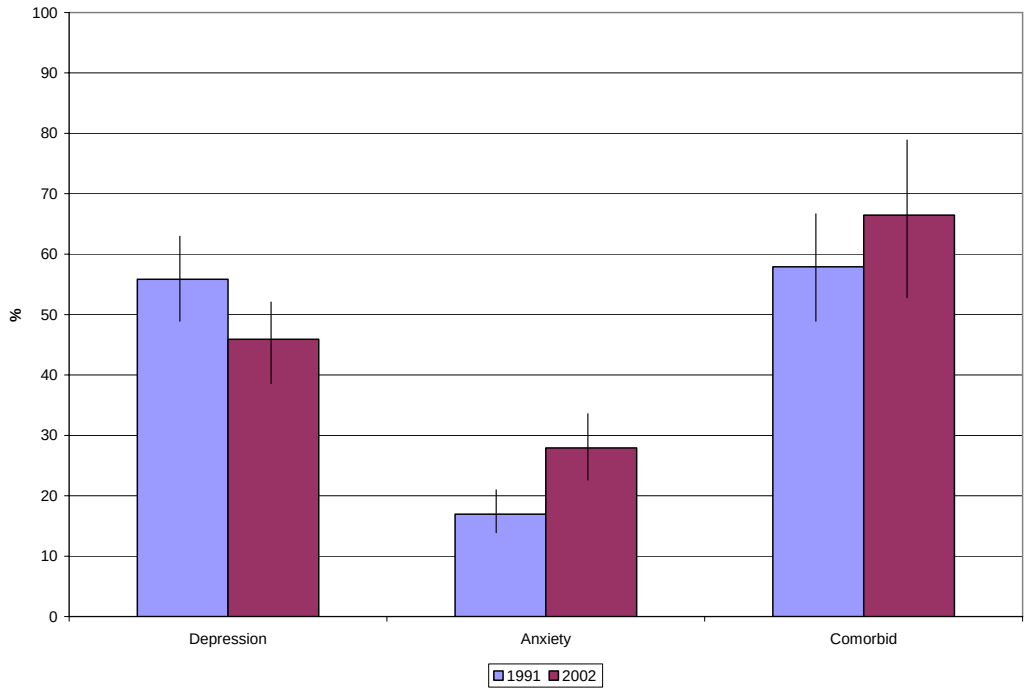
1. Chi-square test
2. All odds ratios are crude odds ratios
3. reference group = the **other** two age groups combined

Table 9. Rate of service utilization by predisposing and enabling factors, 2002

	Service use (%) (N=1,017)	P-value[1]	OR (95% CI)[2]
PREDISPOSING			
Age 15 - 24 years[3]	28.0 (20.3-35.7)	<.0001	0.46 (0.30-0.72)
Age 25 - 44 years[3]	46.6 (40.3-52.8)	0.03	1.50 (1.03-2.18)
Age 45 - 64 years[3]	44.1 (34.8-53.5)	0.46	1.18 (0.76-1.82)
Male	31.8 (25.5-38.1)	---	1.00
Female	46.7 (41.0-52.3)	<0.001	1.87 (1.29-2.71)
Married	39.8 (33.2-46.4)	---	1.00
Widowed	43.0 (15.3-70.6)*	0.83	1.14 (0.33-3.90)
Separated, divorced	57.7 (48.7-66.7)	0.002	2.07 (1.30-3.28)
Single	37.3 (30.4-44.2)	0.61	0.90 (0.60-1.34)
Non-Canada born	38.7 (26.0-49.3)	---	1.00
Canadian born	42.2 (37.7-46.7)	0.55	1.16 (0.71-1.88)
Non-Caucasian	27.3 (17.3-37.2)*		1.00
Caucasian	44.2 (39.7-48.7)	0.01	2.11 (1.25-3.58)
< high school education	38.0 (29.8-46.1)	---	1.00
High school education	43.9 (34.5-53.2)	0.45	1.23 (0.72-2.10)
Some post secondary	39.6 (28.4-50.9)	0.91	1.03 (0.57-1.86)
Post-secondary	42.0 (35.1-49.0)	0.56	1.14 (0.73-1.77)
ENABLING			
No social support	56.8 (43.4-70.3)	---	1.00
Presence of social support	39.6 (35.1-44.2)	0.02	0.50 (0.28-0.89)
Middle & high income	39.6 (35.1-44.2)	---	1.00
Low income	54.7 (44.7-64.7)	0.005	1.84 (1.21-2.81)
Unemployed in preceding yr	48.3 (41.9-54.6)	---	1.00
Employed in preceding yr	34.6 (28.8-40.5)	0.002	0.57 (0.40-0.81)
Rural Residence	40.6 (26.6-54.5)*	---	1.00
Urban Residence	41.4 (36.8-46.1)	0.91	1.04 (0.56-1.93)

1. Chi-square test
2. All odds ratios are crude odds ratios
3. reference group = the **other** two age groups combined
4. Data with a coefficient of variation (CV) from 16.6% to 33.3% are identified by an * and should be interpreted with caution. Data with a coefficient of variation (CV) greater than 33.3% were suppressed due to extreme sampling variability and are identified by an 'S'.

Figure 12. Proportion of respondents with depression and/or anxiety who sought mental health care in the preceding year, in 1991 and 2002, by depression, anxiety and comorbid depression and anxiety



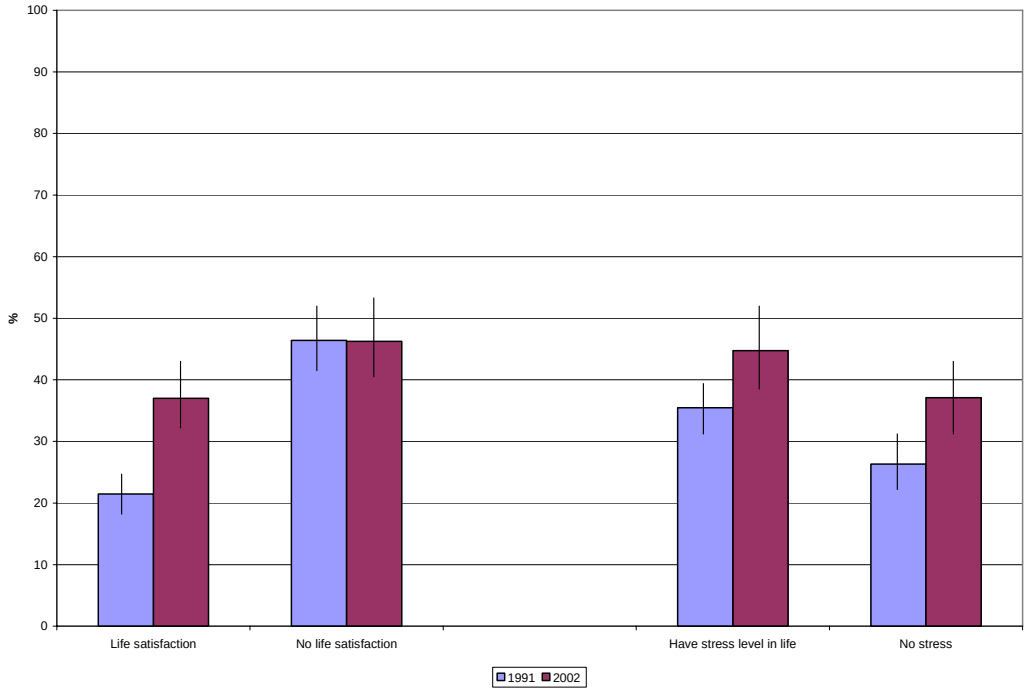
The crude associations between need factors and rate of service utilization were then examined (Tables 10 and 11). First, there was a significant difference in the rate of treatment seeking by disorder, with the anxiety group having a significantly lower rate of use (17%) compared to the depression (56%), or comorbid groups (58%) in 1991. Compared to those with comorbid depression and anxiety, those with anxiety were 85% less likely to seek treatment (OR=0.2). Eleven years later, the difference still persisted between those with anxiety and comorbid depression and anxiety (28% vs. 66%, respectively) with the anxiety group being 80% less likely to seek care (OR=0.2). There was, however, also a difference between the comorbid group and those with depression (66% vs. 45% respectively) with the depression group being 57% less likely to seek care (OR=0.4) than the comorbid group. As shown in Figure 12, there was in fact an unexpected decline in the rate of service utilization for individuals with depression only, whereas an increase was seen among those with anxiety disorders and comorbid depression and anxiety disorders. Two possible explanations for this are that (1) this could be differences in classification in that

comorbidity is identified more in recent years and may be classified as such rather than having only depression, or that (2) this could be due to the fact that the individuals with depression who sought and received care no longer met the criteria for depression during the 12 months that this thesis is addressing, and were therefore excluded from the analysis.

The presence of chronic conditions was associated with use of service in 1991 with 45% of individuals with chronic conditions seeking care compared to 29% without such conditions (OR=2.0). Between 1991 and 2002, there was also a higher rate of service use among the 2002 respondents without chronic conditions with 38% seeking care than the corresponding 1991 respondents, of whom 29% sought care in 1991.

Individuals who were not satisfied with his or her life were over three times more likely to seek care than those who were satisfied (OR=3.2) in 1991. This association was also present in 2002 with individuals who were not satisfied with their life being 46% more likely to seek care than those who were (OR=1.5). This attenuation in the association seen in 2002 stems from difference in service utilization between 1991 and 2002 among the people who were satisfied (21% in 1991 versus 37%) without a similar increase in the unsatisfied individuals (Figure 13).

Figure 13. Proportion of respondents with depression and/or anxiety who sought mental health care in the preceding year, in 1991 and 2002, by life satisfaction and life stress



The presence of disability was associated with service utilization at both time points. In 1991, 44% of individuals with a disability sought care compared to 29% of those without a disability, thereby showing that the former were 90% more likely to seek care than the latter (OR=1.9). In 2002, 53% of individuals with a disability sought care compared to 36% of those without, again suggesting that the former were twice as likely to seek care as the latter (OR=2.0).

With regards to the association between level of stress and service use, individuals who reported having a stressful daily life were over 50% more likely to seek treatment for their mental or emotional problems in 1991 than those without stress (OR=1.5). A similar association was not observed eleven years later.

With respect to self-perceived physical and mental health, an association was only found in 2002 for self-perceived physical health with those having low self-perceived physical health being 55% more likely to seek treatment than those with good self-perceived physical health (OR=1.6). The association between self-perceived mental health and service use, however, was significant at both time points. In 1991, 57% of respondents with low self-perceived mental health sought

treatment compared to 28% with good self-perceived mental health (OR=3.4). In 2002, 59% of respondents with low self-perceived mental health sought treatment compared to 32% with good self-perceived mental health (OR=3.0).

Having comorbid mental disorders in addition to depression and/or anxiety disorders had varying effects on the likelihood of seeking treatment at the two time points, depending on the comorbid condition. A significant association between the presence of mania and service utilization was only significant in 2002 (OR=2.7), and showed a non-significant increase in 1991. The co-occurrence of substance dependence, however, was significant at both time points. In 1991, those with a substance dependence were 90% more likely to seek treatment than those without (OR=1.9). Similarly, in 2002, individuals with substance dependence problems were over twice as likely to seek care as those without such problems (OR=2.1).

Table 10. Rate of service utilization by need factors, 1991

	Service use (%) (N=900)	P-value[1]	OR (95% CI)[2]
Comorbid	57.9 (49.4-66.4)	---	1.00
Depression	55.9 (49.0-62.7)	0.72	0.92 (0.59-1.44)
Anxiety	16.9 (13.8-20.1)	<.0001	0.15 (0.10-0.23)
No chronic conditions	29.0 (25.6-32.4)	---	1.00
Chronic conditions	45.0 (38.0-52.0)	<.0001	2.00 (1.43-2.82)
Life satisfaction	21.5 (18.0-24.9)		1.00
No life satisfaction	46.4 (41.1-51.7)	<.0001	3.17 (2.37-4.24)
No Disability	28.9 (25.5-32.2)	---	1.00
Disability	43.5 (36.5-50.5)	0.0001	1.90 (1.37-2.62)
No stress	26.3 (21.7-31.0)	---	1.00
Have stress level in life	35.5 (31.5-39.5)	0.005	1.54 (1.14-2.07)
Good SP physical health	31.3 (27.8-34.9)	---	1.00
Low SP physical health	34.2 (28.1-40.3)	0.42	1.14 (0.83-1.56)
Good SP mental health	28.2 (25.0-31.4)	---	1.00
Low SP mental health	57.1 (48.7-65.5)	<.0001	3.39 (2.29-5.02)
Other Mental disorders			
No Mania	31.6 (28.4-34.7)	---	1.00
Mania	41.8 (27.0-56.6)	0.15	1.56 (0.85-2.85)
No Alcohol dependence	30.1 (26.9-33.2)	---	1.00
Alcohol dependence	53.0 (42.1-64.0)	<.0001	2.62 (1.64-4.19)
No illicit drug dependence	32.1 (29.0-35.2)	---	1.00
Illicit drug Dependence	31.6 (14.8-48.3)	0.004	0.98 (0.44-2.16)
No substance dependence	30.4 (27.2-33.6)	---	1.00
Substance dependence	45.7 (35.8-55.5)	0.003	1.92 (1.25-2.95)

1. Chi-square test
2. crude odds ratios

Table 11. Rate of service utilization by need factors- 2002

	Service use (%) (N=1,017)	P-value[1]	OR (95%CI)[2]
NEED			
Comorbid	65.6 (52.3-78.9)	---	1.00
Depression	45.1 (38.2-52.1)	0.01	0.43 (0.22-0.84)
Anxiety	27.9 (22.0-33.7)	<0.0001	0.20 (0.10-0.40)
No chronic conditions	37.8 (32.6-43.0)	---	1.00
Chronic conditions	49.9 (42.1-57.8)	0.01	1.64 (1.12-2.41)
Life satisfaction	37.0 (30.9-43.1)	---	1.00
No life satisfaction	46.2 (40.0-52.5)	0.04	1.46 (1.02-2.11)
No Disability	36.1 (31.1-41.1)	---	1.00
Disability	53.1 (45.5-60.7)	<0.001	2.01 (1.39-2.89)
No stress	37.1 (31.0-43.2)	---	1.00
Have stress level in life	44.8 (38.8-50.8)	0.07	1.37 (0.97-1.95)
Good SP physical health	38.3 (33.5-43.2)	---	1.00
Low SP physical health	49.0 (39.8-58.2)	0.04	1.55 (1.02-2.33)
Good SP mental health	32.2 (27.0-37.4)	---	1.00
Low SP mental health	58.9 (50.8-67.0)	<0.0001	3.01 (2.01-4.52)
Other Mental disorders			
No Mania	39.4 (34.9-44.0)	---	1.00
Mania	64.0 (51.6-76.5)	0.00	2.74 (1.54-4.84)
No Alcohol dependence	41.1 (36.5-45.6)	---	1.00
Alcohol dependence	45.4 (31.3-59.5)	0.57	1.19 (0.65-2.19)
No illicit drug dependence	40.3 (35.9-44.8)	---	1.00
Illicit drug Dependence	82.4 (66.9-97.9)	0.03	6.92 (1.23-39.03)
No substance dependence	40.1 (35.6-44.6)	---	1.00
Substance dependence	58.5 (45.4-71.6)	0.01	2.11 (1.20-3.69)

1. Chi-square test
2. Crude odds ratios

4.4 Individual level predictors of service utilization

Multivariate models of individual level factors were used to determine which factors were predictive of service utilization in 1991 and 2002 when

adjusted for all of the other variables in the model. Due to their hypothesized relationship to the outcome, and their reported relationship to each other, all of the variables were included in the model in order to see how the associations between the variables and use of services have changed. Tables 12 and 13 show the results of the multivariate modeling for 1991 and 2001, respectively.

In 1991, age, gender, marital status, country of birth, presence of social support, income, mental disorder, the presence of a chronic condition, low life satisfaction and low perceived mental health were all statistically significantly associated with use of services for emotions, mental health or use of alcohol or illicit drugs, after adjusting for the other factors. Using the 25 to 44 years age group as the reference group, individuals aged 15 to 24 years were approximately 70% less likely to seek services (OR=0.3) than the reference group. Individuals aged 45 to 64 years were 40% less likely to seek care compared to the reference group (OR=0.6). Women were over two and a half times as likely to seek services as men (OR=2.5). Relative to married individuals, those who were widowed were seven times more likely to seek care (OR=7.2). Furthermore, respondents who were born in Canada were 60% more likely to seek care than those born elsewhere (OR=1.6).

In terms of the enabling factors, there was a statistically significant association between income and service use, with individuals in the lower income category being 85% more likely to seek care (OR=1.9) than those not in the lower income category. The presence of social support was significantly associated with a 40% reduction in the likelihood of seeking treatment than those without such support (OR=0.6).

Among the need factors, the presence of a chronic condition increased the probability of using services by approximately 80% (OR=1.8). Having low life satisfaction almost doubled the likelihood of seeking care than adequate or high life satisfaction (OR=2.0), as did having low perceived mental health (OR=1.9). And finally, compared to those with comorbid depression and anxiety disorders, there was no significant difference in the rate of service utilization among individuals with depression only, but individuals with an anxiety disorder, were

80% less likely to seek care than those with comorbid depression and anxiety (OR=0.2).

In 2002, some similarities and some differences were found when compared with the data from 1991. As in the case with the 1991 respondents, women in the 2002 survey were over twice as likely as men to seek care for problems with their emotions, mental health or use of alcohol or illicit drugs (OR=2.3). Individuals in the 15 to 24 year age group were also less likely to seek care (OR=0.2). Furthermore, as one would expect, having low self-perceived mental health more than doubled one's probability of seeking health care (OR=2.3). And finally, individuals in the anxiety disorder group were 80% less likely to seek care compared to individuals with comorbid depression and anxiety disorders (OR=0.2).

However, some determinants of service utilization that were not found to be significant in the 1991 data were significant in the 2002 data. In 2002, individuals with depression were significantly less likely to seek services than those with comorbid depression and anxiety (OR=0.5). Also, Caucasian respondents were much more likely to use services than non-Caucasian respondents (OR=2.5). Respondents who were employed in the preceding year were found to be 45% less likely to seek care than those who were not employed (OR=0.5). The presence of a disability increased the likelihood of seeking care by 76% (OR=1.8). And finally, the presence of both mania and substance dependence problems increased one's likelihood of seeking services (OR=2.2 and OR=2.8, respectively). Unlike the 1991 respondents, marital status, social support, income, the presence of a chronic condition, or satisfaction with life, were not found to be statistically significantly predictive of use of services for problems with emotions, mental health or use of alcohol or illicit drugs in 2002.

Table 12. Multivariate model of mental health service utilization - Individual level predictors, 1991 - OMHS Model 1

	OR (95% CI)[1]	p-value
Predisposing Variables		
Age 15 - 24	0.27 (0.14-0.50)	<.01
Age 25 - 44	1.00	---
Age 45 - 64	0.61 (0.39-0.95)	0.03
Female	2.48 (1.67-3.69)	<.01
Married/common-Law	1.00	---
Single	1.23 (0.71-2.13)	0.46
Widowed	7.15 (2.11-24.26)	0.00
Separated, divorced	0.87 (0.44-1.70)	0.68
Canada-born	1.61 (1.00-2.59)	0.05
Caucasian	1.40 (0.87-2.25)	0.16
Enabling Variables		
< high school education	1.00	---
High school education	1.19 (0.73-1.96)	0.48
Some post-secondary education	0.89 (0.52-1.51)	0.65
Post-secondary education	1.41 (0.82-2.40)	0.21
Presence of social support	0.58 (0.38-0.88)	0.01
Low income	1.85 (1.12-3.04)	0.02
Employed in preceding year	0.77 (0.51-1.15)	0.20
Urban Residence	1.60 (0.91-2.83)	0.11
Need Variables		
Chronic conditions	1.78 (1.13-2.78)	0.01

(continued)

1. Odds ratios are adjusted for all other variables in the model

Table 12 (*continued)* Multivariate model of mental health service utilization - Individual level predictors, 1991 - OMHS Model 1

	OR (95% CI)[1]	p-value
Disability	1.12 (0.73-1.74)	0.60
Low life satisfaction	1.95 (1.34-2.82)	0.00
High stress level in life	1.23 (0.82-1.84)	0.32
Comorbid depression and anxiety	1.00	---
Depression only	0.88 (0.52-1.49)	0.64
Anxiety only	0.19 (0.12-0.33)	<.01
Mania	0.69 (0.33-1.43)	0.32
Substance dependence	1.32 (0.73-2.38)	0.36
Low perceived physical health	0.72 (0.45-1.15)	0.17
Low perceived mental health	1.89 (1.13-3.15)	0.02

1. Odds ratios are adjusted for all other variables in the model

Table 13. Multivariate model of mental health service utilization – Individual level predictors, 2002 - CCHS 1.2 Model 1

	OR (95% CI)	p-value
Predisposing Variables		
Age 15 - 24 years	0.21 (0.12-0.37)	<.01
Age 25 - 44 years	1.00	---
Age 45 - 64 years	0.80 (0.47-1.35)	0.40
Female	2.31 (1.52-3.53)	<0.01
Married/common-Law	1.00	---
Single	1.65 (1.01-2.70)	0.04
Widowed	0.58 (0.15-2.32)	0.44
Separated, divorced	1.29 (0.74-2.27)	0.37
Canada-born	0.93 (0.49-1.73)	0.81
Caucasian	2.52 (1.25-5.07)	0.01
Enabling Variables		
< high school education	1.00	---
High school education	1.13 (0.61-2.09)	0.70
Some post-secondary education	1.40 (0.67-2.91)	0.37
Post-secondary education	1.03 (0.61-1.74)	0.90
Presence of social support	0.80 (0.38-1.67)	0.55
Low income	1.13 (0.64-1.99)	0.68
Employed in preceding year	0.54 (0.35-0.84)	0.01
Urban Residence	1.13 (0.59-2.17)	0.72
Need Variables		
Chronic conditions	1.15 (0.72-1.82)	0.55

(continued)

1. Odds ratios are adjusted for all other variables in the model

Table 13 (*continued)* Multivariate model of mental health service utilization - Individual level predictors, 2002 – CCHS 1.2 Model 1

	OR (95% CI)[1]	p-value
Disability	1.76 (1.14-2.71)	0.01
Low life satisfaction	0.80 (0.51-1.25)	0.33
High stress level in life	0.77 (0.50-1.20)	0.25
Comorbid depression and anxiety	1.00	---
Depression only	0.52 (0.27-0.98)	0.04
Anxiety only	0.21 (0.11-0.39)	<.01
Mania	2.23 (1.08-4.60)	0.03
Substance dependence	2.80 (1.29-6.09)	0.01
Low perceived physical health	0.83 (0.51-1.37)	0.47
Low perceived mental health	2.27 (1.42-3.62)	<.01

1. Odds ratios are adjusted for all other variables in the model

4.5 Multilevel predictors of service utilization

Once the individual-level predictors of service utilization were examined, the next step was to assess the association between Census Subdivision-level (CSD) factors and service utilization for problems with emotions, mental health or use of alcohol or illicit drugs. Multilevel analyses were carried out, the results of which are shown in Tables 14 to 21. Table 14 shows the comparison of mean proportions of the demographic variables (age, marital status, Canadian citizenship, visible minority, unemployment rate, and income cut off) between those who used health care services and those who did not for both 1991 and 2002. There were no significant differences for either time point, suggesting a lack of association (unadjusted) between these variables and service utilization. Similar comparisons were made for the CSDs between the three disorder types (Table 15) and again, no noticeable differences were found in any of the CSD level factors

between these three disorder groups. These findings suggest that the characteristics of the communities do not differ by service utilization or disorder group.

The results of the subsequent multilevel regression analyses are shown in Table 16 to 21. The first pair of models includes all of the individual-level variables in the model, with the random effects of CSD accounted for, without any of the CSD-level variables. Thus in this model, the effect of CSD is allowed to vary randomly around an overall mean. The results of these models for 1991 and 2002 are shown in Tables 16 and 17 (OMHS Model 2 and CCHS 1.2 Model 2), respectively. Adjustment for CSD-level variation resulted in some changes in the regression models but mainly in the 1991 data.

In the 1991 survey, what was consistent with OMHS Model 1 was that age was still significant in Model 2 with respondents in the 15 to 24 year age group being 70% less likely (OR=0.3) and those in the 45 to 64 year age group 40% less likely (OR=0.6) to seek care compared to the 25 to 44 year age group. Widowed respondents were also three and a half times as likely to seek care compared to married respondents (OR=3.5). Individuals in the anxiety group were 90% (OR=0.1) less likely to seek care than those with comorbid depression and anxiety. And finally, individuals with low self-perceived mental health were almost twice as likely to seek care (OR=2.0) than those with good self-perceived mental health.

Some differences also arose between Model 1 and Model 2. Being born in Canada, for example, was no longer significantly associated with treatment seeking in Model 2, nor was the presence of social support, low income status, presence of chronic conditions, and life satisfaction. The presence of high stress in life, however, was significant in Model 2, with there being over a 60% increase (OR=1.6) in the likelihood of seeking treatment with self-reported high life stress. Being employed in the preceding year significantly reduced the probability of seeking care by approximately 40% (OR=0.6), while living in an urban setting increased the likelihood of treatment seeking by 60% (OR=1.6). And finally, those with depression were significantly less likely to seeking care compared to those with comorbid depression and anxiety (OR=0.4).

In 2002, Model 1 and Model 2 were much more consistent than the 1991 models. All of the significant factors in Model 1 remained significant in Model 2. Thus in Model 2, the 15 to 24 year age group was 64% less likely to seek care than the 25 to 44 year age group (OR=0.4). Women were still significantly more likely to seek care than men (OR=1.7). Respondents who were employed in the preceding year were 30% less likely to seek care (OR=0.7). With respect to need variables, the presence of a disability increased the likelihood of respondents seeking care by 67% (OR=1.7) and those with low self-perceived mental health were over twice as likely to seek care (OR=2.2) than those with good self-perceived mental health. Individuals with depression or anxiety were significantly less likely to seek care (OR=0.5 and OR=0.2, respectively) than those with comorbid depression and anxiety. And the presence of mania significantly increased the likelihood of seeking care by 90% (OR=1.9). The only difference with CCHS 1.2 Model 1 was that having a post-secondary education increased the likelihood of seeking care by 60% (OR=1.6) when compared to those with less than high school education in Model 2 though this association was not significant in Model 1.

The next pair of models included the inclusion of all of the individual- and CSD-level variables ('full' model). Due to the large number of variables in the models relative to the sample sizes that were available, however, reliable estimates could not be established and therefore the specific results cannot be reported. Hence the 'fullest-possible' models were run to see at least how some of the CSD-level factors fit in the multilevel models (OMHS Model 3 and CCHS 1.2 Model 3). Tables 18 and 19 show the results of the models that include the maximum number of variables that could be included in obtaining reasonably stable estimates for 1991 and 2002, respectively. In the 1991 survey (Table 18) the significant individual-level variables remained the same as in OMHS Model 2. The only significant CSD-level variable was the number of physicians per 100,000 population with an increase in number of physicians increasing the likelihood of seeking care and even this was barely significant (OR=1.0). In the 2002 survey (Table 19), none of the CSD-level variables were statistically

significant and all of the individual-level factors remained stable when compared to CCHS 1.2 Model 2. Thus in the OMHS and CCHS 1.2 surveys, CSD-level variables do not appear to play any significant role in the respondents' treatment-seeking behaviours.

Based on the results of Models 1, 2 and 3 for each time point, therefore, the final model included all of the individual-level factors and the number of physicians per 100,000 population. The results of these analyses are shown in Tables 20 and 21 (OMHS Model 4 and CCHS 1.2 Model 4). This decision was made based on the fact that (1) having fewer variables in the models will provide more reliable estimates given the complexity of the model and the analysis, and (2) the inclusion or exclusion of the CSD-level variables did not have any significant impact on the other variables in the model.

The final model for the 1991 survey therefore found that age, gender, marital status, employment in the preceding year, urban residence, life stress, depression, anxiety, low self-perceived mental health and number of physicians per 100,000 in a CSD were significantly associated with treatment seeking. The respondents in the 15 to 24 year and 45 to 64 year age groups were 70% (OR=0.3) and 40% (OR=0.6) less likely to seek care, respectively, compared to the 25 to 44 year age group respondents. Women were over twice as likely as men (OR=2.1), and widowed respondents were over three times as likely (OR=3.6) as married respondents to seek care. In terms of enabling factors, individuals who were employed in the preceding year were 40% less likely to seek care than those not employed in preceding year (OR=0.6), whereas respondents living in an urban setting were 60% more likely than rural residents (OR=1.6). And respondents reporting high life stress were 66% more likely than respondents reporting low stress to seek help (OR=1.7).

With respect to the need factors, respondents with either depression or anxiety were both significantly less likely to seek care than those with comorbid depression and anxiety (OR=0.4 and OR=0.1, respectively), whereas those with low self-perceived mental health were twice as likely to seek care as those with good self-perceived mental health (OR=2.1). And lastly, the number of physicians

per 100,000 population in a CSD was positively associated with treatment seeking (OR=1.0).

In the final model for the 2002 survey, age, gender, education, employment in preceding year, presence of disability, depression, anxiety, mania, substance dependence and low perceived mental health were significantly associated with seeking mental health services. Respondents in the 15 to 24 year age group were significantly less likely to seek care than those in the 25 to 44 year age group (OR=0.4). Women were 70% more likely to seek care than men (OR=1.7) and respondents with post-secondary education were 60% more likely to seek care than those with less than high school education (OR=1.6). With respect to enabling factors, respondents who were employed in the preceding year were 30% less likely to seek care than those who did not work in the preceding year.

And with regards to need variables in CCHS 1.2 Model 4, individuals with a disability were 70% more likely to seek care than those without a disability (OR=1.7). Respondents with mania were 87% more likely than non-mania respondents (OR=1.9), while those with substance dependence were twice as likely as non-substance-dependent respondents (OR=2.2) to seek care. Compared to the respondents with comorbid depression and anxiety, those with depression were 55% less likely (OR=0.5) and those with anxiety disorders were approximately 75% less likely (OR=0.2) to seek help. And finally, those with low self-perceived mental health were over twice as likely to seek care (OR=2.2) than those with good self-perceived mental health.

Thus comparing the 1991 and 2002 surveys, the consistently significant predictors of treatment seeking were that among people with depression and/or anxiety, those in the 25 to 44 years age group were more likely to seek care than those in the 15 to 24 years age group. Women were more likely than men, and the unemployed in the preceding year were more likely than those who were employed, to seek treatment. Furthermore, individuals with comorbid depression and anxiety were significantly more likely to have sought treatment than those with depression only as well as those in the anxiety group. And finally,

respondents who reported low self-perceived mental health were more likely to seek care than those with higher self-perceived mental health.

Significant associations specific to the 1991 data were that people in the 44 to 64 years age group with depression and/or anxiety were 40% less likely to seek treatment than the 25-44 year olds, widowed respondents were over three and a half times more likely to seek treatment than married respondents. Respondents living in urban residence were 60% more likely than rural residents, and those with high life stress were 70% more likely to seek care than those with lower levels of life stress. And finally, the number of physicians per 100,000 in CSDs showed a positive association with increased treatment seeking.

Significant associations specific to 2002 were that respondents with post-secondary education were 60% more likely to get treatment than those with less than high school education. Among the DEPANX respondents, those with a disability were 70% more likely to seek care without a disability. Furthermore, individuals with a comorbid manic condition were 90% more likely to get treatment than those without mania, and those with comorbid substance dependence were over twice as likely to seek treatment than those without the dependence, thereby supporting the notion that the added burden of comorbid conditions would be associated with a greater likelihood of seeking treatment.

Table 14. Mean proportions of census subdivision level demographic variables for 1991 and 2002 by Service Utilization

	Service Users	Non-service users
OMHS (1991)	(N=277)	(N=623)
% Female	51.0 (50.8-51.1)	51.0 (50.9-51.2)
% aged 15-24 years	14.3 (14.2-14.4)	14.1 (14.1-14.3)
% aged 24-45 years	34.1 (33.7-34.5)	34.1 (33.8-34.3)
% aged 45-64 years	19.8 (19.6-20.1)	19.9 (19.7-20.0)
% aged 65 years and older	11.7 (11.3-12.2)	12.0 (11.7-12.3)
% single	29.3 (28.7-29.9)	29.6 (29.1-30.0)
% married	55.5 (54.7-56.3)	55.3 (54.7-55.9)
% separated or divorced	8.64 (8.5-8.8)	8.5 (8.4-8.7)
% widowed	6.51 (6.3-6.8)	6.6 (6.5-6.8)
% Canadian citizen	90.7 (90.0-91.4)	90.4 (89.9-90.9)
% visible minority	40.6 (40.0-41.3)	41.1 (40.7-41.5)
Unemployment rate	8.6 (8.4-8.9)	8.7 (8.5-8.9)
% under low income cut off	13.6 (13.0-14.3)	14.1 (13.6-14.5)
CCHS 1.2 (2002)	(N=482)	(N=535)
% Female	51.2 (51.2-51.3)	51.1 (51.1-51.2)
% aged 15-24 years	12.9 (12.8-13.0)	13.0 (12.9-13.1)
% aged 24-45 years	30.6 (31.3-30.9)	31.0 (30.8-31.3)
% aged 45-64	23.7 (23.5-23. 9)	23.6 (23.4-23.7)
% aged 65 years and older	13.3 (13.0-13.6)	12.7 (12.4-13.0)
% single	23.4 (23.0-23.8)	23.9 (23.6-24.3)
% married	59.8 (29.4-60.2)	60.0 (59.5-60.4)
% separated or divorced	10.3 (10.2-10.4)	9.9 (9.8-10.1)
% widowed	6.5 (6.4-6.6)	6.2 (6.1-6.3)
% Canadian citizen	93.4 (92.9-93.9)	92.4 (92.0-92.9)
% visible minority	15.5 (14.1-16.9)	19.0 (17.5-20.4)
Unemployment rate	6.2 (3.0-6.3)	6.0 (5.9-6.1)
% under low income cut off	14.0 (13.5-14.5)	13.9 (13.5-14.4)

Table 15. Mean proportions of census subdivision level demographic variables for 1991 and 2002 by Disorder

	Depression	Anxiety	Both
OMHS (1991)	**(N=207)**	**(N=560)**	**(N=133)**
% Female	51.1 (50.9-51.3)	50.9 (50.8-51.1)	51.0 (50.8-51.3)
% aged 15-24 years	14.2 (14.1-14.4)	14.2 (14.1-14.3)	14.2 (14.0-14.3)
% aged 24-45 years	33.6 (33.2-34.0)	34.2 (33.9-34.4)	34.6 (34.0-35.3)
% aged 45-64	20.0 (19.8-20.3)	19.8 (19.7-20.0)	19.8 (19.5-20.0)
% aged 65 years and older	12.3 (11.9-12.8)	11.7 (11.4-12.0)	12.0 (11.5-12.6)
% single	28.9 (28.3-29.5)	29.5 (29.0-29.9)	30.8 (29.7-31.8)
% married	55.7 (54.8-56.6)	55.5 (54.9-56.2)	53.7 (52.4-55.1)
% separated or divorced	8.6 (8.4-8.9)	8.5 (8.3-8.7)	8.8 (8.5-9.1)
% widowed	6.8 (6.5-7.0)	6.5 (6.3-6.7)	6.7 (6.4-7.0)
% Canadian citizen	90.9 (90.1-91.7)	90.6 (90.1-91.1)	89.5 (88.4-90.7)
% visible minority	40.8 (40.1-41.5)	41.2 (40.7-41.6)	40.4 (39.4-41.3)
Unemployment rate	8.8 (8.5-9.1)	8.5 (8.4-8.7)	9.1 (8.7-9.5)
% under low income cut off	13.9 (13.1-14.7)	13.6 (13.2-14.1)	15.3 (14.3-16.3)

(continued)

Table 15 *(continued)* Mean proportions of census subdivision level demographic variables for 1991 and 2002 by Disorder

	Depression	**Anxiety**	**Both**
CCHS 1.2 (2002)	**(N=404)**	**(N=412)**	**(N=201)**
% Female	51.2 (51.1-51.2)	51.2 (51.1-51.3)	51.1 (51.0-51.3)
% aged 15-24 years	13.0 (12.9-13.1)	13.0 (12.9-13.1)	12.9 (12.7-13.0)
% aged 24-45 years	30.8 (30.5-31.1)	30.9 (30.6-31.2)	30.9 (30.4-31.3)
% aged 45-64	23.7 (23.5-23.9)	23.6 (23.4-23.8)	23.6 (23.3-23.8)
% aged 65 years and older	12.9 (12.6-13.3)	12.9 (12.5-13.2)	13.1 (12.6-13.6)
% single	23.8 (23.4-24.2)	23.8 (23.3-24.2)	23.3 (22.7-24.0)
% married	59.8 (59.4-60.3)	60.0 (59.5-60.5)	59.9 (59.2-60.5)
% separated or divorced	10.1 (9.9-10.2)	10.0 (9.8-10.2)	10.3 (10.1-10.5)
% widowed	6.3 (6.2-6.5)	6.2 (6.0-6.4)	6.5 (6.3-6.7)
% Canadian citizen	92.7 (92.1-93.2)	93.0 (92.5-93.5)	92.9 (92.1-93.6)
% visible minority	18.2 (16.6-19.9)	16.9 (15.4-18.5)	14.4 (15.0-19.8)
Unemployment rate	6.1 (6.0-6.3)	5.95 (5.8-6.1)	6.2 (6.0-6.5)
% under low income cut off	14.1 (13.6-14.7)	13.81 (13.3-14.4)	14.0 (13.2-14.8)

Table 16. Multivariate and multilevel regression model of mental health service utilization with random effects of CSD only for 1991 – OMHS Model 2 (N=900)

	OR (95% CI)[1]	p-value
Predisposing Variables		
Age 15-24 years	0.31 (0.17-0.56)	0.0001
Age 25-44 years	1.00	---
Age 45-64 years	0.61 (0.37-1.00)	0.049
Female	2.12 (1.40-3.20)	0.0004
Married/common-Law	1.00	---
Single	1.64 (0.96-2.81)	0.0721
Widowed	3.45 (1.21-9.79)	0.0203
Separated, divorced	1.12 (0.64-1.97)	0.6904
Canada-born	0.99 (0.59-1.66)	0.9724
Caucasian	1.31 (0.79-2.17)	0.2909
Enabling Variables		
< high school education	1.00	---
High school education	0.78 (0.48-1.30)	0.3417
Some post-secondary education	0.89 (0.52-1.51)	0.6607
Post-secondary education	1.24 (0.73-2.11)	0.4277
Presence of social support	1.01 (0.65-1.57)	0.9742
Low income	1.50 (0.94-2.40)	0.0877
Employed in preceding year	0.61 (0.41-0.92)	0.0176
Urban Residence	1.64 (1.04-2.59)	0.033
Need Variables		
Chronic conditions	1.32 (0.86-2.04)	0.2063
Disability	1.18 (0.77-1.82)	0.4436

(continued)

1. Odds ratios are adjusted for all other variables in the model

Table 16 *(continued)* Multivariate and multilevel regression model of mental health service utilization with random effects of CSD only for 1991 – OMHS Model 2 (N=900)

	OR (95% CI)[1]	p-value
Low life satisfaction	1.44 (0.98-2.12)	0.0646
High stress level in life	1.63 (1.09-2.46)	0.0183
Comorbid depression & anxiety	1.00	---
Depression only	0.39 (0.23-0.67)	0.0005
Anxiety only	0.10 (0.06-0.17)	<.0001
Mania	0.97 (0.46-2.05)	0.9368
Substance dependence	0.93 (0.53-1.63)	0.7878
Low perceived physical health	1.08 (0.69-1.68)	0.7349
Low perceived mental health	1.99 (1.21-3.29)	<0.01

1. Odds ratios are adjusted for all other variables in the model

Table 17. Multivariate and multilevel regression model of mental health service utilization with random effects of CSD only for 2002 - CCHS 1.2 Model 2 (N=1,017)

	OR (95% CI)[1]	p-value
Predisposing Variables		
Age 15-24 years	0.36 (0.24-0.56)	<.0001
Age 25-44 years	1.00	---
Age 45-64 years	0.88 (0.61-1.25)	0.4646
Female	1.70 (1.25-2.31)	0.0008
Married/common-Law	1.00	---
Single	1.39 (0.95-2.03)	0.0854
Widowed	1.13 (0.50-2.55)	0.7625
Separated, divorced	1.30 (0.87-1.96)	0.2002
Canada-born	1.37 (0.89-2.09)	0.1517
Caucasian	1.38 (0.84-2.25)	0.2009
Enabling Variables		
< high school education	1.00	---
High school education	1.17 (0.75-1.81)	0.4836
Some post-secondary education	1.47 (0.88-2.44)	0.1376
Post-secondary education	1.60 (1.09-2.35)	0.0169
Presence of social support	1.09 (0.68-1.74)	0.714
Low income	1.14 (0.76-1.72)	0.5123
Employed in preceding year	0.71 (0.52-0.96)	0.0278
Urban Residence	1.09 (0.71-1.67)	0.6988
Need Variables		
Chronic conditions	1.00 (0.73-1.38)	0.9941
Disability	1.67 (1.22-2.28)	0.0014

(continued)

1. Odds ratios are adjusted for all other variables in the model

Table 17 *(continued)* Multivariate and multilevel regression model of mental health service utilization with random effects of CSD only for 2002–CCHS 1.2 Model 2 (N=1,017)

	OR (95% CI)[1]	p-value
Low life satisfaction	0.98 (0.71-1.34)	0.8926
High stress level in life	1.03 (0.76-1.40)	0.831
Comorbid depression & anxiety	1.00	---
Depression only	0.45 (0.30-0.69)	0.0003
Anxiety only	0.23 (0.15-0.35)	<.0001
Mania	1.89 (1.13-3.16)	0.0159
Substance dependence	2.24 (1.33-3.79)	0.0028
Low perceived physical health	0.89 (0.62-1.28)	0.5297
Low perceived mental health	2.17 (1.54-3.05)	<.0001

1. Odds ratios are adjusted for all other variables in the model

Table 18. Multivariate and multilevel regression model of mental health service utilization with both random effects and CSD variables for 1991 – OMHS Model 3 (N=900)

	OR (95% CI)[1]	p-value
Predisposing Variables		
Age 15-24 years	0.31 (0.17-0.56)	0.0001
Age 25-44 years	1.00	---
Age 45-64 years	0.59 (0.36-0.97)	0.0394
Female	2.12 (1.40-3.21)	0.0004
Married/common-Law	1.00	---
Single	1.66 (0.96-2.88)	0.0708
Widowed	3.75 (1.31-10.73)	0.0139
Separated, divorced	1.16 (0.66-2.04)	0.6148
Canada-born	0.99 (0.58-1.68)	0.9595
Caucasian	1.29 (0.78-2.15)	0.3227
Enabling Variables		
< high school education	1.00	---
High school education	0.81 (0.49-1.33)	0.4033
Some post-secondary education	0.94 (0.55-1.60)	0.82
Post-secondary education	1.35 (0.79-2.32)	0.2712
Presence of social support	0.98 (0.63-1.53)	0.9345
Low income	1.50 (0.93-2.42)	0.0922
Employed in preceding year	0.60 (0.40-0.91)	0.0166
Urban Residence	2.06 (1.13-3.78)	0.0191
Need Variables		
Chronic conditions	1.34 (0.87-2.08)	0.1856
Disability	1.21 (0.78-1.87)	0.3892

(continued)

1. Odds ratios are adjusted for all other variables in the model

Table 18 *(continued)* Multivariate and multilevel regression model of mental health service utilization with both random effects and CSD variables for 1991 – OMHS Model 3 (N=900)

	OR (95% CI)[1]	p-value
Low life satisfaction	1.41 (0.95-2.08)	0.0844
High stress level in life	1.67 (1.11-2.51)	0.0142
Comorbid depression & anxiety	1.00	---
Depression only	0.39 (0.23-0.67)	0.0006
Anxiety only	0.10 (0.06-0.17)	<.0001
Mania	1.04 (0.49-2.22)	0.9141
Substance dependence	0.94 (0.53-1.67)	0.8369
Low perceived physical health	1.10 (0.70-1.72)	0.6907
Low perceived mental health	2.05 (1.24-3.39)	0.0055
CSD-Level Variables	Parameter Estimates[2]	
% Female	-13.97 (-36.86-8.92)	0.2306
% separated or divorced	2.09 (-16.01-20.20)	0.8201
% widowed	3.06 (-11.65-17.77)	0.6826
% single	1.17 (-6.34-8.68)	0.7592
% Canadian citizen	1.78 (-3.70-7.26)	0.5232
% visible minority	-1.13 (-4.23-1.98)	0.4754
Unemployment rate	-0.001 (-0.09-0.09)	0.9905
% under low income cut off	-0.01 (-0.08-0.06)	0.7365
No. physicians per 100,000 population	0.0002 (0.00-0.00)	0.0333

1. Odds ratios are adjusted for all other variables in the model
2. The parameter estimates are the maximum likelihood estimates, not odds ratios

Table 19. Multivariate and multilevel regression model of mental health service utilization with both random effects and CSD variables for 2002 – CCHS 1.2 Model 3 (N=1,017)

	OR (95% CI)[1]	p-value
Predisposing Variables		
Age 15-24 years	0.27 (0.17-0.43)	<.0001
Age 25-44 years	1.00	---
Age 45-64 years	0.88 (0.61-1.26)	0.4723
Female	1.67 (1.22-2.29)	0.0014
Married/common-Law	1.00	---
Single	1.45 (0.98-2.13)	0.0618
Widowed	0.92 (0.41-2.07)	0.8336
Separated, divorced	1.29 (0.85-1.97)	0.2241
Canada-born	1.18 (0.75-1.86)	0.465
Caucasian	1.05 (0.63-1.75)	0.8528
Enabling Variables		
< high school education	1.00	---
High school education	1.10 (0.71-1.72)	0.6621
Some post-secondary education	1.29 (0.76-2.18)	0.3384
Post-secondary education	1.56 (1.05-2.31)	0.0277
Presence of social support	1.30 (0.81-2.10)	0.2793
Low income	1.13 (0.75-1.71)	0.565
Employed in preceding year	0.69 (0.50-0.94)	0.0194
Urban Residence	1.01 (0.61-1.68)	0.9622
Need Variables		
Chronic conditions	0.90 (0.65-1.25)	0.5381
Disability	1.67 (1.21-2.29)	0.0018

(continued)

1. Odds ratios are adjusted for all other variables in the model

Table 19 *(continued)* Multivariate and multilevel regression model of mental health service utilization with both random effects and CSD variables for 2002 – CCHS 1.2 Model 3 (N=1,017)

	OR (95% CI)[1]	p-value
Low life satisfaction	0.96 (0.69-1.32)	0.7921
High stress level in life	1.04 (0.76-1.42)	0.8047
Comorbid depression & anxiety	1.00	---
Depression only	0.32 (0.20-0.50)	<.0001
Anxiety only	0.15 (0.10-0.25)	<.0001
Mania	1.84 (1.08-3.13)	0.0258
Substance dependence	2.88 (1.68-4.94)	0.0002
Low perceived physical health	0.87 (0.60-1.26)	0.4573
Low perceived mental health	2.10 (1.48-2.99)	<.0001
CSD-Level Variables	Parameter Estimate[2]	
% Female	19.30 (-8.71-47.30)	0.1754
% separated or divorced	2.57 (-11.91-17.05)	0.7263
% widowed	-15.10 (-34.10-3.90)	0.1185
% single	-2.84 (-11.78-6.08)	0.5304
% Canadian citizen	2.78 (-17.71-12.14)	0.713
% visible minority	-1.69 (-6.61-3.23)	0.4989
Unemployment rate	-0.01 (-0.14-0.12)	0.8495
% under low income cut off	0.02 (-0.05-0.10)	0.6242
No. physicians per 100,000 population	-0.001 (-0.003-0.001)	0.416

1. Odds ratios are adjusted for all other variables in the model
2. The parameter estimates are the maximum likelihood estimates, not odds ratios

Table 20. Multivariate and multilevel regression model of mental health service utilization with both random effects and one CSD variable for 1991 - OMHS Model 4 (N=900)

	OR (95% CI)[1]	p-value
Predisposing Variables		
Age 15-24 years	0.31 (0.17-0.55)	0.0001
Age 25-44 years	1.00	---
Age 45-64 years	0.58 (0.35-0.95)	0.0322
Female	2.11 (1.39-3.19)	0.0005
Married/common-Law	1.00	---
Single	1.57 (0.91-2.71)	0.1061
Widowed	3.64 (1.27-10.41)	0.0162
Separated, divorced	1.13 (0.64-1.99)	0.6717
Canada-born	1.04 (0.61-1.75)	0.8943
Caucasian	1.35 (0.81-2.24)	0.245
Enabling Variables		
< high school education	1.00	---
High school education	0.79 (0.48-1.31)	0.3571
Some post-secondary education	0.91 (0.53-1.56)	0.7332
Post-secondary education	1.28 (0.75-2.19)	0.3618
Presence of social support	1.00 (0.64-1.56)	0.9981
Low income	1.47 (0.92-2.36)	0.1106
Employed in preceding year	0.59 (0.39-0.89)	0.0119
Urban Residence	1.60 (1.01-2.55)	0.0471
Need Variables		
Chronic conditions	1.32 (0.85-2.04)	0.2149
Disability	1.22 (0.79-1.87)	0.3763

(continued)

1. Odds ratios are adjusted for all other variables in the model

Table 20 *(continued)* Multivariate and multilevel regression model of mental health service utilization with both random effects and one CSD variable for 1991 – OMHS Model 4 (N=900)

	OR (95% CI)[1]	p-value
Low life satisfaction	1.43 (0.97-2.11)	0.0714
High stress level in life	1.66 (1.10-2.50)	0.0161
Comorbid depression and anxiety	1.00	---
Depression only	0.40 (0.24-0.68)	0.0008
Anxiety only	0.10 (0.06-0.17)	<.0001
Mania	0.99 (0.47-2.09)	0.9751
Substance dependence	0.98 (0.55-1.73)	0.9427
Low perceived physical health	1.08 (0.69-1.70)	0.7288
Low perceived mental health	2.06 (1.25-3.42)	0.005
CSD-Level Variables	Parameter Estimate[2]	
No. physicians per 100,000 population	0.0002 (0.000-0.0003)	0.0404

1. Odds ratios are adjusted for all other variables in the model
2. The parameter estimates are the maximum likelihood estimates, not odds ratios

Table 21. Multivariate and multilevel regression model of mental health service utilization with both random effects and one CSD variable for 2002 – CCHS 1.2 Model 4 (N=1,017)

	OR (95% CI)[1]	p-value
Predisposing Variables		
Age 25-44 years	1.00	---
Age 15-24 years	0.37 (0.24-0.57)	<.0001
Age 45-64 years	0.88 (0.61-1.25)	0.464
Female	1.72 (1.26-2.34)	0.0007
Married/common-Law	1.00	---
Single	1.41 (0.96-2.06)	0.0763
Widowed	1.13 (0.50-2.55)	0.7627
Separated, divorced	1.30 (0.87-1.96)	0.2023
Canada-born	1.38 (0.90-2.12)	0.1409
Caucasian	1.37 (0.83-2.25)	0.2172
Enabling Variables		
< high school education	1.00	---
High school education	1.17 (0.75-1.81)	0.4854
Some post-secondary education	1.47 (0.89-2.45)	0.135
Post-secondary education	1.61 (1.09-2.36)	0.0167
Presence of social support	1.10 (0.69-1.75)	0.7013
Low income	1.14 (0.76-1.71)	0.5202
Employed in preceding year	0.71 (0.53-0.97)	0.0313
Urban Residence	1.11 (0.71-1.74)	0.6394
Need Variables		
Chronic conditions	1.01 (0.73-1.39)	0.9611
Disability	1.69 (1.24-2.30)	0.0011

(continued)

1. Odds ratios are adjusted for all other variables in the model

Table 21 *(continued)* Multivariate and multilevel regression model of mental health service utilization with both random effects and one CSD variable for 2002 – CCHS 1.2 Model 4 (N=1,017)

	OR (95% CI)[1]	p-value
Low life satisfaction	0.99 (0.72-1.36)	0.9446
High stress level in life	1.05 (0.77-1.42)	0.7738
Comorbid depression and anxiety	1.00	---
Depression only	0.46 (0.30-0.70)	0.0003
Anxiety only	0.23 (0.15-0.35)	<.0001
Mania	1.87 (1.12-3.13)	0.0177
Substance dependence	2.24 (1.33-3.79)	0.0028
Low perceived physical health	0.90 (0.62-1.28)	0.5429
Low perceived mental health	2.18 (1.55-3.06)	<.0001
CSD-Level Variables	Parameter Estimate[2]	
No. physicians per 100,000 population	-0.0004 (-0.002-0.001)	0.595

1. Odds ratios are adjusted for all other variables in the model
2. The parameter estimates are the maximum likelihood estimates, not odds ratios

4.6 Types of services used

Among individuals who sought treatment for their mental, emotional or substance use problems, the types of services that they used were examined. As reported earlier, the overall use had increased from 32% in 1991 to 41% in 2002 for all types of mental health services. And when broken down by disorder, the rate of use had gone up among those with anxiety only and both anxiety and depression, but not for those with depression. In order to get a glimpse of what might be really happening with this particular population, the types of services that these individuals were using were examined, broken down in two ways, the first in more detail than the second.

We first categorized the services into the following non-mutually exclusive types: hospital, psychiatrist, family physician, psychologist, other physician, nurse, social worker, religious worker, other professional, internet support group, self-help groups, and telephone hotlines. As shown in Table 22, there was a 14% increase in use of psychiatrists overall, from 26% to 40% with a similar increase only seen among the depression group when broken down by disorder (19% in 1991 vs. 39% in 2002). There was also a significant increase in the use of family physicians with 60% of service users going to a family physician in 1991 and 73% in 2002. For family physicians however, the corresponding disorder-specific increase was only found among individuals with anxiety disorders (46% in 1991 vs. 74% in 2002). And with regards to the use of self-help groups, the rate declined from 15% in 1991 to 8% in 2002. Such a decline was only found among the comorbid group when broken down by disorder (21% in 1991 vs. 8% in 2002).

When comparing between disorders, there was a significant difference in the rate of use of family physicians among the 1991 respondents. The proportion of individuals in the anxiety group who sought treatment with a family physician was significantly less (46%) than among the depression group respondents (69%). On the other hand, the use of self-help groups was significantly greater among the anxiety group (22%) than the depression group (7%). In 2002, there was a significant difference in the rate of use of psychiatrists, with their use being significantly lower in the anxiety group (30%) than in the comorbid group (55%) and depression group (39%).

Table 22. Types of service used in the preceding 12 months by depression or anxiety disorders, 1991 versus 2002

	Overall (N=277)	**Depression** (N=96)	**Anxiety** (N=88)	**Both** (N=93)
OMHS (1991)				
Hospital (%)	6.8 (3.8-9.8)	6.2 (1.3-11.1)	9.3 (3.1-15.5)	4.4 (0.2-8.7)
Psychiatrist (%)	26.0 (20.8-31.2)	17.9 (10.1-25.7)	25.2 (15.9-34.4)	42.0 (31.8-52.2)
FP (%)	59.7 (53.8-65.5)	69.0 (59.5-78.4)	46.3 (35.7-56.9)	60.9 (50.8-71.0)
Psychologist (%)	15.3 (11.1-19.6)	17.5 (9.8-25.3)	11.1 (4.4-17.7)	17.2 (9.4-25.0)
Other MD (%)	4.7 (2.2-7.2)	6.2 (1.3-11.0)	0.7 (-1.1-2.5)	7.3 (1.9-12.7)
Nurse (%)	6.1 (3.3-9.0)	9.7 (3.7-15.7)	2.2 (-0.9-5.3)	5.0 (0.5-9.6)
Social Worker (%)	23.3 (18.3-28.3)	24.1 (15.4-32.9)	21.1 (12.4-29.8)	24.8 (15.9-33.8)
Religious Worker (%)	13.4 (9.4-17.4)	16.6 (9.0-24.1)	9.4 (3.2-15.6)	13.1 (6.1-20.1)
Other Professional (%)	3.8 (1.5-6.0)	0.6 (-1.0-2.1)	7.3 (1.8-12.9)	4.8 (0.4-9.2)
Internet support group %)	NR	NR	NR	NR
Self-Help groups (%)	15.2 (11.0-19. 5)	6.9 (1.8-12.1)	21.86 (13.05-30.67)	21.28 (12.80-29.75)
Telephone hotline (%)	6.8 (3.8-9.7)	3.6 (-0.2-7.4)	8.73 (2.72-14.75)	9.84 (3.68-16.01)

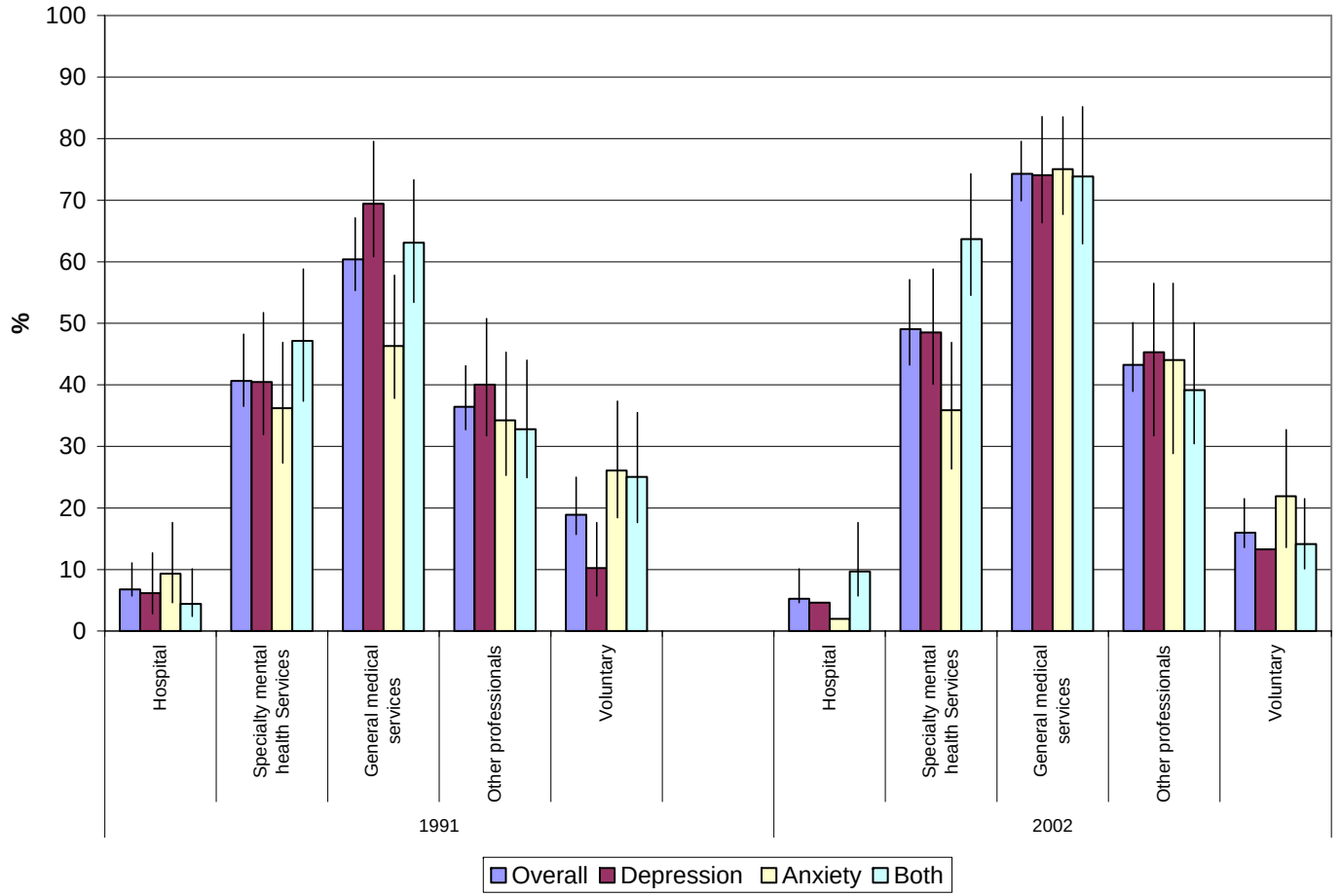
(continued)

Table 22 *(continued)* Types of service used in the preceding 12 months by depression or anxiety disorders, 1991 versus 2002

	Overall (N=482)	**Depression** (N=196)	**Anxiety** (N=135)	**Both** (N=151)
CCHS 1.2 (2002)				
Hospital (%)	5.3 (2.9-7.6)*	S	S	9.7 (4.1-15.3)
Psychiatrist (%)	40.4 (33.9-46.9)	38.5 (28.6-48.4)	29.8 (19. 5-40.1)*	54.5 (43.8-65.2)
FP (%)	73.2 (67.8-78.6)	72.5 (63.0-81.9)	73.8 (65.1-82.5)	73.7 (62.5-85.0)
Psychologist (%)	15.0 (11.0-19.0)	16 (9.3-22.7)*	12.7 (6.02-19.39)*	15.7 (8.3-23.1)*
Other MD (%)	S	S	S	S
Nurse (%)	9.4 (6.1-12.7)*	10.5 (4.6-16.4)*	7.5 (3.0-12.1)*	9.7 (4.5-14.9)*
Social Worker (%)	30.1 (24.5-35.8)	32.3 (22.0-42.7)	31.9 (22.1-41.7)*	24.9 (16.2-33.6)*
Religious Worker (%)	10. 7 (6.9-14.5)*	9.0 (3.8-14.1)*	15.9 (7.0-24.7)*	S
Other Professional (%)	S	S	S	S
Internet support group (%)	S	S	S	S
Self-Help groups (%)	8.0 (5.2-10.8)*	6.6 (2.3-10.9)*	10.5 (3.9-17.2)*	7.7 (3.1-12.3)*
Telephone hotline (%)	5.3 (3.0-7.5)	S	S	S

Data with a coefficient of variation (CV) from 16.6% to 33.3% are identified by an * and should be interpreted with caution. Data with a coefficient of variation (CV) greater than 33.3% were suppressed due to extreme sampling variability and are identified by an 'S'.

Figure 14. Types of services used among the depressed and/or anxious who used health care services, 1991 and 2002



We then categorized the types of services, as defined by Fournier and colleagues [14]: hospital, specialty mental health services, general medical services, other professional, and voluntary support network (Table 23 and Figure 14). There was a significant increase in the use of general medical services from 60% in 1991 to 74%, with a similar significant increase seen only among the individuals with anxiety disorders with 46% having sought general medical services to 75% in 2002.

With respect to disorder-specific differences, in 1991, there were significantly more respondents with depression who sought care from general medical services 69% than those with anxiety disorders 46%. On the other hand, significantly more respondents with anxiety disorders used voluntary services (26%) than those with depression (10%). In the 2002 survey, such differences were not found. There was, however, a significantly greater proportion of respondents with comorbid depression and anxiety disorders who sought specialty mental health services (64%) than those with anxiety disorders alone 36%.

Table 23. Categories of service used in the preceding 12 months by depression or anxiety disorders, 1991versus 2002

OMHS (1991)	**Overall** (N=277)	**Depression** (N=96)	**Anxiety** (N=88)	**Both** (N=93)
Hospital	6.8 (3.8-9.8)	6.2 (1.3-11.1)	9.3 (3.1-15.5)	4.4 (0.2-8.7)
Specialty mental health Services	40.7 (34.8-46.5)	40.5 (30.5-50.5)	36.2 (26.0-46.4)	47.1 (36.8-57.5)
General medical services	60.4 (54.6-66.2)	69.4 (60.0-78.8)	46.3 (35.7-56.9)	63.1 (53.1-73.1)
Other professionals	36.4 (30.7-42.1)	40.1 (30.1-50.0)	34.2 (24.1-44.3)	32.8 (23.1-42.5)
Voluntary	18.9 (14.3-23.5)	10.2 (4.1-16.4)	26.1 (16.7-35.4)	25.0 (16.1-34.0)
CCHS 1.2 (2002)	**Overall** (N=482)	**Depression** (N=196)	**Anxiety** (N=135)	**Both** (N=151)
Hospital	5.3 (2.9-7.6)*	S	S	9. 7 (4.1-15.3)
Specialty mental health Services	49.1 (42.5-55.6)	48.5 (38.4-58.6)	35.9 (24.9-46.9)	63.7 (53.6-73.8)
General medical services	74.3 (69.0-79.6)	74.1 (64.9-83.3)	75.0 (66.5-83.6)	73.9 (62.6-85.1)
Other professionals	43.3 (37.1-49.4)	45.3 (35.1-55.5)	44.1 (32.9-55.2)	39.2 (29.0-49.4)
Voluntary	16.0 (12.1-20.0)	S	21.9 (12.1-31.7)*	14.2 (8.0-20.3)*

1. Definitions adapted from Fournier et al., 1997 (CJP 1997, 42:737)
Specialty MH services: psychiatrists and psychologist; General medical system: general practitioners and other medical specialists; Other professional: nurse, social worker, religious advisor, other (acupuncturist, chiropractor, dietician, etc…); Voluntary support network: Internet support group/chat room, self-help group, and telephone help line
2. Data with a coefficient of variation (CV) from 16.6% to 33.3% are identified by an * and should be interpreted with caution. Data with a coefficient of variation (CV) greater than 33.3% were suppressed due to extreme sampling variability and are identified by an 'S'.

4.7 Medication use

There was a significant increase in the rate of psychotropic medication use between 1991 and 2002. Table 24 shows the proportion of respondents having taken some form of medication in the preceding 12 months. For the total Ontario respondents, the rate of psychotropic medication use (antidepressants or anxiety-reducing medications) increased from 2.2% to 7.7%. As shown in Table 24, and depicted in Figure 15, among the DEPANX sample, the rates of use of these medications were 14% in 1991 and 33% in 2002. The most striking difference was seen among those with anxiety disorders, for whom the rate in 2002 of 25% was triple that of 1991 (7%). In comparison, the increase was less dramatic, yet still significant, in the depression group with 19% on these medications in 1991 and 32% in 2002. A significant difference was also found among the comorbid group, with 32% being on anti-depressant and/or anxiety-reducing medications in 1991 and 53% in 2002.

The rate of use of antidepressant medication (not including anxiety-reducing medications) was also examined. The use of antidepressants between 1991 and 2002 increased dramatically from 2% to 6%. Again, the relative increase was most noticeable among the individuals with anxiety, whose use of antidepressants was three times as high in 2002 than in 1991. A significant increase was also observed in both the depression group and the comorbid depression and anxiety group, with a 200% rise in the rate of antidepressant use in both groups (Figure 16).

Figure 15. Rate of antidepressants or anxiety-reducing medications use among individuals with depression and/or anxiety disorders and the Ontario sample overall

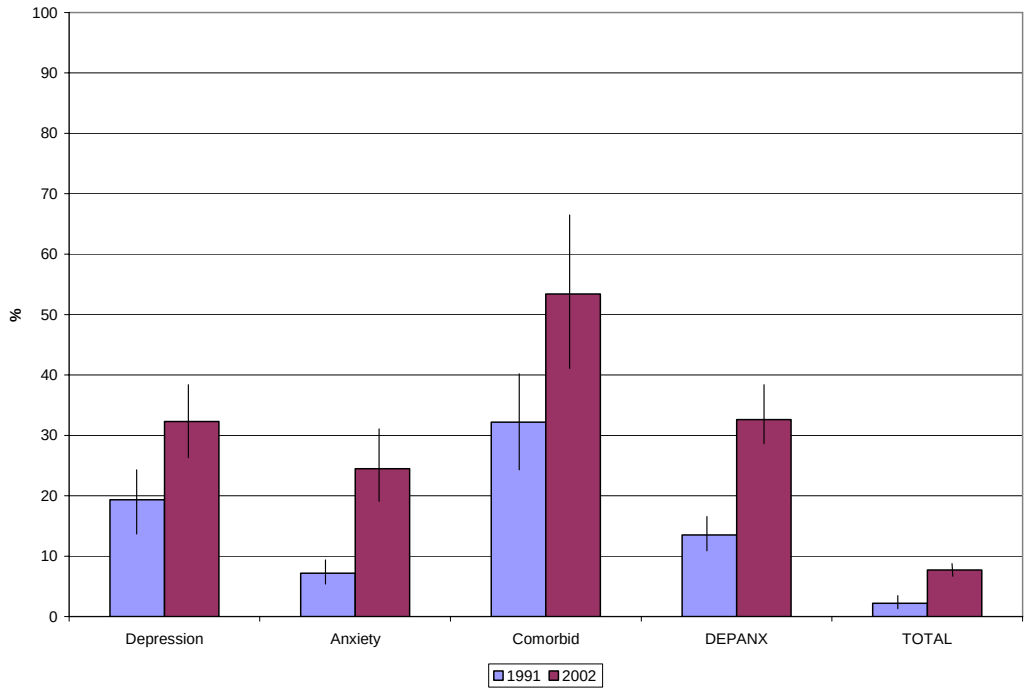


Figure 16. Rate of antidepressant medications use among individuals with depression and/or anxiety disorders and the Ontario sample overall

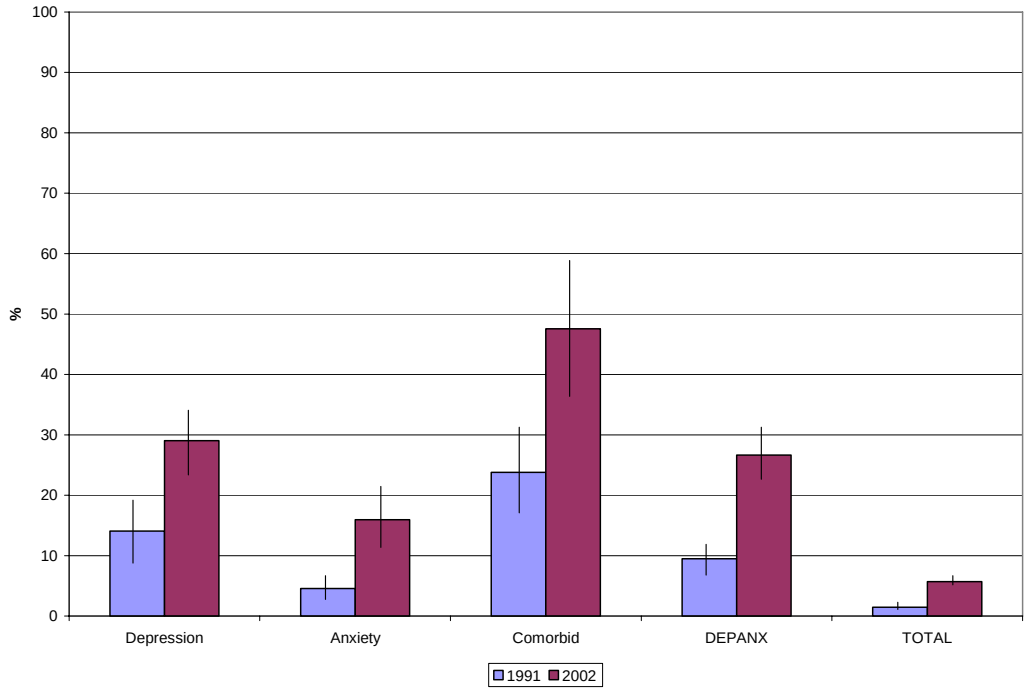


Table 24. Comparison of antidepressants and anxiety-reducing medications use among the depressed and/or anxious in 1991 and 2002

	Antidepressants or anxiety-reducing medication (%)	Antidepressants (%)
OMHS (1991)		
Depression (n=207)	19.3 (13.9-24.8)	14.1 (9.3-18.9)
Anxiety (n=560)	7.2 (5.1-9.4)	4.6 (2.8-6.3)
Depression and Anxiety (n=133)	32.2 (24.2-40.3)	23.8 (16.5-31.1)
DEPANX sample (n=900)	13.5 (11.3-15.8)	9.5 (7.6-11.4)
TOTAL sample (n=8,116)	2.2 (1.8-2.5)	1.5 (1.2-1.7)
CCHS 1.2 (2002)		
Depression (n=404)	32.3 (26.4-38.2)	29.03 (23.3-34.8)
Anxiety (n=412)	24.5 (18.6-30.3)	15.9 (10.9-21.0)
Depression and Anxiety (n=201)	53.4 (41.1-65.7)	47.5 (35.9-59.2)
DEPANX sample (n=1,017)	32.6 (28.8-38.3)	26.7 (23.1-30.3)
TOTAL sample (N=10,415)	7.7 (7.1-8.3)	5.7 (5.1-6.3)

4.8 Use of more than one type of service

Among those respondents who sought treatment in 1991, 45% saw two or more types of health care providers. These rates differed depending on the disorder they had. Fewer respondents with anxiety disorders (30%) sought two or more types of services than those with depression (49%) and those with comorbid depression and anxiety disorders (60%). In 2002, 58% of the DEPANX sample who used services sought two or more types of services. Unlike the 1991 respondents, however, no statistically significant differences were found between disorder groups.

The types of services used among those who sought only one type of service were examined in 1991 and 2002 (Tables 25 and 26). The numbers were too small to make precise estimations for the less commonly used services. Nonetheless,

what was clear was that the most commonly sought service type in 1991 was family physician (51%), followed by psychiatrist (11%) and social workers (11%) (Figure 17). In 2002, again, family physicians were the most sought type of service with 56.2% of users going to see them, followed by psychiatrists (17%) and then social workers (13%). No significant differences were found across disorder groups.

Among respondents who had sought two or more types of services (Tables 25 and 26), family physicians were also the most commonly utilized service overall (72%) in 1991, followed by psychiatrists (44 %) and social workers (38%). In 2002, family physicians were still the most commonly utilized service with 86% of service users having sought their services, followed by psychiatrists (57%) and social workers (43%). With respect to the use of services by family physicians, 87.1% of individuals with depression sought care from a family physicians, which was a significantly higher rate than those with comorbid depression and anxiety (63%) and then anxiety disorders (51%). On the other hand, the rate of use of psychiatrists' services was significantly higher among the anxiety group (60%) and comorbid group (59%) than the depression group (27%). Such differences between disorder groups were not observed in the 2002 survey, which can be explained by the fact that between 1991 and 2002, the rate of use of psychiatrists increased significantly among the depression group from 27% to 61%. Among the anxiety group, there was a significant increase in the rate of use of family physicians from 51% to 82%. A similar significant increase was seen among the comorbid group with 63% having sought care with a family physician in 1991 to 86% in 2002.

Table 25. Types of service utilization by service users with depression and/or anxiety, broken down by one-type versus multiple-service users in 1991 (%)

	Overall (N=900)	Depression (N=207)	Anxiety (N=560)	Both (N=133)
One service type				
Hospital	S	S	S	S
Psychiatrist	11.4 (5.9-17.0)	10.1 (0.1-20.1)	10.2 (1.8-18.6)	17.8 (5.4-30.2)
Family Physician	51.4 (42.7-60.1)	53.7 (37.1-70.3)	45.3 (31.5-59.2)	61.0 (45.2-76.8)
Other MD	S	S	S	S
Psychologist	8.4 (3.6-13.3)	8.5 (-0.8-17.8)	11.8 (2.8-20.8)	S
Nurse	S	S	S	S
Social Worker	11.2 (5.8-16.7)	16.4 (4.1-28.8)	8.4 (0.7-16.1)	S
Religious Worker	2.7 (-0.1-5.5)	3.3 (-2.7-9.3)	S	S
Other Professional	S	S	S	S
Telephone Hotline	2.2 (-0.4-4.7)	S	S	S
Self-help Groups	5.5 (1.6-9.5)	S	S	S
Specialty mental health services	20.7 (13.6-27.7)	20.4 (7.0-33.9)	22.0 (10.5-33.6)	17.8 (5.4-30.2)
General medical services	51.6 (42.9-60.3)	54.2 (37.6-70.8)	45.3 (31.5-59.2)	61.0 (45.2-76.8)
Other professionals	20.1 (13.1-27.0)	22.8 (8.8-36.8)	21.6 (10.2-33.1)	9.5 (0.01-19.0)
Voluntary	7.7 (3.1-12.3)	S	11.0 (2.3-19.8)	11.7 (1.3-22.1)

(continued)

Data with a coefficient of variation (CV) from 16.6% to 33.3% are identified by an * and should be interpreted with caution. Data with a coefficient of variation (CV) greater than 33.3% were suppressed due to extreme sampling variability and are identified by an 'S'.

Table 25 *(continued)* Types of service utilization by service users with depression and/or anxiety, broken down by one-type versus multiple-service users in 1991 (%)

	Overall (N=900)	**Depression (N=207)**	**Anxiety (N=560)**	**Both (N=133)**
Multiple service types				
Hospital	14.1 (8.2-20.0)	10.8 (2.3-19.3)	30.9 (14.3-47.5)	7.4 (-0.1-14.8)
Psychiatrist	43.9 (35.6-52.3)	26.6 (14.5-38.6)	60.1 (42.5-77.8)	58.7 (44.7-72.7)
Family Physician	71.5 (63.9-79.1)	87.1 (78.0-96.3)	50.7 (32.7-68.7)	62.7 (48.9-76.4)
Other MD	10.1 (5.0-15.1)	12.2 (3.3-21.1)	S	12.2 (2.9-21.5)
Psychologist	24.0 (16.8-31.2)	27.4 (15.3-39.6)	9.8 (-0.9-20.5)	28.6 (15.8-41.4)
Nurse	11.7 (6.3-17.1)	16.9 (6.7-27.1)	S	8.4 (0.5-16.3)
Social Worker	38.3 (30.1-46.5)	32.9 (20.1-45.8)	50.9 (32.9-68.9)	37.6 (23.9-51.4)
Religious Worker	26.4 (19.0-33.8)	30.7 (18.1-43.3)	27.2 (11.2-43.2)	19.4 (8.2-30.7)
Other Professional	3.0 (0.2-5.9)	S	S	8.0 (0.3-15.7)
Telephone Hotline	12.4 (6.8-17.9)	5.1 (-0.9-11.1)	25.1 (9.5-40.7)	14.5 (4.5-24.5)
Self-help Groups	27.1 (19.6-34.6)	14.0 (4.5-23.5)	51.2 (33.2-69.2)	29.9 (16.9-42.9)
Specialty mental health services	65.6 (57.6-73.6)	62.5 (49.3-75.7)	70.0 (53.4-86.5)	67.2 (53.8-80.5)
General medical services	72.9 (65.4-80.4)	87.6 (78.6-96.6)	50.7 (32.7-68.7)	66.4 (53.0-79.8)
Other professionals	57.0 (48.7-65.3)	59.2 (45.8-72.6)	64.3 (47.1-81.6)	48.6 (34.4-62.8)
Voluntary	32.7 (24.8-40.6)	18.4 (7.9-29.0)	61.4 (43.8-78.9)	34.3 (20.8-47.8)

Data with a coefficient of variation (CV) from 16.6% to 33.3% are identified by an * and should be interpreted with caution. Data with a coefficient of variation (CV) greater than 33.3% were suppressed due to extreme sampling variability and are identified by an 'S'.

Table 26. Types of service utilization by service users with depression and/or anxiety, broken down by one-type versus multiple-service users in 2002 (%)

	Overall (n=1,017)	Depression (n=404)	Anxiety (n=412)	Both (n=201)
One service type				
Hospital	S	S	S	S
Psychiatrist	17.2 (9.2-25.1)*	S	S	36.9 (13.1-60.8)*
Family Physician	56.2 (46.5-66.0)	55.5 (40.8-70.3)	62.9 (46.1-79.8)	48.7 (27.3-70.1)*
Other MD	S	S	S	S
Psychologist	S	S	S	S
Nurse	S	S	S	S
Social Worker	12.8 (4.9-20.8)*	S	S	S
Religious Worker	S	S	S	S
Other Professional	S	S	S	S
Internet	S	S	S	S
Self-help Groups	S	S	S	S
Telephone Hotline	S	S	S	S
Specialty mental health services	21.5 (13.1-29.8)*	18.3 (8.3-28.4)*	S	36.9 (13.1-60.8)*
General medical services	57.3 (47.6-66.9)	56.9 (42.2-71.6)	64.2 (47.5-80.8)	48.7 (27.3-70.1)*
Other professionals	17.5 (9.1-25.8)*	S	S	S
Voluntary	3.8 (1.4-6.2)*	S	S	S

(continued)

Data with a coefficient of variation (CV) from 16.6% to 33.3% are identified by an * and should be interpreted with caution. Data with a coefficient of variation (CV) greater than 33.3% were suppressed due to extreme sampling variability and are identified by an 'S'.

Table 26 *(continued)* Types of service utilization by service users with depression and/or anxiety, broken down by one-type versus multiple-service users in 2002 (%)

Multiple service types	Overall (n=1,017)	Depression (n=404)	Anxiety (n=412)	Both (n=201)
Hospital	9.1 (5.1-12.0)*	S	S	14.5 (6.3-22.7)*
Psychiatrist	57.3 (48.8-65.7)	60.9 (47.1-74.8)	45.3 (30.5-60.2)*	63.3 (50.7-75.9)
Family Physician	85.5 (80.3-90.7)	87.3 (78.1-96.5)	82.1 (72.3-91.8)	86.3 (77.9-94.6)
Other MD	S	S	S	S
Psychologist	22.7 (16.2-29.3)	25.3 (13.6-37.0)*	18.1 (8-28.1)*	23.6 (13.0-34.2)*
Nurse	15.9 (10.5-21.4)*	19.7 (9.0-30.4)	12.0 (4.2-19.8)*	14.6 (7.3-21.9)*
Social Worker	42.7 (34.9-50.5)	45.8 (31.5-60.1)	48.9 (35.0-63.0)	33.4 (22.0-45.0)*
Religious Worker	16.3 (10.3-22.3)*	15.3 (6.6-24.0)*	24.3 (10.7-37.8)	S
Other Professional	S	S	S	S
Internet	7.5 (3.6-11.5)*	S	S	S
Self-help Groups	12.9 (8.2-17.7)*	S	18.2 (7.2-29.3)*	10.9 (4.3-17.6)*
Telephone Hotline	8.7 (4.8-12.5)*	S	S	S
Specialty mental health services	69.1 (61.5-76.7)	75.0 (62.8-87.1)	51.7 (36.8-66.7)	77.1 (65.9-88.3)
General medical services	86.7 (81.6-91.7)	89.1 (80.6-97.6)	83.3 (73.77-92.79)	86.5 (78.2-94.9)
Other professionals	62.0 (54.1-69.9)	67.0 (54.7-79.3)	65.4 (50.5-80.3)	52.6 (39.7-65.5)
Voluntary	24.9 (18.2-31.5)	21.3 (11.2-31.4)*	35.1 (20.5-49.7)*	20.3 (11.4-29.2)*

Data with a coefficient of variation (CV) from 16.6% to 33.3% are identified by an * and should be interpreted with caution. Data with a coefficient of variation (CV) greater than 33.3% were suppressed due to extreme sampling variability and are identified by an 'S'.

Figure 17. Types of services used among those using only one type of service in 1991 and 2002

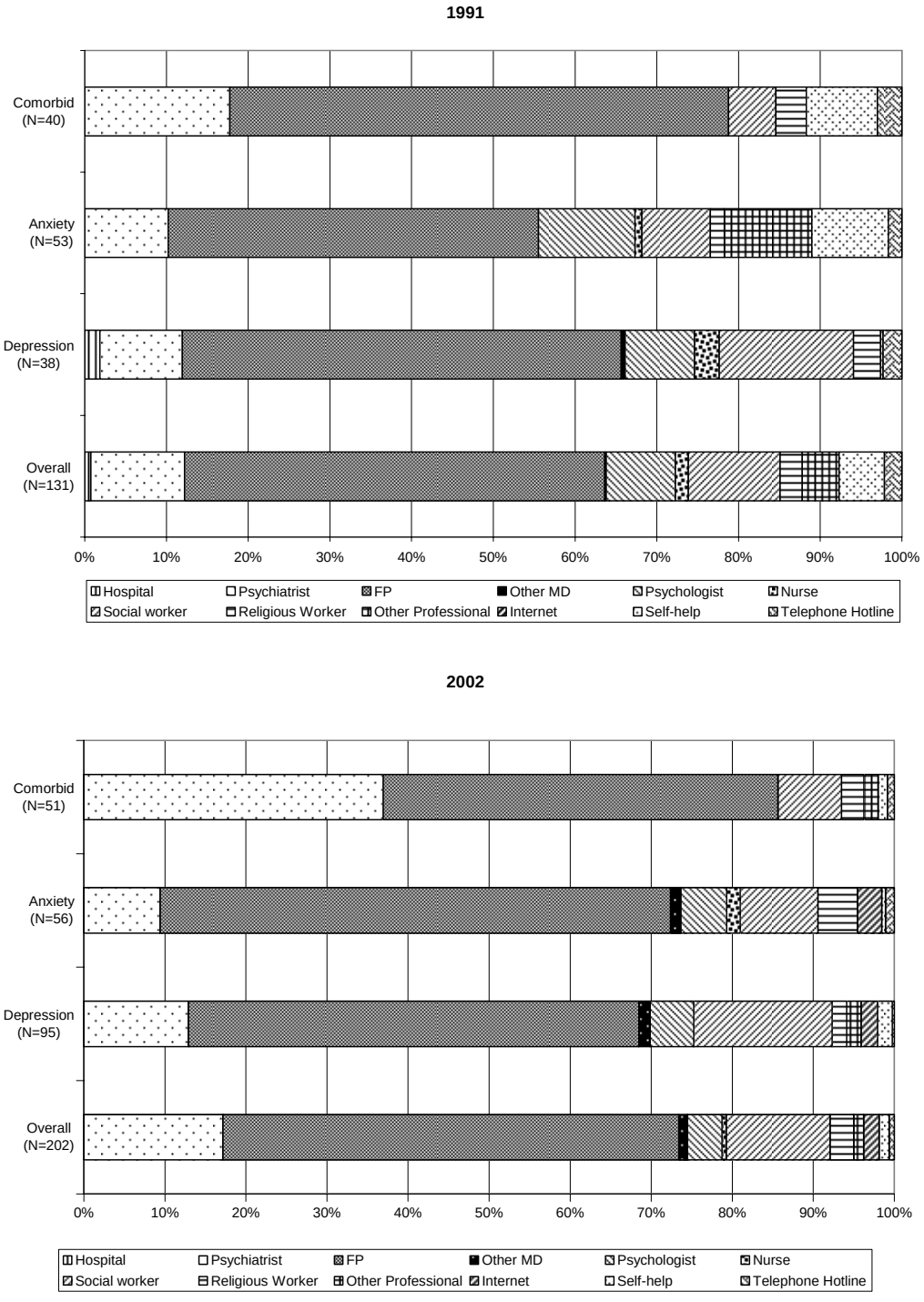
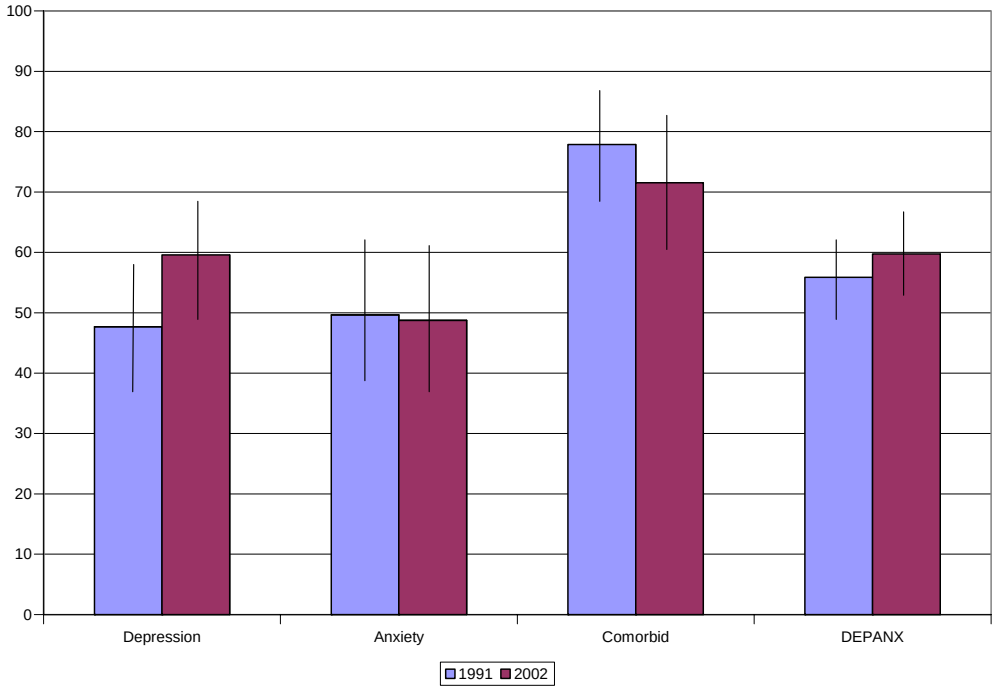


Figure 18. Proportion of service users who used services more than five times in the preceding year (N = 482 in 1991 and N = 277 in 2002)



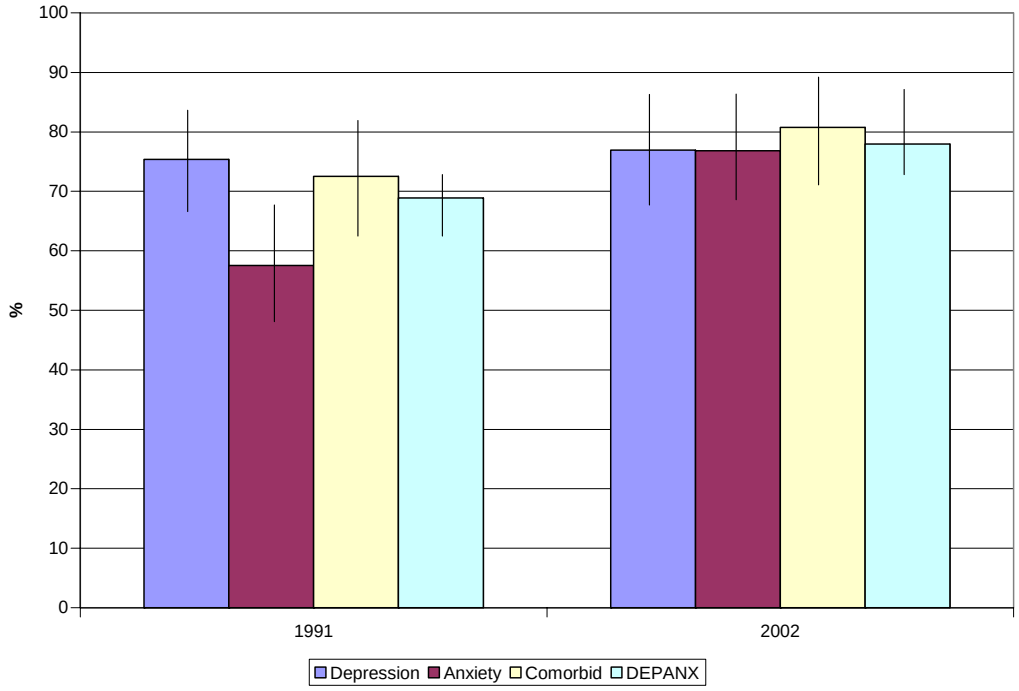
4.9 Frequency of use of services

The frequency of service use by disorder is depicted in Figure 18. The mean frequency of use was 14(SE=33) in 1991 and 20 (SE=50) in 2002.

In 1991, 56% of service users used them more than five times in the preceding year. The rate was very comparable between those with depression and those with anxiety, at 48% and 50%, respectively, whereas the rate among those with comorbid depression and anxiety disorders was much higher at 78%.

In 2002, the proportion of frequent users stayed relatively the same as in 1991 overall (60%). Similarly, the rate of having more than 5 visits in the preceding year was about the same as 1991 among those with depression (60%), anxiety (49%), and comorbid depression and anxiety disorders (72%). The lack of a significant difference could be due to the potential underestimation of service use frequency in the 2002 data, as described previously. Nonetheless, the comorbid depression still remained the most frequent users of services within this sample.

Figure 19. Rate of use of service in a doctor's office in 1991 and 2002 by disorder (N = 482 in 1991 and N = 277 in 2002)



4.10 Setting of service

In 1991, 69% of service users sought care at a doctor's office (Figure 19). The rates of use were similar between those with depression (75%) and comorbid depression and anxiety (73%), and comparatively lower among those with anxiety disorder (58%). In 2002, there was an increase in the access of services in doctor's offices overall (78%), but the increase was mainly due to the rise among those with anxiety disorders (77%), which is more comparable to those with depression (77%) and comorbid depression and anxiety (81%) in 2002.

4.11 Unmet needs and reasons for not getting care

Among the respondents who met the criteria for depression and/or anxiety disorders in the two surveys, respondents were asked if they ever felt the need for care for their emotional, mental or substance use problems but did not go/receive it. As shown in Tables 27 and 28, the rates of self-perceived unmet need did not change significantly between 1991 and 2002 overall or when broken down by disorder groups.

When the rate of unmet need was compared between disorder groups, there were significant differences at both time points. In 1991, respondents with comorbid depression and anxiety disorders reported a significantly higher rate of unmet need (41%) compared to those with depression (22%) or anxiety disorders (15%). This was also the case in 2002, with (47%) of those in the comorbid group reporting unmet needs whereas 23% of the depression group and 20% of the anxiety group reported unmet needs.

Individuals who responded having had unmet needs were further asked for reasons for not getting the needed care. Again, although there were no significant differences between the two time points, there were some differences between the disorder groups worth noting. In 1991, a significantly greater proportion of individuals in the depression group preferred to manage their problems themselves (54%) compared to those in the comorbid group (21%). The 1991 survey also showed that there were significantly more respondents in the comorbid group who were unable to afford to pay for treatment (28%) compared to the anxiety group respondents (5%). In the 2002 survey, a significantly greater proportion of the comorbid respondents reported not having professional help available at the time it was required (40%) than the respondents with depression (19%).

The various barriers to care were categorized into three groups in accordance with the groupings used by Statistics Canada in the CCHS 1.2 survey. These are acceptability, accessibility and availability barriers. Acceptability barriers include preference to manage their needs themselves, not knowing how or where to get help, not thinking anything more could help and being afraid to ask for help or of what others would think. Accessibility barriers include the inability to pay/too expensive, problems such as the distance or transportation or scheduling problems, and language problems. Availability barriers include professional help not being available at the time required, such as the doctor being on holidays, inconvenient hours or there being a long wait. Given these categorizations, respondents in the anxiety group were significantly more likely to report there being acceptability barriers (78%) compared to those in the comorbid

group (48%) in 1991. Disorder-specific differences were also found with accessibility barriers, with the comorbid group having a significantly higher rate of such barriers (32%) compared to both the depression (8%) and anxiety (7%) groups. On the other hand, the 2002 survey respondents with unmet needs did not have any disorder-specific differences with respect to acceptability barriers. There were not enough respondents with the other two other two types of barriers to make reliable comparisons.

Table 27. Comparison of reasons for not seeking care by depression and/or anxiety disorders, 1991

	Overall (N=900)	**Depression** (N=207)	**Anxiety** (N=560)	**Both** (N=133)
Felt need but didn't go	20.0 (17.4-22.7)	22.0 (16.3-27.6)	14.9 (12.0-17.9)	40.5 (32.1-49.0)
Among those with unmet need	(N=156)	(N=52)	(N=63)	(N=41)
ACCEPATBILITY				
▪ Preferred to manage yourself	34.3 (26.7-41.8)	54.3 (40.3-68.3)	30.0 (18.4-41.7)	20.8 (7.8-33.8)
▪ Didn't know how or where to get help	23.7 (17.0-30.5)	22.3 (10.6-34.0)	26.4 (15.2-37.6)	20.5 (7.6-33.4)
▪ Didn't think anything more could help	23.3 (16.6-30.0)	12.4 (3.1-21.6)	30.3 (18.6-41.9)	22.5 (9.2-35.8)
▪ Afraid to ask for help or of what others would think	15.0 (9.3-20.6)	22.6 (10.8-34.4)	10.5 (2.7-18.2)	14.8 (3.4-26.1)
Acceptability overall	68.7 (61.4-76.1)	73.1 (60.6-85.6)	78.31 (67.84-88.77)	47.52 (31.6-63.5)
ACCESSIBILTY				
▪ Couldn't afford to pay / too expensive	11.2 (6.2-16.2)	S	4.9 (-0.6-10.3)	27.7 (13.4-42.0)
▪ Problems i.e., distance/ transportation, childcare or scheduling	4.0 (0.9-7.2)	S	4.2 (-0.9-9.1)	S
▪ Language problems	S	S	S	S
Accessibility overall	13.9 (8.4-19.4)	8.3 (0.5-16.0)	6. 9 (0.5-13.3)	32.0 (17.1-46.9)
AVAILABILITY				
▪ Professional help not available -at–time required	3.6 (0.6-6.5)	S	S	S
Availability overall	3.6 (0.6-6.5)	S	S	S

Data with a coefficient of variation (CV) from 16.6% to 33.3% are identified by an * and should be interpreted with caution. Data with a coefficient of variation (CV) greater than 33.3% were suppressed due to extreme sampling variability and are identified by an 'S'.

Table 28. Comparison of reasons for not seeking care by depression and/or anxiety disorders, 2002

	Overall (N=1,017)	**Depression** (n=404)	**Anxiety** (N=412)	**Both** (N=201)
Felt need but didn't go	25.9 (21.5-30.3)	23.0 (17.0-29.0)	19.9 (14.7-25.2)	47.3 (34.6-59.9)
Among those with unmet need	(N=267)	(N=101)	(N=76)	(N=90)
ACCEPATBILITY				
▪ Preferred to manage yourself	35.8 (26.3-45.2)	40.0 (23.3-56.7)*	45.5 (31.4-59.8)	S
▪ Didn't know how or where to get help	16.2 (10.7-21.7)*	16.7 (7.3-26.1)*	18.31 (6.49-30.1)*	S
▪ Didn't think anything more could help	15.9 (8.7-23.1)*	S	S	S
▪ Afraid to ask for help or of what others would think	15.8 (10.2-21.5)*	14.4 (6.2-22.6)*	S	17.0 (6.5-27.5)*
Availability overall	63.7 (53.2-74.1)	73.2 (61.8-84.6)	70.2 (54.7-85.6)	46.3 (25.7-66.8)*
ACCESSIBILITY				
▪ Couldn't afford to pay / too expensive	9.2 (5.0-13.5)*	S	S	S
▪ Problems i.e., distance/ transportation, childcare or scheduling	S	S	S	S
▪ Language problems	S	S	S	S
Accessibility overall	12.4 (7.2-17.7)*	S	S	S
AVAILABILITY				
▪ Professional help not available -at–time required	21.0 (11.5-30.5)*	19.1 (9.3-28.9)*	S	39.8 (17.6-62.1)*
Availability overall	21.0 (11.5-30.5)*	19.12 (9.3-28.9)*	S	39.8 (17.6-62.1)*

Data with a coefficient of variation (CV) from 16.6% to 33.3% are identified by an * and should be interpreted with caution. Data with a coefficient of variation (CV) greater than 33.3% were suppressed due to extreme sampling variability and are identified by an 'S'.

To explore the lack of significant change in unmet needs further, the rate of completely unmet needs was compared with the rate of partially unmet needs, by assessing the association between service use and unmet needs for the two time points (Table 29). Completely unmet need was defined here as having self-perceived unmet needs and not having sought care in the preceding 12 months. Individuals with partially unmet needs were defined as those who used services in the preceding 12 months but also reported unmet needs. Comparison between 1991 and 2002 showed that the proportion of individuals with complete unmet needs remained stable, whereas the proportion with partial unmet needs was greater in 2002 (13%) compared to 1991 (5%).

The rates of unmet needs were also examined among service users and non-service users in the preceding year at both 1991 and 2002 (Figure 20). Here too, unmet need is quite different between service users and non-users. Unmet needs increased from 16% to 31% among service users, whereas the rate remained the same at 22% among non-service users. Similar changes were seen when broken down by disorder groups as well.

Table 29. Rates of service utilization and unmet needs in 1991 and 2002

1991

Overall (N=900)

		Unmet needs: No	Unmet needs: Yes	
Use of services	No	53.2%	14.8%	623
	Yes	26.8%	5.2%	277
		744	156	900

Depression (N=207)

		Unmet needs: No	Unmet needs: Yes	
Use of services	No	32.1%	12.0%	111
	Yes	45.9%	9.9%	96
		155	52	207

Anxiety (N=560)

		Unmet needs: No	Unmet needs: Yes	
Use of services	No	69.9%	13.1%	472
	Yes	15.2%	1.8%	88
		497	63	560

Comorbid depression and anxiety (N=133)

		Unmet needs: No	Unmet needs: Yes	
Use of services	No	14.1%	28.0%	40
	Yes	45.4%	12.5%	93
		92	41	133

2002

Overall (N=1,017)

		Unmet needs: No	Unmet needs: Yes	
Use of services	No	46.1%	12.6%	535
	Yes	27.9%	13.4%	482
		750	267	1,017

Depression (N=404)

		Unmet needs: No	Unmet needs: Yes	
Use of services	No	46.6%	8.3%	208
	Yes	30.4%	14.8%	196
		744	156	404

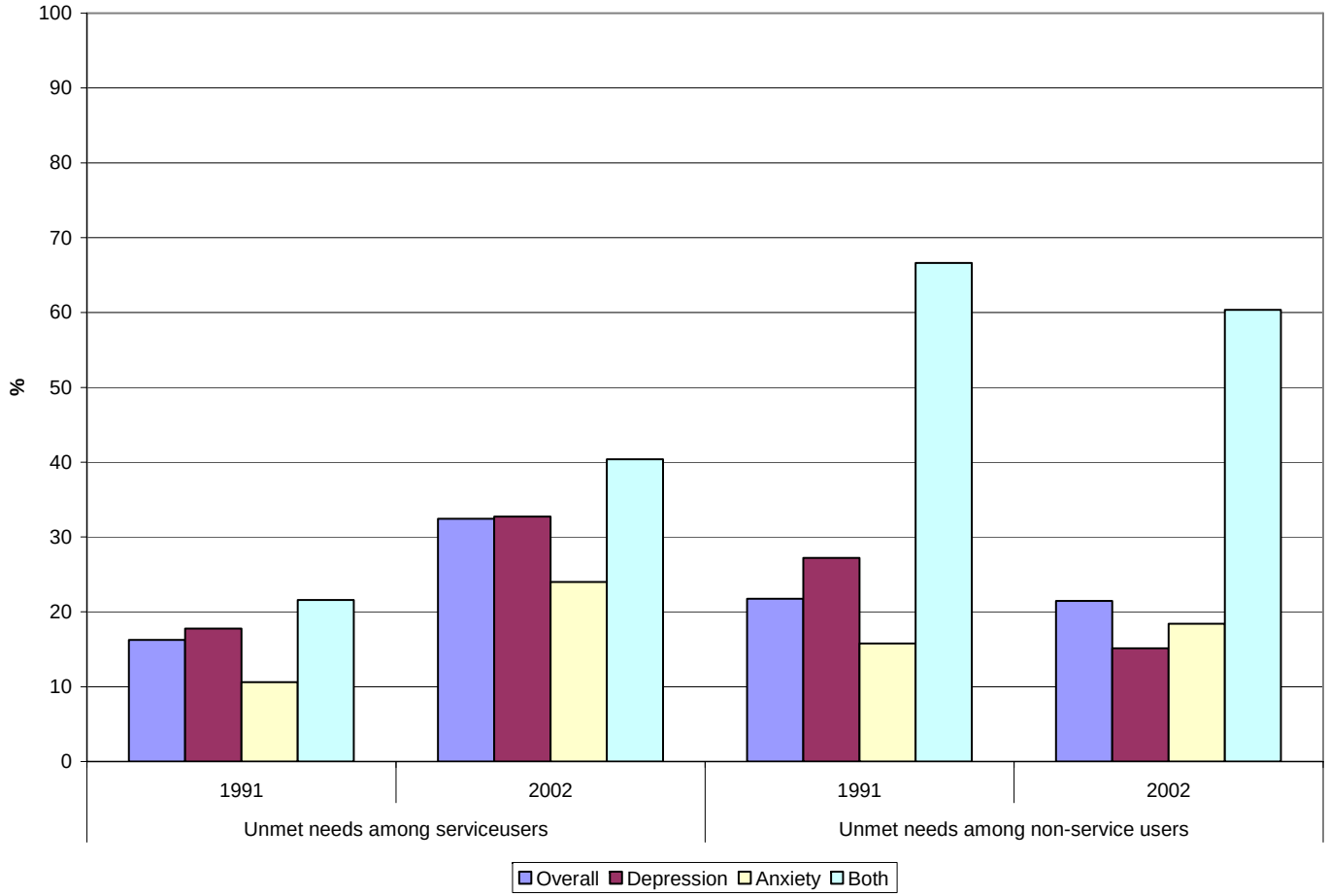
Anxiety (N=412)

		Unmet needs: No	Unmet needs: Yes	
Use of services	No	58.9%	13.3%	277
	Yes	21.2%	6.7%	135
		336	76	412

Comorbid depression and anxiety (N=201)

		Unmet needs: No	Unmet needs: Yes	
Use of services	No	13.6%	20.7%	50
	Yes	39.1%	26.5%	151
		111	90	201

Figure 20. Rate of unmet needs among service users in 1991 (N=900) and 2002 (N=1,017)



5 Discussion

5.1 Summary and discussion of results

5.1.1 Use of services and its predictors

Between 1991 and 2002, there was a 10% increase from 32% to 42% in the use of health care services for problems with emotions, mental health or use of alcohol or illicit drugs among individuals who met diagnostic criteria for depression and/or anxiety disorders. As hypothesized, the utilization rates were lowest among those with anxiety disorders, and highest among those with comorbid depression and anxiety disorders at both time points. Contrary to expectations, however, the relative increase in rate of use between 1991 and 2002 was only significant among those with anxiety disorders; their utilization rate increased by 64%, (from 17% to 28%).

Our findings in Ontario, are similar to a large population survey on mental health and mental health services carried out in the United States from 2001 to 2003 which examined the prevalence of mental disorders as well as mental health service utilization patterns (National Comorbidity Survey – Replication) [314;315]. They found that among the respondents with DSM-IV anxiety, mood, impulse control, and substance disorders in the preceding 12 months, 41% received some form of treatment in the specialty mental health, general medical, human services or alternative medicine sector.

In this study, factors that were significantly associated with greater likelihood of service utilization in both 1991 and 2002 were age 25-44 years (relative to 15 to 24 year olds) and female gender among predisposing factors, not having employment in the preceding year among enabling factors, and presence of anxiety and/or depressive disorder, and low self-perceived mental health among need factors. Significant predictors that were specific to utilization in 1991 were age 25-44 years (relative to 45 to 64 year olds), being a widow, living in an urban area, high daily life stress and the number of physicians per 100,000

population. Significant factors specific to 2002 were post-secondary education, presence of disability, presence of mania, and presence of substance dependence.

5.1.1.1 Age

Consistent with many published findings, individuals in the youngest age group were much less likely to seek care than those in the 25 to 44 year age group. Statistics Canada [316] found the highest rate of any of five mental disorders or two substance dependencies in the young adults aged 15 to 24 years. Approximately 18% of young adults, compared to almost 12% of the 25 to 44 year old adults and 8% of the 45 to 64 year olds reported having experienced mental disorders or substance dependence in the previous year. Nonetheless, they were the least likely age group to seek care [317]. Reasons for persons in this age group to underutilize services for mental disorders, especially when their mental disorder rate is comparatively high, are not yet fully understood. A study by Chandra and Minkovitz [318] found that stigma towards mental illnesses begin at a young age. Over a third of eighth grade children (35%) had moderate to high levels of stigma towards mental health service utilization and approximately 50% had limited levels of stigma. Boys had higher levels of stigma than girls. Such under-utilization of services in this age group is of particular concern because the rate of suicide among adolescents and young adults is high; the greatest increase in suicide deaths between 1960 and 1991 was seen in the 15 to 19 year age group [319].

There may also be parental influences involved in this age group. For example, Richardson [320] found that parents perceived numerous barriers to seeking mental health care for their child. Approximately 30% of parents found that other family members would disapprove. Stigma was another barrier. Thirty percent of parents were concerned about others finding out that their child is receiving mental health care, and 11% felt embarrassed when taking their child to a mental health professional. Trust towards the mental health professional to provide the best care for their child was another concern.

Young adults may also have more difficulty identifying a problem when necessary [141], or knowing where to seek help [142]. Ability to recognize the presence of mental disorders is important if appropriate care is to be sought by these

individuals. Wright and colleagues, for instance, showed that young individuals aged 12 to 25 years, who were able to recognize and label mental disorders correctly, were more likely to seek help and make treatment choices appropriately [321]. Mental health education and promotion is therefore a critical component in improving the detection and management of mental illnesses in young adults.

There are increasingly more sources of information targeted at young adults now compared to 1991, which can potentially have a significant impact on them. For example, there are award-winning, Canada-based websites such as *Mind your Mind* (http://www.mindyourmind.ca/) which is a site for youth "by youth". Young adults can get information, resources and tools that can help them manage stress, crises and mental health problems. This site provides a place where personal stories can be shared. The site also publishes a newsletter called *Lip Service* where specific topics are discussed. For example, one of the issues focuses on anti-stigma campaigns (volume 2 issue 1) and another issues focuses on the difficulties and challenges faced by young men today (volume 2 issue 7). There are also other websites targeted at providing health information to youth such as *YooMagazine* (http://www.yoomagazine.net/#). The use of this website was tested on young adults in four schools covering grades 7 through to 12 [322]. The authors found that use of this website for health information was associated with increased visits to school health centres, guidance counsellors and referrals to health professionals.

There are also educational materials such as *Mauve* (http://pentafolio.com/mauve/adultes/a-adulte.htm), which is an interactive CD-ROM for young adults in times of stress. They include personal accounts, video clips, animation, sound effects, music, writings, photos and illustrations from which teenagers can learn. Stuart (206) [323] also evaluated the impact of a video-based anti-stigma program ("Reach Out program") on high school students from eight schools across Canada. Videos portraying real life experiences of individuals with schizophrenia were accompanied by lesson plans to guide discussion and active learning. Participation in this program increased the students' knowledge about schizophrenia and reduced the likelihood of socially

distancing themselves from persons with mental illnesses. These types of mediums might help young adults recognize mental health problems when they arise and be more open to seeking care when necessary.

And with increasingly more and more family physicians providing mental health care [56], routine screening during regular visits with family physicians can help detect and treat young adults in need of care. Family physicians' offices can also be used to provide educational materials about mental health problems. Craven and colleagues [324], for example, assessed and compared the impact of displaying various pamphlets in waiting rooms versus examination rooms on whether or not patients picked up the educational material. They found that of the pamphlets that were displayed, the one on mood disorders were taken most often, and that significantly more pamphlets were taken from examination rooms than from the waiting room. Although the difference in the location was attributed to the amount of time spent in one location relative to the next, as opposed to the sensitivity of the material, it is important to be aware of effective approaches to providing mental health information to individuals of all ages.

In terms of the older age group, the lower likelihood of utilization among the 45 to 64 year age group, relative to the 25-44 year olds, was only significant in the 1991 dataset. The most likely explanation for this would be that of a cohort effect. Individuals in the 25 to 44 year age group had the highest rate of treatment seeking in both 1991 and 2002. By 2002, the 35 to 44 year olds of 1991 now represented the 45 to 54 years olds. Similarly, the 55 to 64 year olds in 1991 (who were shown to have low treatment seeking) were in the 65 and older group. Thus this shift in individuals from the 25 to 44 age category to the 45 to 64 year category most likely diluted the difference between these two groups with respect to the rate of treatment seeking.

5.1.1.2 Gender

Consistent with other studies, women were significantly more likely to seek care than men, and this association persisted eleven years later. No significant increase in service utilization was found among men, suggesting that there is still much work to be done in terms of finding better approaches to get men with

mental health care needs to seek care. A study using a national longitudinal survey in Canada (the National Population Health Survey) between 1994 and 2000 [325], however, found that the largest increase in the use of antidepressants for major depression was seen among men and among those younger than 35 years, suggesting that there may be some gains being made in getting professional care to this under-treated group of individuals.

Nonetheless, there are still huge efforts necessary to improve awareness, education, and treatment seeking among this population. According to Langlois and Morrison [326], men are still four times as likely to die from suicide than women in Ontario (16% versus 4%). Nationally, suicide was the leading cause of death for men in the 25-29 year and 40-44 year age groups, and the second leading cause for both genders for the 10-24 year age groups after motor vehicle accidents. With approximately 90% of suicides being associated with mental illnesses [5;6], early detection and support for mental illnesses can potentially have a significant impact in preventing suicide and reducing the burden of mental disorders.

Men's health and mental health are slowly gaining attention [327-332]. For example, the Canadian Health Network and the Public Health Agency of Canada recognize the importance of addressing mental health issues in men. Published on their website (http://www.canadian-health-network.ca), articles such as "Men's mental health: a silent crisis", and "Suffering in silence: stigma, mental illness and the workplace" describe the problems with men lacking awareness of their susceptibility to mental illnesses and inform them about common situations where depression is masked by other conditions such as substance abuse. They also provide information about the differences in the manifestation of depression between men and women, as well as the role stigma plays in discouraging men to seek treatment. There are also websites such as the *Toronto Men's Health Network* (http://www.menshealthnetwork.ca) to which men can refer if they have health concerns, including mental health. Men's health magazines such as *Men's Health* (http://www.menshealth.com) are also including articles on mental health that may help men become more informed about the signs and symptoms of mental illnesses and where they can find information and help when necessary.

On the *Mind for Mind* website, as mentioned above, a specific issue of their newsletter was released, entitled "It's hard to be a man". This issue discusses the challenges young men face today in knowing what it is to be a man. Furthermore, June 9-15, 2003, was proclaimed "Men's Health Awareness Week" in the city of Toronto as a means to promote men's awareness of the importance of early detection and treatment of disease and other health and lifestyle issues. These types of information may help men become more attentive to their own health and mental health issues and become more willing to seek treatment when they recognize a need. Targeting men in mental health promotional efforts should therefore be a priority in order to improve detection and treatment of mental illnesses as well as prevention of suicides.

5.1.1.3 Employment

With respect to enabling factors, having been employed in the preceding year reduced the likelihood of seeking care. Possible explanations for the lower likelihood include the hypothesis that being unemployed is a proxy for a poorer level of functioning thereby necessitating them to seek treatment more than those who were employed. It can also be the case that working might make it more difficult to find the time to seek care when necessary. Since most mental health services are only available during normal business hours, it would be difficult to get away to seek care, especially if the individual wishes to do so discreetly. Furthermore, stigma towards mental illnesses at the workplace may reduce the likelihood of treatment seeking among the employed (ie., to stay employed). This is a concern because of the associated absenteeism and lost productivity. Thus, mental disorders in the workplace is a key issue that needs to be better addressed because of the large economic burden that they impose through lost productivity, absenteeism and presenteeism[l].

[l] Presenteeism refers to the "concept has been used to designate the phenomenon of people, despite complaints and ill health that should prompt rest and absence from work, still turning up at their jobs." [333]

The impact of depression and anxiety on the workplace has been widely observed in studies examining disability, performance, absenteeism and presenteeism and their associated costs [334-348]. In the United States, for instance, substantial efforts were made in the 1990's towards public education and information about mental disorders and its treatments [339] and depression was ranked the third most important workplace problem following family crisis and stress by the International Labour Office [340]. Examination into the impact of depression on the workplace have shown that the employees with depression had a greater average length of disability and rate of disability relapse than those with other medical disorders, increased absenteeism and presenteeism, higher turnover, and had the largest medical plan costs of all behavioural health diagnoses [342;343;349].

In the Canadian setting, Dewa and Lin [350] showed that mentally ill individuals experience significantly more partial disability days and extreme effort days[m] within the working population. Dewa and colleagues [337] also showed that about one third of the societal cost from depression is attributable to lost productivity at work. They further found that Canada bears an annual $4.5 billon dollar loss due to reduced productivity. The consequences of the short- and long-term disability associated with mental disorders are that they account for 30% of all disability claims which equal $15 to $33 billion dollar cost annually.

Sullivan [345] also argues that the employers bear most of the economic burden that results from lost productivity from depression. Proactive efforts to minimize the risk factors for depression and anxiety disorders may therefore prove to be very cost-effective in minimizing the use of company resources, and maintain or even improve employee mental health. Sullivan suggests that in the case of depression, proactive action can be taken to identify employees at risk and working to minimize the risk factors before they become heavy users of company

[m] According to Dewa and colleagues [337], *partial disability days* refers to days where a worker was "completely unable to work or carry out normal activities" and *extreme effort days* is defined as "days during which a worker is present at work but functioning at less than full capacity" (p.19).

resources. For employees who are already depressed, appropriate treatment can be provided to reduce lost productivity, absenteeism and presenteeism.

In fact, Dewa and colleagues [351] showed that when recommended antidepressant medication at the appropriate dose was provided, persons with depression returned to work quicker. Among those who returned to work, early intervention was associated with shorter disability period. Goldman and colleagues [344] also assessed the impact of replacing the mental health benefits from the medical plan with a managed care program for a private employer over a nine year period. They found that their mental health care costs changed from an annual 30% increase to a 40% reduction after the first year and an incremental reduction thereafter. The increasing number of persons using mental health care services suggests that the reduction in costs were attributable to fewer outpatient sessions per users, reduced probability of inpatient admission, shorter length of stay if admitted, and lower costs per service. Furthermore, Rost and colleagues [346;347] tested whether provision of enhanced care for depression would be cost-beneficial to employers. They carried out a randomized controlled trial comparing enhanced care versus usual care and found that the employees receiving the enhanced care showed a 6% greater productivity and 23% less absenteeism over two years.

These studies therefore show that depression and anxiety can be costly in the workplace. Employers can contribute towards timely detection and appropriate treatment such that they can dramatically improve their performance, productivity, and absenteeism. Thus, although mental illnesses can lead to unemployment and treatment seeking, being employed could also reduce the likelihood of treatment seeking. The cross-sectional nature of this thesis precludes any examination into the direction of the association. Future studies looking at the direction of the association would give some indication of how much effort should be placed on supported employment for the mentally ill versus mental health education and promotion for workers to prevent the onset of mental illnesses.

5.1.1.4 Urban/rural setting & contextual factors

Interestingly, living in an urban setting was no longer associated with increased treatment seeking in the 2002 survey, and neither was the number of physicians per 100,000 population. One possible explanation might be the coinciding increase in the provision of mental health services by primary care physicians [55;56]. Previous reports have shown that increasingly more specialized physicians are practicing in the bigger cities [91;352], which meant that primary care physicians would provide mental health care in their absence. Also, pharmaceutical companies were strategic in targeting primary care physicians in marketing their antidepressant medication [353;354]. The increased use of medications, described in more detail later in the Discussion section, may have also contributed towards the increase in treatment of mental health problems in rural areas.

5.1.1.5 Education

In the 2002 survey, unlike in the 1991 survey, having postsecondary education was found to increase the likelihood of seeking care compared to those with less than a high school education. Both the Canadian census [78] and the data from this study showed that there was a dramatic increase in the level of education obtained by Canadians between 1991 and 2001. Having more formal education is likely to reflect increased awareness about mental disorders and treatment seeking options, which could, in turn, increase the likelihood for seeking care. For example, education may lead to better recognition of need when one is faced with mental health problems. It may also reduce some of the stigma towards mental illness through increased awareness and understanding of mental illnesses, and the need for treatment in the presence of such illnesses. This, in turn, may make treatment seeking seem more acceptable. It might also increase the likelihood of the individual knowing where to go for help or what their help seeking options would be.

5.1.1.6 Depression, Anxiety, Comorbid depression and anxiety

Compared to persons having comorbid depression and anxiety disorders, those with only anxiety disorders were far less likely to seek treatment, although they were the only group who showed significantly increased their utilization rates between 1991 and 2002. It is not surprising that the individuals experiencing comorbid depression and anxiety were significantly more likely to seek care than the other two groups, given that individuals with comorbid depression and anxiety disorders are likely to experience more disability and impairment and therefore have greater need for professional care [11;355]. Several possible explanations can be posed for the higher treatment seeking rate for depression than for anxiety. People, in general, may be more aware and educated about mood disorders than they are about anxiety. Anxiety disorders may be more difficult to detect than mood disorders. The marketing of antidepressants, SSRIs in particular, by the pharmaceutical industry during the 1990s may have played a key role in the higher treatment seeking rate for depression. Up to 85% of total promotional spending by pharmaceutical companies targeted physicians, through office and hospital-based promotions, provision of free samples, and advertising in medical journals [356]. In the United States, patients have also become targets for advertising in recent years [354;357;358]. Although direct-to-consumer advertising (DTCA) is illegal in Canada, many Canadians are exposed to, and potentially affected by it, through access to American print and broadcasting advertisements [358]. For both physicians and patients, depression has been marketed as a biological illness and antidepressant medication as its cure [359]. The specific targeting of care towards depression may explain the difference in the service utilization between individuals with depression and anxiety disorders.

Nonetheless, treatment seeking for mental heath among the depressed and/or anxious are still less than half, despite the increases that were seen between 1991 and 2002. Although it is not to say that everyone meeting the criteria needs professional care, it is highly likely that a significant portion of the 60% who did not seek care, can and would, benefit from treatment of some kind if they received it. Mental health education and promotion in the community, as well as to health

care providers, may improve recognition of mental health care needs and subsequent outcomes.

5.1.1.7 Low self-perceived mental health

Having low self-perceived mental health is likely to be a good indicator for needing help and a trigger for seeking treatment. This assumption was confirmed in this study with the positive association between low self-perceived mental health and treatment seeking. This is not surprising given that one would only expect someone to consider seeking mental health care if there was some awareness of such a need. There can be situations where a close friend or family member detects a problem for which they then recommend professional care, or where a doctor detects the possibility of a mental disorder during a regular visit. To be able to recognize a mental health problem when it arises is a key factor in seeking care. In this study, only 13% and 34% of individuals who meet the criteria for depression and/or anxiety felt that their mental health was poor in 1991 and 2002 respectively. Mental health promotional efforts targeting both consumers and health care providers, especially primary care physicians, that focus on 'recognizing the signs' and what can be done to manage the situation is bound to have made a significant difference in detection, treatment and ultimate outcomes.

And in fact, many mental health promotional campaigns, particularly towards consumers, have become available in Ontario in recent years. The Centre for Addiction and Mental Heath (CAMH)(http://www.camh.net) in Toronto has been instrumental in promoting mental health in the province and in the country. For example, they ran a public awareness campaign called *There is help, there is hope*, which provides information about what symptoms to look for and how to get help for depression and alcohol problems. *Beautiful Minds* is also a program that has been shown to be effective in improving people's knowledge about mental health and in reducing mental health stigma. Public service announcements have also been shown, where prominent Canadians have talked openly about their mental health or addiction problems and how they overcame their obstacles (*Transforming Lives*, CAMH). Nationally, the Canadian Mental

Health Association has asked public figures such as Chantel Kreviazuk to become a spokesperson for a series of public service announcements.

An international example of successful mental health promotion campaign is *Beyondblue* in Australia (www.beyondblue.org.au). Beyondblue is a national, non-profit organization that focuses on awareness and advocacy of depression and anxiety disorders. Programs to improve community awareness and destigmatization include television advertisements, community presentations, advocacy, prevention and early detection programs, training of primary care providers, and research and knowledge translation. These efforts have been shown to have a positive impact on the knowledge of depression and anxiety disorders in the general population [360;361].

5.1.1.8 Daily life stress

High daily life stress was significantly associated with utilization of services in 1991 but not in 2002. A few possible explanations can be proposed for this. Persons with depression and/or anxiety disorders may find it difficult to distinguish between high stress levels that require attention and those that do not. In the 1991 survey, the question about daily stress levels had four possible answers: very stressful, fairly stressful, not very stressful, and not at all stressful. On the other hand, the same question in the 2002 survey had five possible answers: extremely stressful, quite a bit stressful, a bit stressful, not very stressful, and not at all stressful. Since the focus for this study was to look at 'high' stress, individuals were categorized as having high stress if they described their daily lives as being "very or fairly stressful" in 1991 and "extremely or quite a bit" stressful in 2002 for the present study. Respondents who had replied as having "a bit" of stress represented 32% of the sample and were consequently categorized into the low-to-no stress category in the 2002 sample. If they had been included in the high stress category, there would have been 87% who reported stressful daily lives in 2002 instead of 55%, compared to 63% in 1991. With such a high proportion of respondents having reported moderate to high levels of daily life stress, it is entirely plausible that it is more difficult to recognize a manageable level of stress from an unmanageable one. This demonstrates the difficulty in

operationalizing concepts that require judgment on the part of the respondent. The same level of stress could be classified as some stress by one person and high stress by another depending on how the response options are interpreted.

5.1.1.9 Life Satisfaction

There was an attenuation of association between life satisfaction and service utilization between 1991 and 2002. Though individuals with little or no satisfaction with life were three times more likely to seek care than those who were satisfied in 1991, similar individuals were only 50% more likely to do so in 2002. There were many more treatment seekers who were satisfied with their lives in 2002 than in 1991 without the corresponding increase in the non-satisfied individuals, which seems to account for the smaller association. The cross-sectional nature of this analysis precludes us from distinguishing "which came first". The greater satisfaction with life could in fact be the 'result' of receiving effective treatment which, in turn, may have them focusing more on the positive aspects of their lives.

5.1.1.10 Disability and comorbid mental illnesses

Consistent with other studies, respondents with a disability, having a comorbid manic condition, and having a comorbid substance dependence problem were independently associated with a higher likelihood of seeking care. It is certainly understandable that the added impairment of having any of these comorbid conditions would necessitate seeking care more than if they were not present. The existence of better treatments for these conditions may have also increased their likelihood of seeking care.

5.1.2 Types of services sought

The types of services that were used among treatment seekers changed between 1991 and 2002. As expected, family physicians were the most consulted mental health care providers in 1991 and this was still the case a decade later. Their use increased from 60% in 1991 to 73% in 2002. But when examined separately, the only group that showed an increase was the anxiety group, whose

rate of seeing family physicians increased from 46% to 74%. By 2002, therefore, the results showed that all three groups were seeking care with a family physician at the same rate of approximately 73% or 74%, which was not the case in 1991.

There was an increase in the use of psychiatrists overall, from 26% to 40%. The disorder-specific rates, however, showed that only those with depression exhibited an increase in their use over time (18% in 1991 vs. 39% in 2002). Unlike the situation with family physicians, however, there was still a difference between the three disorder groups in 2002. Persons with anxiety were still less likely to seek care from a psychiatrist (30%) than those with depression (38%) or comorbid depression and anxiety (54%).

As for self-help groups, the overall rate declined from 15% to 8%, but such a decline was only evident among the comorbid depression and anxiety group when broken down by disorder (21% vs. 8%). The rate remained at 7% for the depression group at both time points. And although both the anxiety and comorbid depression and anxiety groups used self-help care at about the same rate (~20%) in 1991 only the comorbid depression and anxiety group showed a decrease in use that was statistically significant. For the comorbid group, the greater impairment associated with having both depression and anxiety and the subsequent need for professional care seems to have already been evident in 1991, since the majority had already seen a psychiatrist or a family physician. The reduction in the use of self-help groups in the absence of a corresponding increase in the use of professional care in this group suggests that the individuals who were using the self-help groups did not necessarily shift services to professional care. Another possibility is that there are fewer self-help groups available in 2002 compared to 1991. Further exploration into the role of self-help groups in mental health care in future research may provide useful information that can be used in planning mental health services in Ontario.

The increasing use of professional care might also be due to the greater ease in finding such care in 2002 than in 1991. There is a greater number of primary care physicians providing mental health service in 2002 compared to 1991. The proportion of care provided by each primary care physician allocated towards

mental health care has also increased between 1991 and 2002. These changes might facilitate the process of seeking care by either receiving care from the primary care physician directly or getting referred to a psychiatrist or psychologist. The ability to see a family physician for mental health care allows discrete exploration into mental health care which, if stigmatizing thoughts were preventing someone from seeking care, would provide a safer way to do so.

The 1990's have also seen greater efforts by government to improve services, as seen from the report on the mental health reform [98], the implementation plan [100], and operational framework for service delivery [362]. There have also been changes in mental health care provision, and the introduction of safe and effective pharmacological interventions. All of these changes may have led to an increasing acceptance of professional care for emotional or mental disorders.

Nonetheless, this increasing use of professional care and the increasing rate of depression and anxiety disorders without the corresponding increase in the number of general practitioners in Ontario [91;352] suggests that the shortage of service providers might be getting worse. Lin [95] reported that the majority of mental health care users (63%) saw a general practitioner or family physician alone. When individuals who saw both a general practitioner and a psychiatrist were included, this number increased to about 75%. Lesage and colleagues [272] also examined the types of services used by Canadians and found that at both the national level as well as at the provincial level of Ontario, general practitioners were the most sought type of care for mental health reasons at 5.3%[n] (with or without a diagnosis of mental disorders).

While general practitioners/family physicians (GP/FP) play a significant role in mental health care, the goal of the Mental Health Reform [98] was to move more towards a model of "shared care" whereby the care for individuals who

[n] The 5.3% reported by Lesage et al. reflects the proportion of all Ontario respondents of the CCHS 1.2 survey who saw a GP, whereas the 75% reported by Lin et al. reflects the GP use among service users. Thus the proportions are very different due to the difference in the denominator.

require complex assessments or interventions is coordinated between their GP/FP and specialty physicians. The shared mental health care model was first conceived in 1996 in Canada and has been gaining acceptance and evolving in sophistication [363-365]. Katon and colleagues [366] reported that collaboration between psychiatrists and psychologists led to improved outcomes with respect to treatment adherence, satisfaction and depression outcome. Shared care between family physicians and psychiatrists was examined by Turner and Sorkin [367] in Toronto in the early 1990's. They found that mood disorders were the most common diagnosis for which primary care physicians referred their clients to a psychiatrist. Their results suggest not only that the awareness and detection of mood disorders by primary care physicians is improving, but that physicians consider mood disorders to be better managed by psychiatrists.

Therefore, the shared care model has been shown to increase accessibility to psychiatric consultation, enhance continuity of care, provide better support for family physicians, and improve communication between family physicians and psychiatrists [368]. Such integrated care has also been found to be highly satisfactory by family physicians who felt that it allowed them to improve their skills and comfort when patients have mental health problems and thereby provide better care to their patients. The psychiatrists and counsellors were also satisfied by their ability to provide care as part of the primary care team [369].

The increasing treatment seeking in primary care settings among individuals with depression and/or anxiety disorders lends itself well to the shared care model. If the majority of treatment seekers are seeing family physicians who practice shared care, then they are likely to receive the most appropriate care available. In rural areas where there is a shortage of specialist mental health care providers, regular contact with psychiatrists and counsellors for input and advice can better equip the physicians to manage the patients with mental health care needs. Shared care has been embraced in Ontario [370] and can potentially have a significant impact on the provision of mental health care in the province. Dewa and her colleagues [371] provide sound arguments for the various types of health care professionals in providing mental health care. These not only include physicians

and psychiatrists, but also psychologists, nurses, social workers and occupational therapists. The "shared care" approach to mental health service provision might not only facilitate access to care, but also provide a more efficient and effective mode of care.

5.1.3 Use of more than one type of services

Among those respondents who sought treatment in 1991, 45% saw multiple types of health care providers. As would be expected, the utilization rate of multiple types of care was highest among the comorbid depression and anxiety group, followed by the depression group, and was lowest among the anxiety group. The rate of use of multiple service types increased a decade later to about 58%, but with no significant differences between the three disorder groups.

Among persons who only used one type of service, the most commonly sought service provider was a family physician (51%), which persisted a decade later (56%). The second and third most frequently sought service providers were psychiatrists and social workers (11.4% and 11.2%, respectively) and this too, remained the same in 2002 (17% and 13%, respectively).

The same pattern was also seen among respondents who had sought multiple types of services. Family physicians were the most commonly utilized service overall in both 1991 (72%) and 2002 (86%), followed by psychiatrists (44% in 1991 and 57% in 2002) and social workers (38% and 43%, respectively). There were differences across disorder groups in 1991, with the depression group seeking care by a family physician at a higher rate and by a psychiatrist at a lower rate than the other two groups. Since the utilization rate of psychiatric care increased in the depression group and the rate of use of family physicians increased in the anxiety and comorbid depression and anxiety group, the overall rate appears more similar between these groups. Use of multiple services may be due to users choosing to pursue multiple or alternative services, or referrals from one provider to another.

Use of multiple services may also be a sign of shared mental health care where psychiatrists and other providers visit general practitioners and see and

discuss patients and provide educational input and advice. Use of multiple services is consistent with the government's goal towards shared care [98] and the empirical evidence for the benefits of shared care [363;364;366;368-370;372-374].

5.1.4 Medication use

The pattern of increasing use of medications was consistent with that of mental health service use overall. There was a dramatic increase from 2.2% to 7.7% in the use of antidepressants and anxiety-reducing medications during the ten years among all Ontario respondents (with or without depression/anxiety). Among those with depression and/or anxiety, the rate of medication use increased from 14% to 33%. The most drastic increase was seen among the anxiety group, who more than tripled in the rate of medication use from 7% to 25%. A significant increase was also seen among the depression group, from 19% to 32%, and the comorbid depression and anxiety respondents, from 32% to 54%. Such increases are understandable given the introduction of SSRIs in the late 1980's and early 1990's. These were seen to be just as effective as the existing medications such as Tricyclics and MAOIs but with fewer side effects, such that SSRIs were better tolerated by patients.

These results are consistent with past studies that examined the rate of medications use for major depression, such as the one by Patten [375] who analyzed the 1994/95, 1996/97, and 1998/99 data from the National Population Health Survey by Statistics Canada to determine the rate of use of antidepressant medication among respondents with major depression. Patten found a significant increase in the rate of antidepressant medication use from 18% to 33%.

The marketing of SSRI's by the pharmaceutical companies, as discussed earlier, is highly likely to have had a significant impact on the increase in use of antidepressant medication as well. The existence of medications that can treat these conditions also makes it more of a 'medical' problem as opposed to a psychological problem, which might make treatment seeking more tolerable to many individuals. This was seen in Japan in recent years where mental health promotional efforts, primarily led by the pharmaceutical industry, sought to

normalize minor depression. Their message was that minor depression is the 'cold of the soul', it is something that anyone can get, and that it can be cured by medicine [376]. SSRI's were only approved by the Japanese government in 1999, but since then, the diagnosis of depression and use of antidepressant medication has increased dramatically. Increasing attention in the popular media was very influential in bringing forth this change. In particular, celebrities began reporting having depression and being on antidepressant medication. Even the Crown Princess Masako was reported by the Imperial Household Agency as being on antidepressants and in counselling for an adjustment disorder [376]. Physicians were speaking openly about depression and its possible treatments in public. The result was that mainstream conception of depression began to shift from that of a rare serious mental illness to a very common, less severe condition [377].

This is not to say that medication use is the answer to treating depression and/or anxiety disorders. There have been questions raised as to the effectiveness of antidepressant medications [378]. Although they may be beneficial, the improvements in symptoms may be limited and many individuals on antidepressant medication continue to suffer form depression and/or anxiety disorders. The data in this study also showed a large number of treated individuals who still met the criteria for depression and/or anxiety disorders.

5.1.5 Setting

Among the service users, the overall rate of seeking care at the doctor's office did not change (75% in 1991 and 78% in 2002) between the two time points. When broken down by disorder, however, the individuals with anxiety disorders increased dramatically from 58% to 77%. This group of individuals therefore seem to be becoming more similar in their treatment seeking behaviour to that of the other two groups.

These rates are consistent with the approximately 70% of treatment seekers who saw general practitioners. The increase in treatment seeking from family physicians and in doctors' offices, combined with the increase in shared care in

Ontario is in line with the goals outlined in the Ontario Mental Health Reform report [98] and the WHO 2001 Report [1] that makes primary care the fulcrum for mental health care of common mental disorders.

5.1.6 Frequency of use

The frequency of service use remained stable over time with approximately 60% using services more than five times in the preceding year. The comorbid depression and anxiety group respondents had a higher rate of frequent use (over 70%) than the other two groups (approximately 50%). Patten and Beck [379] also found that between 1994 and 2000, the rate of mental health service utilization had increased significantly but that the frequency of use had not.

Perhaps this is related to the type of services being used. For example, there may be a difference in the rate of use of medication, medication plus psychotherapy, and psychotherapy alone between those with depression and anxiety disorders. If those with depression were more likely to get both medication and psychotherapy, or psychotherapy, then this would be reflected in a greater frequency of service utilization compared to pharmacological treatment that involves getting a prescription filled and having fewer follow-up visits than would be experienced by psychotherapy.

5.1.7 Unmet needs

With respect to self-perceived unmet needs, both overall and group-specific rates were stable over time. Approximately one fifth of respondents in 1991 and one quarter of respondents in 2002 meeting diagnostic criteria for depression and/or anxiety, irrespective of service use, reported unmet needs for mental health care. Across disorders, however, many more respondents with comorbid depression and anxiety reported unmet needs than the other two groups at both time points. For general health problems, other national data by Statistics Canada (National Population Health Surveys and Canadian Community Health Survey Cycle 1.1) have shown that the rate of self-reported unmet health care needs (not specific to mental health) is increasing over time [70;380;381]. The proportions of individuals reporting the presence of unmet needs in 1994/95, 1998/99 and

2000/01 were 4 %, 6%, and 13%, respectively, with mental health problems comprising 11% (in 1998/99) and 9% (in 2000/01) of the unmet needs. In absolute terms, these translate into 0.7% in 1998/99 and 1.1% in 2000/01 with unmet needs for emotional or mental health problems. The absence of an increase in unmet needs in this thesis can be due to its focus on individuals with depression and/or anxiety disorders. Since they are likely to have greater needs for care than those without depression and anxiety disorders, they are more likely to seek care. Inclusion of individuals without depression and/or anxiety disorders may have revealed similar rates of unmet needs to that found by Sanmartin and colleagues [70;380;381].

When the rate of completely unmet needs was compared with the rate of partially unmet needs, unmet needs increased among the service users between 1991 and 2002 but not among the non-users. Nelson and Park [382] also found, using the same data (CCHS 1.2) that service users reported higher unmet needs than non-service users among all Ontario residents, irrespective of presence or absence of mental disorder. One possible explanation for service users having greater unmet needs is that individuals who have sought treatment are likely to be more educated and aware of their treatment options and possible outcome expectations. That being the case, they may be in a better position to identify inadequate care, whether it is in terms of the availability of services or the actual treatment itself. The increase in mental disorders and mental health care needs in the absence of an increase in physician supply [91;352] can certainly make it more challenging to find an appropriate physician who has the time to ensure the provision of adequate care.

There have also been numerous studies to date that have examined the adequacy of care among dissatisfied treatment seekers for mental disorders [383-385]. Bebbington and colleagues (1996 and 1997) [386;387] examined measures of appropriate care by administering a community version of the MRC Needs for Care Assessment Schedule (NFCAS-C). Less than half of the approximately 10% of the population who needed mental health care were found to have had their needs met, suggesting that the presence of a diagnosable disorder was not the

same as the presence of need for treatment. Furthermore, Bebbington and colleagues [388] showed that of the 30% of the general population with neurotic disorders in the previous year, less than 30% received treatment. Only 9% of people with disorders were receiving medication and 8% were receiving counselling or psychotherapy. Thus, there is consistent evidence in the literature suggesting that the treatment that is being provided by physicians may not be as adequate as it should be.

Part of the difficulty in trying to reduce unmet needs of any population for mental health is that the concept of need itself is difficult to define. Although there have been ongoing debates over the appropriateness of using a diagnosis of a mental disorder as an indicator for need of care, the mainstream position seems to be that they are not the same [138;294;389-393]. The challenge has been the development of valid and reliable methods to identify persons with mental health care needs. According to Wing and colleagues [394], need can be defined in terms of: "(1) the type of impairment or other factor causing social disablement; or (2) the model of treatment or other intervention required to meet it… and is conditional on the existence of an effective and acceptable form or model of care". The two main streams of research into needs assessment have to do with (1) methods to identify people with mental health care needs overall, and (2) methods to identify the specific types of care needed among those in need, which can also be used to examine adequacy of care. The NFCAS instrument, as mentioned above, is an example of the latter, and is geared towards severe mental illnesses. The Camberwell Assessment of Need (CAN) [395] is also a systematic tool to assess whether various areas of potential need are met, such as accommodation, occupation, specific psychotic symptoms, psychological distress, information about condition and treatment, non-prescribed drugs, food and meals, household skills, self-care and presentation, safety to self, safety to others, money, child care, physical health, alcohol, basic education, company, telephone, public transport, welfare benefits. Issakidis and Tesson [396] examined the agreement in need between the client and the service provider for individuals receiving care in two mental health service centres in Australia. They used the short version of the

Camberwell Assessment of Need and the Health of the Nation Outcomes Scales and found that there was poor to moderate agreement between the professional and the client in their perceptions of specific health care needs.

Instruments that evaluate overall need for care, such as the community version of the NFCAS, for example, are geared towards less severe, common mental disorders. The Perceived Need for Care Questionnaire (PNCQ) [397] identifies individuals as having no need, unmet need, partially met need and met need. It has been shown to be feasible, reliable and valid. In their study examining unmet needs in the Australian population [398], Meadows and colleagues found that 10% of Australians had both a perceived need as well as a psychiatric diagnosis. They also found that only a minority (4%) of untreated cases expressed perceived need. With regards to the type of needs respondents expressed, Meadows and colleagues [398;399] found that general practitioners are meeting needs for medications, counselling and information better than they are for social interventions and skills training. In the Canadian context, Sareen and colleagues [400] examined the types of needs expressed in the Canadian military setting and found that social interventions, skills training, information, and therapy/counselling were also the services that were not met as well as medication needs.

In the United States, Mojtabai and colleagues [164] examined the association between help seeking and perceived need for care using data form the National Comorbidity Study of 1990-92. Although they found that the presence of mental disorders was strongly related to perceived need for care, the rate of perceived need in mentally disordered persons was not particularly high. For example, 49% of respondents with mood disorder, 21% with anxiety disorder, and 56% with mood and anxiety disorders perceived a need for help, suggesting that the majority of those with a mental disorder do not perceive a need for care.

In the Canadian context, Lefebvre and colleagues [401] found, using the community version of the NFCAS in a prospective community study in Montreal that having a mental disorder does not imply need, and service utilization does not equal met needs. Fournier and colleagues [138] also examined the mental health of

Montrealers using the community version of the NFCAS and found that 18% of participants were identified by a clinician as being in need of care, of whom 70% were receiving inadequate care. Persons with anxiety disorders were especially likely to not receive the services that they needed, and half of the individuals who were identified as needing mental health care, had not used services in the preceding year. Approximately 60% of individuals with needs and service use in the preceding year were found to have not received the necessary services and 6% had needs that were impossible to satisfy. Reasons for inadequate care seem to be related to greater severity, higher likelihood of comorbid disorders, and the treatments not being able to manage the deteriorating conditions.

5.1.8 Reasons for unmet needs

Many of the reasons for unmet needs could not be examined due to insufficient sample size. Even for the results that were presented, the confidence intervals were quite wide and therefore some caution was necessary in interpreting the results. That said, the rates of the various reasons for unmet needs were generally stable over time, but some noteworthy differences did arise across disorders in each time point. For example, respondents in the anxiety group were more likely to report acceptability barriers (78%) than those in the comorbid group (48%) in 1991. There were twice as many individuals in the depression group who preferred to manage their problems themselves as those with comorbid depression and anxiety in 1991. Given that having more than one disorder is generally more impairing than only having just one, it is reasonable to infer that the degree of need for care among the comorbid respondents would be more likely to override any acceptability issues that they may have. When only one of the two conditions are present, however, 40% of those with depression and 45% of those with anxiety were preferring to manage their condition themselves, suggesting that some form of stigma may still be a large barrier for treatment seeking. For example, it could be seen as a sign of weakness to get professional care, there may be a fear of being 'labeled' with a mental disorder or as a mental health care user, and there may also be fears associated with the treatments themselves. Strategies to reduce stigma towards mental illnesses may therefore reduce unmet needs.

It was also found among the 1991 survey that there were more respondents in the comorbid group who were unable to afford to pay for treatment (28%) compared to the anxiety group respondents (5%). This could not be examined in the 2002 data. Cost barriers are difficult to interpret, particularly when using cross-sectional data because it is not possible to determine the presence and direction of a causal relationship between the two. Comorbid conditions are more disabling and therefore more likely to prevent the person from working for sufficient income to pay for the necessary treatment than having anxiety alone. Those with comorbid conditions are likely to have greater needs as well, which

means that their health care costs are potentially higher than those without comorbidity. It could also be the case that the inability to pay or being in an economically disadvantaged position contributes towards the development of a comorbid condition. A larger and more detailed study would be required to address this issue properly.

Availability barriers include professional help not being available at the time required such as the doctor being on holidays, inconvenient hours or there being a long wait. There was a general increase in such barriers, which is consistent with national trends of wait times for health services overall [381]. In the 2002 survey, a significantly greater proportion of the comorbid respondents reported not having professional help available *at the time it was required* (40%) than the respondents with depression (19%), which is consistent with expectations given their greater need for care.

Interestingly, a study by Donelan and colleagues examined health care system satisfaction in five countries including Canada and found that in 1998, the biggest source of dissatisfaction in Canada was access to care [402]. Just over half (56%) of Canadians found that the health care system was good but that fundamental changes were necessary to make it work better, while almost a quarter (23%) felt that it was so problematic that it needs to be rebuilt completely. Donelan and colleagues therefore report there has been a substantial loss of confidence in the health care system by the Canadian public during the 1990's, with the main concerns being system administration and access to specialty care. Furthermore, a Joint Canada/United States Survey was also carried out in 2002/03 to compare health status and access to health care services between the two countries [403]. Of the barriers to care that were reported by respondents, the primary barrier in Canada was "waiting too long", while that in the United States was "cost". And when comparing satisfaction with the health care services, more Americans than Canadians, were "very satisfied" with their health care services. The majority of Canadians (43%) replied as being "somewhat satisfied", which is consistent with the results by Donelan and colleagues. The dissatisfaction found in both studies could very well have extended into mental health care.

Unfortunately, these issues could not be examined in this thesis. Such information, combined with determination of the adequacy of care in this population, would provide valuable insight into how to improve the provision of mental health care.

Several studies have looked at reasons for not using services among those who have reported having unmet needs. For instance, Rabinowitz and colleagues [404] found in a national telephone survey in Israel that only 31% of men and 42% women who perceived need for care actually sought treatment and their reasons for not seeking care included having solved their problems on their own (74%), feeling uncomfortable (11%), economic reasons (6%) and lack of trust of the health care system (9%). In Canada, Lefebvre and colleagues [405] also found that reasons for not seeking care among those with unmet need were cost (36%), belief that it would go away on its own (28%), preference to manage the problem on their own (24%), lack of knowledge as to where to go (12%), did not think it would help (12%), lack of trust (8%), dissatisfaction with the received care (8%), and lack of time (4%). And examining all Canadian respondents with depressive-, anxiety- or substance use-related disorders in the CCHS 1.2 and unmet needs, Wang [406] found that acceptability barriers were higher than accessibility or availability barriers and that those with more than one co-occurring disorder reported greater unmet needs than those with one disorder.

5.2 Strengths of the study

This is the first study to my knowledge that examined the impact of depression and anxiety disorders separately and compared them to having both disorders in assessing utilization of health care services for problems with emotions, mental health or use of alcohol or dugs. There are increasing numbers of studies being carried out that focus their research on individuals with depression or anxiety disorders [407;408] but none thus far have actually compared the use of services between people with anxiety and depression in Canada. It was also the first study to examine and compare the use of services and predictors of service use at two time points in Canada. The two surveys used in this thesis are the most comprehensive collection of data available in Canada to date, and were

comparable enough to allow some exploration into how mental health service utilization is changing in the Ontario setting. These surveys provided a unique opportunity to analyse and compare predictors and patterns of service utilization that were specific to those with depression, anxiety or comorbid depression and anxiety using the Andersen model as the theoretical framework.

This study was, to my knowledge, the first study that examined the association between contextual characteristics and health service utilization in mental health. By adjusting for the potential variability across CSDs that may potentially influence health service utilization, the multilevel analysis was able to improve the specification of the results of the multivariate analysis. Although the extent of the analysis was not as comprehensive as it was initially intended, this thesis provided some insight into the role contextual factors in predicting treatment seeking behaviour in people with mental disorders. Future studies should use better measures of health care systems such as availability of services beyond the number of general practitioners per 100,000 such as the number of specialists, proximity to services, availability of services so that better decisions can be made as to where improvements can be made in service provision. And although the thesis adopted the census subdivision as the unit of analysis for the multilevel work, census tracts may be a more appropriate unit of analysis for capturing the neighbourhood effect [207].

5.3 Limitations of the study

This thesis was a comparison of two parallel cross-sectional studies. The use of data from existing surveys posed restrictions on the variables that can be examined. As described in detail in the methods sections, there were various factors that could not be analysed because the data were not collected in one or both of the surveys. One key piece of missing information is the absence of some information about anxiety disorders in the CCHS 1.2 that were included in the OMHS survey. Inclusion of the generalized anxiety disorder and simple phobia in the CCHS 1.2 would have allowed incorporation of those two disorders, and thereby increased the size of the sample. Instead, we excluded these two disorders

from the OMHS survey sample so that they would be comparable between the two surveys. The possible consequence of this is that the results of this thesis may represent an underestimation of the rate of service utilization among the anxiety group. Katz and colleagues [46] showed that in both the OMHS data as well as the National Comorbidity Survey, respondents with generalized anxiety disorder had the highest proportion of individuals seeking treatment among all respondents with anxiety disorders (53% in the United States, 60% in Ontario). Approximately 20% of those with simple phobia sought treatment in both the United States and Ontario. The study by Katz and colleagues [46] therefore suggests that if information on respondents with these two disorders were available for inclusion in this thesis, particularly those with generalized anxiety disorder, the results could have been somewhat more similar to the depression and comorbid group than what was found.

Another limitation of this thesis is that individuals who received effective treatment (i.e., medication or therapy) more than one year prior to the interview, and consequently no longer met the criteria for depression or anxiety in the 12-month timeframe, could not be included in this thesis. The expected impact of this is an underestimation of rates of treatment seeking, though its magnitude is difficult to determine. It is also difficult to determine if the exclusion is differential by disorder (selection bias). Although the greater impairment experienced by the comorbid group or the more severe cases of depression and anxiety groups may result in the higher likelihood of seeking care, the treatment sought by cases with less impairing conditions may make them more likely to be classified as a non-case. So there is a potential for differential misclassification. However, to try to capture this subgroup is difficult because even if they were identified based on their use of services, there is no method of determining if they would have met the criteria in the absence of the treatment. Detailed exploration into the impact of not including this subgroup was beyond the scope of the thesis but is certainly an issue that needs to be addressed in future studies.

Caution is also necessary in interpreting the outcome variable in the surveys. A review of the literature has shown that individuals with mental disorders can

systematically under-report or over-report service utilization and Rhodes and colleagues [409;410] have also shown that individuals with higher levels of distress systematically over report service utilization than those with lower levels of distress.

Also worth noting is that the measure of medication use may have been an underestimation of the true rate of utilization. Neutel and Walop [411] compared two different approaches to measuring medication use with the National Population Health Survey. The first set of questions asked if respondents had taken any of the listed drug categories in the preceding month: "In the past month, did you take [e.g., antidepressants]?" Those who had replied having taken any medications in the preceding month, were then asked more specific questions: "Now I am referring to the past two days. During those two days, how many different medications did you take? What is the exact name of the medication to which you are referring?" where respondents were asked to look at the bottle, tube or box. In the ten drug categories, the rate of specific drug use that was not self-reported in the first set of categories ranged form 5% to 44%. For antidepressants, 17% of those who reported having taken a specific antidepressant in the preceding two days did not report having taken antidepressants in the preceding month. These results suggest that self-reports of medication use is generally an underestimation of the actual use. Whether the underestimation systematically differs across any particular factor and thereby biasing associations is unknown. Nonetheless any results based on such data should be interpreted with caution.

Moreover, even a large population survey of approximately 10,000 respondents posed challenges in obtaining a large enough sample to conduct in-depth analysis of patterns and predictors of service utilization in individuals with depression and/or anxiety. Given that the analysis also involved tapering the population sample into various sub-groups, particularly in the secondary analyses, this thesis was limited in the extent to which each question could be analysed. There was simply insufficient power to address the associations between the independent variable and the secondary outcomes. Thus caution is certainly necessary in interpreting the results. A larger study that focuses specifically on

this population would provide an opportunity to go beyond the analyses that were carried out in this thesis and examine these issues further, particularly the contextual effect and unmet needs.

Among variables that were included in both surveys, differences in how they were defined or asked affected some factors that required caution in their interpretations. For instance, as addressed in the Methods section, the diagnostic criteria for mental disorders changed during the study period, with the 1991 survey being based on the DSM-III-R criteria and the 2002 survey being based on the DSM-IV criteria. Although prevalence of mental disorders has been shown to be sensitive to slight changes in the DSM criteria over time, their associated risk factors have been found to remain relatively stable [294]. In the absence of a biological gold standard for determining true 'caseness' for mental disorders, other factors such as disability and self-perceived mental health must also be considered in determining need for care.

There were some slight differences in the wording of questions, such as in the case with barriers to care. In the 1991 survey, respondents were asked if they "didn't go" for care when they needed care, whereas in the 2002 survey, respondents were asked if they "did not receive" care when they felt that they needed it. This active versus passive phrasing, for instance, might have an impact on how the question is answered. Thus caution is necessary in interpreting these results.

Additionally, psychological well-being has been shown to be an important determining factor for health care utilization [412]. However, this factor was only measured for the *one* month preceding the interview. Although it was felt that disability is relatively stable over time, I did not feel that the same applied for psychological wellbeing and was therefore considered inappropriate for use in the analysis. Though it is assumed that depression and anxiety and psychological wellbeing are correlated, one would also expect that a good proportion of those with poor psychological wellbeing would fall into the subthreshold level of depression or anxiety and therefore not meet the criteria for the disorder. Thus the magnitude of this association is not known. Future studies addressing this issue

with respect to mental health service utilization may help shed better light on mental health problems and their corresponding need for mental health care.

Complete data on the policy characteristics such as financing, education, manpower and organization as well as delivery system characteristics would allow a more comprehensive assessment into the impact of these components of the model on service utilization relative to the population characteristics. It would also allow identification of areas in which changes can be made to better provide services for individuals with depression or anxiety disorders. However, given the incomplete data for these components, these issues could not be addressed.

Lastly, numerous analyses were carried out in this thesis and it is acknowledged that the shear number of analyses that was done could have resulted in findings that were due to chance. The results were interpreted with this in mind.

5.4 Future research

5.4.1 Contextual effects

A number of suggestions for future research have resulted from these findings. This is the first study to examine contextual effects on mental health service utilization. This thesis focused on individual level characteristics, area level demographic characteristics, and a limited measure of availability of services. There was no significant effect of the contextual factors on mental health service utilization in this population in 1991. Although, the number of physicians had a moderate impact in 2002, the magnitude of the effect was small. It is possible to conclude from this thesis work that contextual effects have little impact on service use, but this could also be explained by limited measures available for this analysis. Further studies examining the contributions of contextual factors on mental health service utilization will be necessary to confirm or contradict this result.

Thus, better assessment of human resources and service provision types of data is necessary. This thesis was only able to look at the impact of the number of physicians in the area. Information on the numbers of psychiatrists and psychiatric

nurses, numbers of hospitals, clinics, and rehabilitation centres, numbers of psychiatric acute care beds, rehabilitation beds, and the numbers of self-help groups and telephone hotlines in their surroundings may be useful in informing planners about the provision and organization of service providers. With increasingly more focus being placed towards shared care in Ontario, mental health care provision is shifting into a more team-approach comprised of family physicians, psychiatrists, and other health care providers. Further examination into the impact of the types of service providers available on mental health service utilization will therefore be useful in planning the organization of the services. It will also allow determination of areas of services that are adequately meeting needs as well as those that require improvement.

5.4.2 Differentiating depression and anxiety disorders

Future research in health service utilization should also focus on further examining the relationship between depression and anxiety disorders and how they relate to detection, service utilization, treatment, and outcomes. Studies that have looked into the temporal patterns of people with both depression and anxiety disorders have found that anxiety disorders preceded the onset of depression the majority of the time [236;241;355;413-416] and that depression that develops secondary to anxiety disorders is much more persistent and severe than 'pure' depression [236;355]. Zimmerman and Chelminsky [417] also demonstrated the difficulties in recognizing anxiety disorders in the presence of depression. This thesis explored how the above then translates into treatment seeking behaviour and barriers to care. The results suggest that there are differences between depression, anxiety, and comorbid depression and anxiety in treatment seeking behaviour. Further investigation is necessary in this area so that mental health care planners can optimally incorporate these differences towards education, detection, and service provision.

5.4.3 Cultural impact on mental health and service utilization

The cultural impact on health service utilization needs further examination. Given the multicultural society in which we live, especially in urban Ontario,

there is a need to find a way to better account for cultural issues. Thus far, the sample sizes of population surveys have simply not been large enough to properly address cultural differences. The Office of Minority Health of the US Department of Health and Human Services released a paper recommending standards for culturally and linguistically competent health care delivery [418] in response to the rapidly changing racial and ethnic profiles of the United States. Nine culturally competent programs are highlighted in a report by the US Health Resources and Services Administration, *Cultural Competence Works* [419], two of which demonstrated the importance of the involvement of the public health agency to their success.

In order to improve mental health service delivery in mainstream settings for a culturally diverse urban population, Kirmayer and his colleagues [420] developed and evaluated a Cultural Consultation Service (CCS) for mental health practitioners and primary care clinicians in Montreal, Canada. The service was designed to provide specific cultural information, links to community resources or to formal cultural psychiatric or psychological assessment, and recommendations for treatment. The authors found the majority of clinicians to be satisfied with the consultation (86%), which they found useful in increasing knowledge of the social, cultural or religious aspects of their cases, in improving treatment, in improving communications, empathy, understanding or therapeutic alliance, and in increasing confidence in diagnosis and treatment. The clinicians reported a small number of concerns with the CCS that included lack of treatment or more intensive follow up (14%), unavailability or inappropriateness of the recommended resources (14%), concerns over competence of the cultural broker (10%) and an over-emphasis on social issues, thereby under-appreciating the psychiatric issue.

Lo and Fung [421] also stressed the importance of culturally competent psychotherapy. They present the two dimensions of cultural competence, generic and specific, where generic cultural competence involves the knowledge and skills necessary in any cross-cultural therapeutic encounter, whereas the specific cultural competence refers to the health care provider's ability to effectively care

for a specific ethnocultural community. A cultural analysis will enable the tailoring of care to the particular culture in setting appropriate goals, process, and content.

5.4.4 Mental Health Promotion

The need for mental health education and promotion is essential to improve mental health service utilization in Ontario. As discussed earlier, the consistent message that is coming through in this thesis is that education and awareness about mental disorders and mental health treatment options for both the community members and health care providers is the key activity that can improve early detection, accurate diagnosis and appropriate treatment. As opposed to deriving educational campaigns specific to disorders, however, the more effective approach will be to target specific groups that underutilize services, such as young adults and men. Examples of mental health educational approaches for these groups were described earlier in the Discussion section. This approach to increasing awareness is likely to be effective because the information and the mode of communication can be tailored to them in a way that is more applicable to themselves. Very few studies however, have directly examined the effectiveness of these campaigns on mental health service utilization and subsequent outcomes.

The shared care approach that has been adopted in the Ontario setting will encourage various health service providers to share knowledge and expertise on mental health with each other. The consultation of family physicians with psychiatrists and psychologists, for example, provides an opportunity for family physicians to learn and practice better detection and management of patients with mental health issues that would not be possible otherwise. The family physicians would then be better equipped to treat mentally ill patients themselves, and to make judgements on who should be referred to a specialist.

Mental health issues are also gaining more attention by government. The newly established Canadian Collaborative Mental Health Initiative was developed as a means to “improve the mental health and well-being of Canadians by

increasing collaboration among health care providers, consumers, families and caregivers - so that Canadians in need of mental health care services, as well as their caregivers and families, would have improved access to mental health care prevention, promotion, and services, through their primary health care provider." (http://www.ccmhi.ca/). A series of papers were published as a special August issue of the Canadian Public Policy journal in 2005 on "Mental Health Reform for the 21st Century" produced in partnership with the School of Policy Studies and the Centre for Health Services and Policy Research. The series outlines the epidemiology of mental health in Canada, and issues ranging from stigma and discrimination, family and caregiver support to the need for mental health reform and the challenges involved in doing so.

The government of Canada recently published a report on the status of mental illnesses in Canada [422] and approved the development of the Canadian Mental Health Commission in March of 2007. The purpose of this Commission is to assist in the development of sound public policies. They will also work towards increasing public awareness in addressing the stigma associated with mental illnesses and addictions, and to becoming a key source of mental health information.

These changes are highly encouraging in terms of the future of mental health and service provision in need of mental health care.

6 Conclusion

This thesis showed that the rate of mental health service utilization for depression and/or anxiety disorders increased significantly between 1991 and 2002. This increase was particularly pronounced among those with anxiety disorders. Nonetheless, people with anxiety disorders still showed the lowest rate of service utilization compared to the other two groups.

Men and younger adults continued to be under-treated for mental health care, whereas being unemployed, having depression and/or anxiety disorder, and having lower self-perceived mental health were factors that increased the likelihood of seeking care.

Residing in an urban area in 2002 was not associated with treatment seeking. This may be an indication that more mental health care needs are being met in rural areas than before. People with higher education, a disability, or comorbid mental disorders were more likely to seek care. Area characteristics did not have a significant impact on treatment seeking in this particular study.

Changes in the profile of potential predictors of service utilization as well as the changes in treatment seeking in Ontario over the ten years can have significant policy and planning implications. No previous study, to my knowledge, has examined change in use and predictors of use of services for mental health problems over time. Currently, Ontarians are more educated than they were even ten years ago and the population, especially in urban areas, is becoming increasingly ethnically diverse. The population is also getting older, and there are fewer people who are married or in common-law partnerships. All of these factors can have an impact on the collective demand of health care services for depression and/or anxiety disorders overall.

The Andersen model was able to incorporate both individual as well as area level characteristics in assessing their association with treatment seeking behaviour for both 1991 and 2002. If more complete data on contextual variables such as service availability and organization of delivery systems can be obtained, the Andersen model is an ideal framework with which their impact on service

utilization can be assessed. This line of research will then be able to provide information that the policy developers and planners can use in reforming mental health services in Ontario.

Family physicians/general practitioners are the most frequently consulted type of mental health care, followed by psychiatrists and social workers. The increase in the use of multiple types of services suggests that there are increasingly more cases of shared care in Ontario.

This study also showed a dramatic increase in the use of medication, particularly for anxiety disorders. It will be important to ensure that decision makers are up-to date on the research on safe and cost-effective medications for mental illnesses, so that patients have access to the most appropriate treatment.

Despite the increase in service use, however, the rate of unmet needs remained relatively stable between 1991 and 2002 overall. Some differences arose in the reasons for the unmet needs between the three disorder groups, suggesting that these three groups of individuals have different treatment seeking patterns that need to be addressed in more detail.

The hope is that the results of this study provide some information for decision makers and other key stakeholders about treatment seeking behaviours of Ontarians with depression and anxiety disorders. Although the management of these three disorder categories may be similar once health services are sought, the path to contact with a health care professional, and the pattern of use of these services, seem to vary. Given the high burden associated with both disorders, it is imperative that better approaches are found to encourage individuals with needs to seek care.

Thus there is no doubt that further studies are necessary but at this point, given the currently available information, perhaps it is time to step back and review the findings. Rather than planning bigger studies, a ‘smaller’ and more detailed and focused approach might be more informative. That is, to take qualitative approaches or mixed approaches to find out what community members want. What do they feel are services that they would like to have offered in the

community? How do they feel about pharmacological treatments for mental illnesses? What do they see as areas that could be improved?

If major depression does indeed become the second leading cause of disease burden by the year 2020, then it is imperative that the mental health care system be ready to better detect and manage both depression and anxiety disorders. As stated so nicely by Jenkins and Strathdee [423]:

> "No country, however rich it might be, can afford anything approaching sufficient specialist personnel to see and care for everyone with a mental disorder. Even in relatively rich countries, specialists can usually only cater for a tiny percentage of people with mental health problems, and these should be and will tend to be those with the greatest needs. On the other hand, it is not tenable to argue that this burden of common mental disorders should be ignored - the costs of so doing are immense in terms of repeated general practitioner consultation (Lloyd, Jenkins, & Mann, 1996), sickness absence (Jenkins, 1985a), labor turnover (Jenkins, 1985b), reduced productivity, impact on families and children, and the more difficult to quantify but nonetheless important concept of the emotional well-being of a country and nation (Jenkins et al., 1998)." (p.277).

Thus a more efficient system of mental health care provision is necessary and the new collaborative care approach appears to be aiming at doing exactly that. The results in this thesis showed that service users are already using multiple types of services, and that the majority of them are seeing general practitioners, psychiatrists, and social workers. One would speculate that the team approach to providing care should increase efficiency, increase the skills and knowledge of all parties involved, and provide better detection and treatment. Increasing public awareness is therefore essential in getting those in need of treatment into the doctor's offices. Future research aimed at examining the best approaches to

increase awareness and reduce stigma, particularly of the most under-serviced groups, should have a significant impact on people's abilities to recognize and seek professional care when needed.

7 Reference

1. World Health Organization. The World Health Report 2001 : Mental Health: New Understanding, New Hope. 2001. World Health Organization.

2. Murray CJL, Lopez AD*The Global Burden of Disease: A comprehensive assessment of mortality and disability from diseases, injuries, and risk factors in 1990 and projected to 2020,* Harvard University Press, 1996.

3. World Health Organization. Suicide huge but preventable public health problem, says WHO, Available at: http://www.who.int/mediacentre/news/releases/2004/pr61/en/

4. Mathers CD, Loncar D*Updated projections of global mortality and burden of disease, 2002-2030:data sources, methods and results.*, World Health Organization, 2005.

5. http://www.who.int/mental_health/prevention/suicide/suicideprevent/en/. Suicide Prevention (SUPRE), Available at: http://www.who.int/mental_health/prevention/suicide/suicideprevent/en/. Accessed Aug 25, 2006

6. http://www.who.int/mental_health/topic_suicide/suicide4.htm. Prevention of Suicidal Behaviours: A Task for All, Available at: http://www.who.int/mental_health/topic_suicide/suicide4.htm

7. Canadian Psychiatric Association. Clinical Practice Guidelines: Management of Anxiety Disorders. Canadian Journal of Psychiatry 51[Suppl. 2]. 2006.

8. Stein DJ (2001), Comorbidity in generalized anxiety disorder: impact and implications, *Journal of Clinical Psychiatry* 62 Suppl 11: 29-34

9. Ballenger JC, Davidson JR, Lecrubier Y, Nutt DJ, Borkovec TD, Rickels K, Stein DJ, Wittchen HU (2001), Consensus statement on generalized anxiety disorder from the International Consensus Group on Depression and Anxiety, *Journal of Clinical Psychiatry* 62 Suppl 11: 53-58

10. Zimmerman M, McDermut W, Mattia JI (2000), Frequency of anxiety disorders in psychiatric outpatients with major depressive disorder, *American Journal of Psychiatry* 157: 1337-1340

11. Hickie IB, Koschera A, Davenport TA, Naismith SL, Scott EM (2001), Comorbidity of common mental disorders and alcohol or other substance misuse in Australian general practice, *Med.J.Aust.* 175 Suppl: S31-S36

12. Ballenger JC, Davidson JR, Lecrubier Y, Nutt DJ, Roose SP, Sheps DS (2001), Consensus statement on depression, anxiety, and cardiovascular disease, *Journal of Clinical Psychiatry* 62: 24-27

13. Patel V.Poverty, Inequality and Mental Health in Developing Countries. In: Leon DA and Walt G eds. *Poverty, inequality, and health: An International Perspective.* 2001;247-262.

14. Fournier L, Lesage AD, Toupin J, Cyr M (1997), Telephone surveys as an alternative for estimating prevalence of mental disorders and service utilization: a Montreal catchment area study, *Canadian Journal of Psychiatry* 42: 737-743

15. Regier DA, Farmer ME, Rae DS, Myers JK, Kramer M, Robins LN, George LK, Karno M, Locke BZ (1993), One-month prevalence of mental disorders in the United States and sociodemographic characteristics: the Epidemiologic Catchment Area study, *Acta Psychiatrica Scandinavica* 88: 35-47

16. Bebbington PE, Meltzer H, Brugha TS, Farrell M, Jenkins R, Ceresa C, Lewis G (2000), Unequal access and unmet need: neurotic disorders and the use of primary care services, *Psychological Medicine* 30: 1359-1367

17. Koopmans GT, Donker MC, Rutten FH (2005), Common mental disorders and use of general health services: a review of the literature on population-based studies, *Acta Psychiatrica Scandinavica* 111: 341-350

18. Ninan PT (2001), Dissolving the burden of generalized anxiety disorder, *Journal of Clinical Psychiatry* 62 Suppl 19: 5-10

19. Greenberg PE, Kessler RC, Birnbaum HG, Leong SA, Lowe SW, Berglund PA, Corey-Lisle PK (2003), The economic burden of depression in the United States: how did it change between 1990 and 2000?, *Journal of Clinical Psychiatry* 64: 1465-1475

20. Stephens T, Joubert N (2001), The economic burden of mental health problems in Canada, *Chronic Diseases in Canada* 22: 18-23

21. American Psychiatric Association*Diagnostic and Statistical Manual of Mental Disorders III-R (Third Edition - Revised)*, Washington, D.C.: American Psychiatric Association, 1987.

22. American Psychiatric Association*Diagnostic and Statistical Manual of Mental Disorder - DSM-IV (Fourth Edition)*, Washington, D.C.: American Psychiatric Association, 1994.

23. Katschnig H, Angermeyer M.Quality of life in depression. In: Katschnig H, Freeman H, and Satrorius N eds. *Quality of Life in Mental Disorders.* 1997;137-147.

24. Murray CJL, Salomon JA, Mathers CD et al. *Summary measures of population health: concepts, ethics, measurement and applications.*, Geneva: WHO, 2002.

25. Offord DR, Boyle MH, Campbell D, Goering P, Lin E, Wong M, Racine YA (1996), One-year prevalence of psychiatric disorder in Ontarians 15 to 64 years of age, *Canadian Journal of Psychiatry* 41: 559-563

26. Health Canada. A Report on Mental Illnesses in Canada. 2002. Ottawa, Canada, Health Canada Editorial Board Mental Illnesses in Canada.

27. Gnam W, Sarnocinska-Hart A, Mustard C, Lin E. The Economic Cost of Mental Disorders and Alcohol, Tabacco, and Illicit Drug Abuse in Ontario, 2000: A Cost-of-Illness Study. 2006. Toronto, Centre for Addiction and Mental Health.

28. Anonymous (2000), Cross-national comparisons of the prevalences and correlates of mental disorders. WHO International Consortium in Psychiatric Epidemiology, *Bulletin of the World Health Organization* 78: 413-426

29. NICE. Depression: management of depression in primary and secondary care. 2004. London, UK, National Institute for Clinical Excellence.

30. NICE. Anxiety: management of anxiety (panic disorder, with or without agoraphobia, and generalised anxiety disorder) in adults in primary, secondary and community care. 2004. London, UK, National Institute For Clinical Excellence.

31. ICSI. ICSI Health Care Guideline: Major Depression, Panic Disorder and Generalized ANxiety Disorder in Adults in Primary Care. 2002. Institute for Clinical Systems Improvement.

32. Parikh SV, Lam RW (2001), Clinical guidelines for the treatment of depressive disorders, I. Definitions, prevalence, and health burden, *Canadian Journal of Psychiatry* 46 Suppl 1: 13S-20S

33. Reesal RT, Lam RW (2001), Clinical guidelines for the treatment of depressive disorders. II. Principles of management, *Canadian Journal of Psychiatry* 46 Suppl 1: 21S-28S

34. Segal ZV, Whitney DK, Lam RW (2001), Clinical guidelines for the treatment of depressive disorders. III. Psychotherapy, *Canadian Journal of Psychiatry* 46 Suppl 1: 29S-37S

35. Kennedy SH, Lam RW, Cohen NL, Ravindran AV (2001), Clinical guidelines for the treatment of depressive disorders. IV. Medications and other biological treatments, *Canadian Journal of Psychiatry* 46 Suppl 1: 38S-58S

36. Segal ZV, Kennedy SH, Cohen NL (2001), Clinical guidelines for the treatment of depressive disorders. V. Combining psychotherapy and pharmacotherapy, *Canadian Journal of Psychiatry* 46 Suppl 1: 59S-62S

37. Thorpe L, Whitney DK, Kutcher SP, Kennedy SH (2001), Clinical guidelines for the treatment of depressive disorders. VI. Special populations, *Canadian Journal of Psychiatry* 46 Suppl 1: 63S-76S

38. Enns MW, Swenson JR, McIntyre RS, Swinson RP, Kennedy SH (2001), Clinical guidelines for the treatment of depressive disorders. VII. Comorbidity, *Canadian Journal of Psychiatry* 46 Suppl 1: 77S-90S

39. Voellinger R, Berney A, Baumann P, Annoni JM, Bryois C, Buclin T, Bula C, Camus V, Christin L, Cornuz J, de Goumoens P, Lamy O, Strnad J, Burnand B, Stiefel F (2003), Major depressive disorder in the general hospital: adaptation of clinical practice guidelines, *General Hospital Psychiatry* 25: 185-193

40. Segal ZV, Whitney DK, Lam RW (2001), Clinical guidelines for the treatment of depressive disorders. III. Psychotherapy, *Canadian Journal of Psychiatry* 46 Suppl 1: 29S-37S

41. Young AS, Klap R, Sherbourne CD, Wells KB (2001), The quality of care for depressive and anxiety disorders in the United States, *Archives of General Psychiatry*. 2001 Jan;58: 55-61

42. Statistics Canada. Canadian Community Health Survey - Mental Health and Well-being, Available at: http://www.statcan.ca/cgi-bin/imdb/p2SV.pl?Function=getSurvey&SDDS=5015&lang=en&db=IMDB&dbg=f&adm=8&dis=2

43. Bijl RV, Ravelli A (2000), Psychiatric morbidity, service use, and need for care in the general population: results of The Netherlands Mental Health Survey and Incidence Study, *American Journal of Public Health* 90: 602-607

44. Andrews G, Sanderson K, Slade T, Issakidis C (2000), Why does the burden of disease persist? Relating the burden of anxiety and depression to effectiveness of treatment, *Bulletin of the World Health Organization* 78: 446-454

45. Bristow K, Patten S (2002), Treatment-Seeking Rates and Associated Mediating Factors Among Individuals With Depression, *Canadian Journal of Psychiatry* 47: 660-665

46. Katz SJ, Kessler RC, Frank RG, Leaf P, Lin E, Edlund M (1997), The use of outpatient mental health services in the United States and Ontario: the impact of mental morbidity and perceived need for care, *American Journal of Public Health* 87: 1136-1143

47. Starkes JM, Poulin CC, Kisely SR (2005), Unmet need for the treatment of depression in Atlantic Canada, *Canadian Journal of Psychiatry* 50: 580-590

48. Patten SB (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

49. Spijker J, Bijl RV, de Graaf R, Nolen WA (2001), Care utilization and outcome of DSM-III-R major depression in the general population. Results from the Netherlands Mental Health Survey and Incidence Study (NEMESIS), *Acta Psychiatrica Scandinavica* 104: 19-24

50. Katz SJ, Kessler RC, Frank RG, Leaf P, Lin E (1997), Mental health care use, morbidity, and socioeconomic status in the United States and Ontario, *Inquiry* 34: 38-49

51. Bland RC, Newman SC, Orn H (1997), Help-seeking for psychiatric disorders, *Canadian Journal of Psychiatry* 42: 935-942

52. Thornicroft G, Tansella M. What are the arguments for community-based mental health care? WHO HEN Synthesis Report . 2003.

53. Lesage AD, Goering P, Lin E (1997), Family physicians and the mental health system. Report from the Mental Health Supplement to the Ontario Health Survey, *Canadian Family Physician* 43: 251-256

54. Wang J, Patten SB, Williams JV, Currie S, Beck CA, Maxwell CJ, El-Guebaly N (2005), Help-seeking behaviours of individuals with mood disorders, *Canadian Journal of Psychiatry* 50: 652-659

55. Watson DE, Heppner P, Roos NP, Reid RJ, Katz A (2005), Population-based use of mental health services and patterns of delivery among family physicians, 1992 to 2001, *Canadian Journal of Psychiatry* 50: 398-406

56. Tepper J. The Evolving Role of Canada's Family Physicians, 1992-2001. 2004. Ottawa, Canadian Institute for Health Information.

57. European Commission*The State of Mental Health in the European Union*, European Commission, 2004.

58. Kniesner TJ, Powers RH, Croghan TW (2005), Provider type and depression treatment adequacy, *Health Policy* 72: 321-332

59. Sewitch MJ, Blais R, Rahme E, Galarneau S, Bexton B (2006), Pharmacologic response to a diagnosis of late-life depression: A population study in Quebec, *Canadian Journal of Psychiatry* 51: 363-370

60. Katz SJ, Kessler RC, Lin E, Wells KB (1998), Medication management of depression in the United States and Ontario, *Journal of General Internal Medicine* 13: 77-85

61. Katon W, Von Korff M, Lin E, Bush T, Ormel J (1992), Adequacy and duration of antidepressant treatment in primary care, *Medical Care* 30: 67-76

62. Parikh SV, Lesage AD, Kennedy SH, Goering PN (1999), Depression in Ontario: under-treatment and factors related to antidepressant use, *Journal of Affective Disorders.* 52: 67-76

63. Wang PS, Demler O, Kessler RC (2002), Adequacy of treatment for serious mental illness in the United States, *American Journal of Public Health* 92: 92-98

64. Weilburg JB, O'Leary KM, Meigs JB, Hennen J, Stafford RS (2003), Evaluation of the adequacy of outpatient antidepressant treatment, *Psychiatric Services* 54: 1233-1239

65. Kessler RC, Berglund P, Demler O, Jin R, Koretz D, Merikangas KR, Rush AJ, Walters EE, Wang PS (2003), The epidemiology of major depressive disorder: results from the National Comorbidity Survey Replication (NCS-R), *JAMA* 289: 3095-3105

66. Beck CA, Patten SB, Williams JV, Wang JL, Currie SR, Maxwell CJ, El-Guebaly N (2005), Antidepressant utilization in Canada, *Social Psychiatry and Psychiatric Epidemiology* 40: 799-807

67. Spijker J, Bijl RV, de Graaf R, Nolen WA (2001), Care utilization and outcome of DSM-III-R major depression in the general population. Results from the Netherlands Mental Health Survey and Incidence Study (NEMESIS), *Acta Psychiatrica Scandinavica* 104: 19-24

68. Patten SB (2005), Modelling major depression epidemiology and assessing the impact of antidepressants on population health, *International Review of Psychiatry* 17: 205-211

69. Meltzer H, Bebbington P, Brugha T, Farrell M, Jenkins R, Lewis G (2003), The reluctance to seek treatment for neurotic disorders, *Int.Rev.Psychiatry* 15: 123-128

70. Sanmartin C, Houle C, Tremblay S, Berthelot J (2002), Changes in unmet health care needs, *Health Rep.* 13: 15-21

71. Sareen J, Cox BJ, Afifi TO, Clara I, Yu BN (2005), Perceived need for mental health treatment in a nationally representative Canadian sample, *Canadian Journal of Psychiatry* 50: 643-651

72. Bland RC, Newman SC, Orn H (1990), Health care utilization for emotional problems: results from a community survey, *Canadian Journal of Psychiatry* 35: 397-400

73. Boyle MH, Offord DR, Campbell D, Catlin G, Goering P, Lin E, Racine YA (1996), Mental health supplement to the Ontario Health Survey: methodology, *Canadian Journal of Psychiatry* 41: 549-558

74. Statistics Canada. Profile of the Canadian population by age and sex: Canada ages. [96F0030XIE2001002]. 2002. Ottawa, Statistics Canda.

75. Ontario Ministry of Finance. Ontario Demographic Quarterly, Highlights of First Quarter 2006. 1-2. 2006.

76. Statistics Canada. 2001 Census: analysis series. Canada's ethnocultural portrait: The changing mosaic. [96F0030XIE2001008]. 2003. Statistics Canada. Census Operation Division.

77. Statistics Canada. 2001 Census Dictionary - reference. [92-378-XIE]. 2003. Ottawa, Minister of Industry, Statistics Canada.

78. Statistics Canada. 2001 Census: analysis series. Education in Canada: Raising the standard. [96F0030XIE2001012]. 2003.

79. Statistics Canada. The Changing Profile of Canada's Labour Force, 2001 Census. [96F0030XIE2001009]. 2003.

80. Federal Provincial and Territorial Advisory Committee on Population Health. Statistical Report on the Health of Canadians and of Toward a Healthy Future: Second Report on the Health of Canadians. 82-570-X1E. 1999.

81. Thomlinson E, McDonagh MK, Crooks KB, Lees M (20074), Health beliefs of rural Canadians: implications for practice, *Aust.J.Rural.Health* 12: 258-263

82. Stevenson K (2002), Health Information on the Net, *Canadian Social Trends* 7-10

83. Rotermann M (2001), Wired Young Canadians, *Canadian Social Trends* 4-8

84. Silver C (2001), Older Surfers, *Canadian Social Trends* 9-12

85. Leach LS, Christensen H, Griffiths KM, Jorm AF, Mackinnon AJ (2006), Websites as a mode of delivering mental health information: perceptions from the Australian public, *Social Psychiatry and Psychiatric Epidemiology*

86. Powell J, Clarke A (2006), Internet information-seekig in mental health: Population survey., *British Journal of Psychiatry* 189: 273-277

87. Preventing Chronic Diseases [serial online]. Health-related information on the web: Results from the HealthStyles Survey, 2002-2003., Available at: http://www.cdc.gov/pcd/issues/2006/apr/05_015.htm

88. McManus P, Mant A, Mitchell PB, Montgomery WS, Marley J, Auland ME (2000), Recent trends in the use of antidepressant drugs in Australia, 1990-1998, *Med.J.Aust.* 173: 458-461

89. Hemels ME, Koren G, Einarson TR (2002), Increased use of antidepressants in Canada: 1981-2000, *Annals of Pharmacotherapy* 36: 1375-1379

90. Patten SB, Beck C (2004), Major depression and mental health care utilization in Canada: 1994 to 2000, *Canadian Journal of Psychiatry* 49: 303-309

91. Chan B. Supply of physicians' services in Ontario. 1, 1-29. 1999. Institute of Clinical Evaluative Sciences. Uses of Health Services.

92. CIHI. Supply and Distribution of Physicians, Canada: Selected Years, 1961 to 1995. 1997. Ottawa, Canadian Institute for Health Information.

93. CIHI. Supply, Distribution and Migration of Canadian Physicians, 2001. 2002. Canadian Institute for Health Information.

94. Lin E, Goering P. Fiscal changes for core mental health services delivered by fee-for-service physicians. 2, 1-17. 2000. Institute for Clinical Evaluative Sciences. Uses of Health Services.

95. Lin E (2000), Changes in Ontario's core mental health care, *Hospital Quarterly* 3: 15

96. Graham R. Building a community suppor for people: A plan for mental health in Ontario. 1988.

97. Heseltine GF. Towards a Blueprint for Change: A Mental Health Policy and Program Perspective: Discussion Paper. 1983. Toronto, Ontario Ministry of Health.

98. Ontario Ministry of Health. Putting People First: The Reform of Mental Health Services in Ontario. 1993.

99. Newman D. MENTAL HEALTH :2000 and Beyond : Strengthening Ontario's Mental Health System. A Report on the Consultative Review of Mental Health Reform in the Province of Ontario. 1998.

100. Ontario Ministry of Health. Making It Happen: Implementation Plan for Mental Health Reform. 1999.

101. Dewa CS, Rochefort DA, Rogers J, Goering P (2003), Left behind by reform: the case for improving primary care and mental health system services for people with moderate mental illness, *Appl.Health Econ.Health Policy* 2: 43-54

102. Dewa CS, Lin E (2000), Chronic physical illness, psychiatric disorder and disability in the workplace, *Soc.Sci.Med.* 51: 41-50

103. Rosenstock IM, Strecher VJ, Becker MH (1988), Social learning theory and the Health Belief Model, *Health Education Quarterly* 15: 175-183

104. Prochaska JO, Velicer WF (1997), The transtheoretical model of health behavior change, *American Journal of Health Promotion* 12: 38-48

105. Ajzen I, Fishbein M*Understanding Attitudes and Predicting Social Behavior*, Englewood Cliffs, NJ, 1980.

106. Fishbein M, Ajzen I*Belief, Attitude, Intention, and Behavior: An Introduction to Theory and Research.*, Reading, MA.: Addison-Wesley, 1975.

107. Bandura A*Social Foundations of Thought and Action: A Social Cognitive Theory*, Englewood Cliffs, NJ: Prentice-Hall, 1986.

108. Bandura A*Social Learning Theory*, Englewood Cliffs, NJ: Prentice Hall, 1977.

109. Redding CA, Rossi JS, Rossi SR, Velicer WF, Prochaska JO (2000), Health Behaviour Models, *The International Electronic Journal of Health Education* 3: 180-193

110. Janz NK, Becker MH (1984), The health belief model: a decade later, *Health Education Quarterly* 11: 1-47

111. Rosenstock IM (1974), The health belief model and preventative health behavior., *Health Education Monographs* 2: 354-386

112. Suchman EA (1967), Preventive health behavior: a model for research on community health campaigns, *J.Health Soc.Behav.* 8: 197-209

113. Andersen R. A Behavioral Model of Families' Use of Health Services. Research series no.25. 1968. Chicago, Center for Health Administration Studies, University of Chicago.

114. Gross PF (1972), Urban health disorders, spatial analysis, and the economics of health facility location, *Int J.Health Serv.* 2: 63-84

115. Pescosolido BA, Wright ER, Alegria M, Vera M (1998), Social networks and patterns of use among the poor with mental health problems in Puerto Rico, *Medical Care* 36: 1057-1072

116. Pescosolido BA, Gardner CB, Lubell KM (1998), How people get into mental health services: stories of choice, coercion and "muddling through" from "first-timers", *Social Science and Medicine* 46: 275-286

117. Pescosolido BA, Boyer CA, Lubell KM.The social dynamics of responding to mental health problems: Past, present, and future challenges to understanding individuals' use of services. Phelan, Jo C. ed. 1995.

118. Aday LA, Andersen R (1974), A framework for the study of access to medical care, *Health Services Research* 9: 208-220

119. Andersen R, Aday LA (1978), Access to medical care in the U.S.: realized and potential, *Medical Care* 16: 533-546

120. Andersen RM (1995), Revisiting the behavioral model and access to medical care: does it matter?, *J.Health Soc.Behav.* 36: 1-10

121. Goodwin R, Andersen RM (2002), Use of the Behavioral Model of Health Care Use to identify correlates of use of treatment for panic attacks in the community, *Social Psychiatry and Psychiatric Epidemiology* 37: 212-219

122. Solorio MR, Milburn NG, Andersen RM, Trifskin S, Rodriguez MA (2006), Emotional distress and mental health service use among urban homeless adolescents, *Journal of Behavioral Health Services and Research* 33: 381-393

123. Parslow R, Jorm A, Christensen H, Jacomb P (2002), Factors associated with young adults' obtaining general practitioner services, *Aust Health Rev* 25: 109-118

124. Smith GC (2003), Patterns and predictors of service use and unmet needs among aging families of adults with severe mental illness, *Psychiatric Services* 54: 871-877

125. Phillips KA, Morrison KR, Andersen R, Aday LA (1998), Understanding the context of healthcare utilization: assessing environmental and provider-related variables in the behavioral model of utilization, *Health Services Research* 33: 571-596

126. Lin E, Goering P, Offord DR, Campbell D, Boyle MH (1996), The use of mental health services in Ontario: epidemiologic findings, *Canadian Journal of Psychiatry* 41: 572-577

127. Kessler RC, Zhao S, Blazer DG, Swartz M (1997), Prevalence, correlates, and course of minor depression and major depression in the National Comorbidity Survey, *Journal of Affective Disorders* 45: 19-30

128. ten Have M, Vollebergh W, Bijl RV, de Graaf R (2001), Predictors of incident care service utilisation for mental health problems in the Dutch general population, *Social Psychiatry and Psychiatric Epidemiology* 36: 141-149

129. Vasiliadis HM, Lesage A, Adair C, Boyer R (2005), Service use for mental health reasons: cross-provincial differences in rates, determinants, and equity of access, *Canadian Journal of Psychiatry* 50: 614-619

130. Weissman MM, Bland R, Joyce PR, Newman S, Wells JE, Wittchen HU (1993), Sex differences in rates of depression: cross-national perspectives, *Journal of Affective Disorders* 29: 77-84

131. Drapeau A, Lesage A, Boyer R (2005), Is the statistical association between sex and the use of services for mental health reasons confounded or modified by social anchorage?, *Canadian Journal of Psychiatry* 50: 599-604

132. Schmitz N, Kruse J (2002), The relationship between mental disorders and medical service utilization in a representative community sample, *Social Psychiatry and Psychiatric Epidemiology* 37: 380-386

133. Rhodes AE, Goering PN, To T, Williams JI (2002), Gender and outpatient mental health service use, *Social Science and Medicine* 54: 1-10

134. Vasiliadis HM, Lesage A, Adair C, Boyer R (2005), Service use for mental health reasons: cross-provincial differences in rates, determinants, and equity of access, *Canadian Journal of Psychiatry* 50: 614-619

135. Leaf PJ, Bruce ML, Tischler GL, Freeman DH (1988), Factors affecting the utilization of specialty and general medical mental health services, *Medical Care* 26: Jan1988-26

136. Wittchen HU, Robins LN, Cottler LB, Sartorius N, Burke JD, Regier D (1991), Cross-cultural feasibility, reliability and sources of variance of the Composite International Diagnostic Interview (CIDI). The Multicentre

WHO/ADAMHA Field Trials, *British Journal of Psychiatry* 159: 645-53, 658

137. Beaudet MP (1996), Depression, *Health Rep.* 7: 11-25

138. Fournier L, Lemoine O, Poulin C, Poirier LR. Enquete sur la sante mentale des Montrealais. Volume 1: La sante mentale et les besoins des sonis des adults. 2002. Montreal, Direction de la Sante Publique.

139. Starkes JM, Poulin CC, Kisely SR (2005), Unmet need for the treatment of depression in Atlantic Canada, *Canadian Journal of Psychiatry* 50: 580-590

140. Vasiliadis HM, Lesage A, Adair C, Boyer R (2005), Service use for mental health reasons: cross-provincial differences in rates, determinants, and equity of access, *Canadian Journal of Psychiatry* 50: 614-619

141. Burns JR, Rapee RM (2006), Adolescent mental health literacy: Young people's knowledge of depression and help seeking, *Journal of Adolescence* 29: 225-239

142. Biddle L, Donovan JL, Gunnell D, Sharp D (2006), Young adults' perceptions of GPs as a help source for mental distress: a qualitative study., *British Journal of General Practice* 56: 924-931

143. Goodwin RD, Hoven CW, Lyons JS, Stein MB (2002), Mental health service utilization in the United States The role of personality factors, *Social Psychiatry and Psychiatric Epidemiology* 37: 561-566

144. Hunsley J, Lee CM, Aubry T (1999), Who uses psychological services in Canada?, *Canadian Psychology* 40: 232-240

145. Lefebvre J, Lesage A, Cyr M, Toupin J, Fournier L (1998), Factors related to utilization of services for mental health reasons in Montreal, Canada, *Soc.Psychiatry Psychiatr.Epidemiol* 33: 291-298

146. Olfson M, Marcus SC, Druss B, Pincus HA (2002), National trends in the use of outpatient psychotherapy, *American Journal of Psychiatry* 159: 1914-1920

147. Parikh SV, Lin E, Lesage AD (1997), Mental health treatment in Ontario: selected comparisons between the primary care and specialty sectors, *Canadian Journal of Psychiatry* 42: 929-934

148. Rabinowitz J, Gross R, Feldman D (1999), Correlates of a perceived need for mental health assistance and differences between those who do and do not seek help, *Social Psychiatry and Psychiatric Epidemiology* 34: 141-146

149. Vasiliadis HM, Lesage A, Adair C, Boyer R (2005), Service use for mental health reasons: cross-provincial differences in rates, determinants, and equity of access, *Canadian Journal of Psychiatry* 50: 614-619

150. Rabinowitz J, Gross R, Feldman D (1999), Correlates of a perceived need for mental health assistance and differences between those who do and do not seek help, *Social Psychiatry and Psychiatric Epidemiology* 34: 141-146

151. Simon GE, Goldberg DP, Von Korff M, Ustun TB (2002), Understanding cross-national differences in depression prevalence, *Psychological Medicine* 32: 585-594

152. Kleinman A (2004), Culture and depression, *New England Journal of Medicine* 351: 951-953

153. U.S.Department of Health and Human Services. Mental Health: A Report of teh Surgeon General - Executive Summary. 1999. Rockville, MD, U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Center for Mental Health Services, National Institutes of Mental Health.

154. U.S.Department of Health and Human Services. Mental Health: Culture, Race, and Ethnicity-A Supplement to Mental Health: A Report of the Surgeon General. 2001. Rockville, MD, U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Center for Mental Health Services.

155. Snowden LR (2003), Bias in mental health assessment and intervention: theory and evidence, *American Journal of Public Health* 93: 239-243

156. Wang PS, Demler O, Kessler RC (2002), Adequacy of treatment for serious mental illness in the United States, *American Journal of Public Health* 92: 92-98

157. Wells K, Klap R, Koike A, Sherbourne C (2001), Ethnic disparities in unmet need for alcoholism, drug abuse, and mental health care, *American Journal of Psychiatry* 158: Dec2001-Dec2032

158. Leong FT, Lau AS (2001), Barriers to providing effective mental health services to Asian Americans, *Ment.Health Serv.Res.* 3: 201-214

159. Wilson M, MacCarthy B (1994), GP consultation as a factor in the low rate of mental health service use by Asians, *Psychological Medicine* 24: 113-119

160. Horne R, Graupner L, Frost S, Weinman J, Wright SM, Hankins M (2004), Medicine in a multi-cultural society: the effect of cultural background on beliefs about medications, *Social Science and Medicine* 59: 1307-1313

161. Cooper LA, Gonzales JJ, Gallo JJ, Rost KM, Meredith LS, Rubenstein LV, Wang NY, Ford DE (2003), The acceptability of treatment for depression among African-American, Hispanic, and white primary care patients, *Medical Care* 41: 479-489

162. Karasz A (2005), Cultural differences in conceptual models of depression, *Social Science and Medicine* 60: 1625-1635

163. Kirmayer LJ (2001), Cultural variations in the clinical presentation of depression and anxiety: implications for diagnosis and treatment, *Journal of Clinical Psychiatry* 62 Suppl 13: 22-28

164. Mojtabai R, Olfson M, Mechanic D (2002), Perceived need and help-seeking in adults with mood, anxiety, or substance use disorders, *Archives of General Psychiatry* 59: 77-84

165. Hoge CW, Lesikar SE, Guevera R, Lange J, Brundage JF, Engel CC, Messer SC, Orman DT (2002), Mental Disorders Among U.S. Military Personnel in the 1990s: Association With High Levels of Health Care Utilization and Early Military Attrition, *American Journal of Psychiatry* 159: 1576-1583

166. Pirkis J, Burgess P, Meadows G, Dunt D (2001), Access to Australian mental health care by people from non-English- speaking backgrounds, *Australian and New Zealand Journal of Psychiatry* 35: 174-182

167. Carpentier N, Lesage A, White D (1999), Family Influence on the First Stages of the Trajectory of Patients Diagnosed with Severe Psychiatric Disorders, *Family Relations* 48: 397-403

168. ten Have M, Oldehinkel A, Vollebergh W, Ormel J (2003), Does educational background explain inequalities in care service use for mental health problems in the Dutch general population?, *Acta Psychiatrica Scandinavica* 107: 178-187

169. Fernandez de la Hoz K, Leon DA (1996), Self-perceived health status and inequalities in use of health services in Spain, *International Journal of Epidemiology* 25: 593-603

170. Starkes JM, Poulin CC, Kisely SR (2005), Unmet need for the treatment of depression in Atlantic Canada, *Canadian Journal of Psychiatry* 50: 580-590

171. Vasiliadis HM, Lesage A, Adair C, Boyer R (2005), Service use for mental health reasons: cross-provincial differences in rates, determinants, and equity of access, *Canadian Journal of Psychiatry* 50: 614-619

172. Berkman LF, Glass T.Social Integration, Social Networks, Social Support, and Health. In: Berkman LF and Kawachi I eds. *Social Epidemiology.* 2000;137-173.

173. Melchior M, Berkman LF, Niedhammer I, Chea M, Golberg M (2003), Social relations and self-reported health: a prospective analysis of the French Gazel cohort, *Social Science and Medicine* 56: 1817-1830

174. Kawachi I, Berkman LF (2001), Social ties and mental health, *J.Urban.Health* 78: 458-467

175. Schroevers MJ, Ranchor AV, Sanderman R (2003), The role of social support and self-esteem in the presence and course of depressive symptoms: a comparison of cancer patients and individuals from the general population, *Social Science and Medicine* 57: 375-385

176. Olstad R, Sexton H, Sogaard AJ (2001), The Finnmark Study. A prospective population study of the social support buffer hypothesis, specific stressors and mental distress, *Social Psychiatry and Psychiatric Epidemiology* 36: 582-589

177. Shields M (2004), Stress, health and the benefit of social support, *Health Rep.* 15: 9-38

178. Thoits PA (1995), Stress, coping, and social support processes: where are we? What next?, *J.Health Soc.Behav.* Spec No: 53-79

179. George LK, Blazer DG, Hughes DC, Fowler N (1989), Social support and the outcome of major depression, *British Journal of Psychiatry* 154: 478-485

180. Lin N, Ye X, Ensel WM (1999), Social support and depressed mood: a structural analysis, *J.Health Soc.Behav.* 40: 344-359

181. Wethington E, Kessler RC (1986), Perceived support, received support, and adjustment to stressful life events, *J.Health Soc.Behav.* 27: 78-89

182. ten Have M, Vollebergh W, Bijl R, Ormel J (2002), Combined effect of mental disorder and low social support on care service use for mental health problems in the Dutch general population, *Psychological Medicine* 32: 311-323

183. Sherbourne CD (1988), The role of social support and life stress events in use of mental health services, *Social Science and Medicine* 27: 1393-1400

184. Albert M, Becker T, McCrone P, Thornicroft G (1998), Social networks and mental health service utilisation: A literature review, *International Journal of Social Psychiatry* 44: Win1998-266

185. Alegria M, Bijl RV, Lin E, Walters EE, Kessler RC (2000), Income differences in persons seeking outpatient treatment for mental disorders: a

comparison of the United States with Ontario and The Netherlands, *Archives of General Psychiatry* 57: 383-391

186. Vasiliadis HM, Lesage A, Adair C, Boyer R (2005), Service use for mental health reasons: cross-provincial differences in rates, determinants, and equity of access, *Canadian Journal of Psychiatry* 50: 614-619

187. Steele LS, Glazier RH, Lin E (2006), Inequity in mental health care under Canadian universal health coverage, *Psychiatric Services* 57: 317-324

188. Drapeau A, Lesage A, Boyer R (2005), Is the statistical association between sex and the use of services for mental health reasons confounded or modified by social anchorage?, *Canadian Journal of Psychiatry* 50: 599-604

189. Tataryn D, Mustard CA, Derksen S. The Utilization of Medical Services for Mental Health Disorders: Manitoba:1991-1992. 1994. Winnipeg, Manitoba Centre for Health Policy and Evaluation.

190. Mustard CA, Derksen S, Tataryn D (1996), Intensive use of mental health care, *Canadian Journal of Psychiatry* 41: 93-101

191. Starkes JM, Poulin CC, Kisely SR (2005), Unmet need for the treatment of depression in Atlantic Canada, *Canadian Journal of Psychiatry* 50: 580-590

192. Human J, Wasem C (1991), Rural mental health in America, *Am.Psychol.* 46: 232-239

193. Yuen EJ, Gerdes JL, Gonzales JJ (1996), Patterns of rural mental health care: An exploratory study, *General Hospital Psychiatry* 18: Jan1996-21

194. Kessler RC, Zhao S, Katz SJ, Kouzis AC, Frank RG, Edlund M, Leaf P (1999), Past-year use of outpatient services for psychiatric problems in the National Comorbidity Survey, *American Journal of Psychiatry* 156: 115-123

195. Kessler RC, Berglund PA, Bruce ML, Koch JR, Laska EM, Leaf PJ, Manderscheid RW, Rosenheck RA, Walters EE, Wang PS (2001), The prevalence and correlates of untreated serious mental illness, *Health Services Research* 36: 987-1007

196. Wang JL (2004), Rural-urban differences in the prevalence of major depression and associated impairment, *Social Psychiatry and Psychiatric Epidemiology* 39: 19-25

197. Parikh SV, Wasylenki D, Goering P, Wong J (1996), Mood disorders: rural/urban differences in prevalence, health care utilization, and disability in Ontario, *Journal of Affective Disorders* 38: 57-65

198. Starkes JM, Poulin CC, Kisely SR (2005), Unmet need for the treatment of depression in Atlantic Canada, *Canadian Journal of Psychiatry* 50: 580-590

199. Macintyre S, Maciver S, Sooman A (1993), Area, Class and Health: Should we be focusing on places or people?, *Journal of Social Policy* 22: 213-23

200. Macintyre S, Ellaway A.Ecological approaches: Rediscovering the role of the physical and social environment. In: Berkman LF and Kawachi I eds. *Social Epidemiology.* 2000;332-348.

201. Diez Roux AV (2000), Multilevel analysis in public health research, *Annu.Rev.Public Health* 21: 171-192

202. Anonymous*Neighbourhood and Health*, Oxford: Oxford Univefrsity Press, 2003.

203. Macintyre S, Ellaway A.Neighbourhood and Helath: An Overview. In: Kawachi I and Berkman LF eds. *Neighbourhoods and Health.* 2003;20-42.

204. Shields M, Tremblay S (2002), The health of Canada's communities, *Health Reports - Supplement* 13: 9-32

205. Wen M, Browning CR, Cagney KA (2003), Poverty, affluence, and income inequality: neighborhood economic structure and its implications for health, *Social Science and Medicine* 57: 843-860

206. Hou F, Chen J (2003), Neighbourhood low income, income inequality and health in Toronto, *Health Rep.* 14: 21-34

207. Ross NA, Tremblay SS, Graham K (2004), Neighbourhood influences on health in Montreal, Canada, *Social Science and Medicine* 59: 1485-1494

208. Lynch J, Smith GD, Harper S, Hillemeier M, Ross N, Kaplan GA, Wolfson M (2004), Is income inequality a determinant of population health? Part 1. A systematic review, *Milbank Q.* 82: 5-99

209. Roos LL, Magoon J, Gupta S, Chateau D, Veugelers PJ (2004), Socioeconomic determinants of mortality in two Canadian provinces: multilevel modelling and neighborhood context, *Social Science and Medicine* 59: 1435-1447

210. Veugelers PJ, Yip AM, Burge F (2004), Inequalities in health and health services delivery: a multilevel study of primary care and hypertension control, *Chronic Diseases in Canada* 25: 101-107

211. Veugelers PJ, Yip AM, Elliott DC (2003), Geographic variation in health services use in Nova Scotia, *Chronic Diseases in Canada* 24: 116-123

212. Veugelers PJ, Yip AM (2003), Socioeconomic disparities in health care use: Does universal coverage reduce inequalities in health?, *Journal of Epidemiology and Community Health* 57: 424-428

213. Veugelers PJ, Fitzgerald AL (2005), Effectiveness of school programs in preventing childhood obesity: a multilevel comparison, *American Journal of Public Health* 95: 432-435

214. Yip AM, Kephart G, Veugelers PJ (2002), Individual and neighbourhood determinants of health care utilization. Implications for health policy and resource allocation, *Canadian Journal of Public Health* 93: 303-307

215. McLeod CB, Lavis JN, Mustard CA, Stoddart GL (2003), Income inequality, household income, and health status in Canada: a prospective cohort study, *American Journal of Public Health* 93: 1287-1293

216. Henderson C, Diez Roux AV, Jacobs DR, Jr., Kiefe CI, West D, Williams DR (2005), Neighbourhood characteristics, individual level socioeconomic factors, and depressive symptoms in young adults: the CARDIA study, *Journal of Epidemiology and Community Health* 59: 322-328

217. Kubzansky LD, Subramanian SV, Kawachi I, Fay ME, Soobader MJ, Berkman LF (2005), Neighborhood contextual influences on depressive symptoms in the elderly, *American Journal of Epidemiology* 162: 253-260

218. Silver E, Mulvey EP, Swanson JW (2002), Neighborhood structural characteristics and mental disorder: Faris and Dunham revisited, *Social Science and Medicine* 55: 1457-1470

219. Litaker D, Love TE (2005), Health care resource allocation and individuals' health care needs: examining the degree of fit, *Health Policy* 73: 183-193

220. Silver E, Mulvey EP, Swanson JW (2002), Neighborhood structural characteristics and mental disorder: Faris and Dunham revisited, *Social Science and Medicine* 55: 1457-1470

221. Drukker M, Driessen G, Krabbendam L, Van OJ (2004), The wider social environment and mental health service use, *Acta Psychiatrica Scandinavica* 110: 119-129

222. Kubzansky LD, Subramanian SV, Kawachi I, Fay ME, Soobader MJ, Berkman LF (2005), Neighborhood contextual influences on depressive symptoms in the elderly, *American Journal of Epidemiology* 162: 253-260

223. Silver E, Mulvey EP, Swanson JW (2002), Neighborhood structural characteristics and mental disorder: Faris and Dunham revisited, *Social Science and Medicine* 55: 1457-1470

224. Litaker D, Love TE (2005), Health care resource allocation and individuals' health care needs: examining the degree of fit, *Health Policy* 73: 183-193

225. Diez Roux AV (2004), Estimating neighborhood health effects: the challenges of causal inference in a complex world, *Social Science and Medicine* 58: 1953-1960

226. Diez Roux AV (2001), Investigating neighborhood and area effects on health, *American Journal of Public Health* 91: 1783-1789

227. Diez Roux AV (2002), A glossary for multilevel analysis, *J.Epidemiol.Community Health* 56: 588-594

228. Diez Roux AV (2004), The study of group-level factors in epidemiology: rethinking variables, study designs, and analytical approaches, *Epidemiol.Rev.* 26: 104-111

229. Oakes JM (2004), The (mis)estimation of neighborhood effects: causal inference for a practicable social epidemiology, *Social Science and Medicine* 58: 1929-1952

230. Diez Roux AV (1998), Bringing context back into epidemiology: variables and fallacies in multilevel analysis, *Am.J.Public Health* 88: 216-222

231. Olfson M, Kessler RC, Berglund PA, Lin E (1998), Psychiatric disorder onset and first treatment contact in the United States and Ontario, *American Journal of Psychiatry* 155: 1415-1422

232. Rhodes AE, Goering PN, To T, Williams JI (2002), Gender and outpatient mental health service use, *Social Science and Medicine* 54: 1-10

233. Ross HE, Lin E, Cunningham J (1999), Mental health service use: a comparison of treated and untreated individuals with substance use disorders in Ontario, *Canadian Journal of Psychiatry* 44: 570-577

234. Tweed DL, Goering P, Lin E, Williams JI (1998), Psychiatric morbidity and physician visits: lessons from Ontario, *Medical Care* 36: 573-585

235. Vasiliadis HM, Lesage A, Adair C, Boyer R (2005), Service use for mental health reasons: cross-provincial differences in rates, determinants, and equity of access, *Canadian Journal of Psychiatry* 50: 614-619

236. Wittchen HU, Kessler RC, Pfister H, Lieb M (2000), Why do people with anxiety disorders become depressed? A prospective-longitudinal community study, *Acta Psychiatrica Scandinavica* 102: 14-23

237. Vasiliadis HM, Lesage A, Adair C, Boyer R (2005), Service use for mental health reasons: cross-provincial differences in rates, determinants, and equity of access, *Canadian Journal of Psychiatry* 50: 614-619

238. Kessler RC, McGonagle KA, Zhao S, Nelson CB, Hughes M, Eshleman S, Wittchen HU, Kendler KS (1994), Lifetime and 12-month prevalence of DSM-III-R psychiatric disorders in the United States. Results from the National Comorbidity Survey, *Archives of General Psychiatry* 51: 8-19

239. Roness A, Mykletun A, Dahl AA (2005), Help-seeking behaviour in patients with anxiety disorder and depression, *Acta Psychiatrica Scandinavica* 111: 51-58

240. Klein DN, Lewinsohn PM, Rohde P, Seeley JR, Shankman SA (2003), Family study of co-morbidity between major depressive disorder and anxiety disorders, *Psychological Medicine* 33: 703-714

241. Murphy JM, Horton NJ, Laird NM, Monson RR, Sobol AM, Leighton AH (2004), Anxiety and depression: a 40-year perspective on relationships regarding prevalence, distribution, and comorbidity, *Acta Psychiatrica Scandinavica* 109: 355-375

242. Goodwin RD (2002), Anxiety disorders and the onset of depression among adults in the community, *Psychological Medicine* 32: 1121-1124

243. de Graaf R, Bijl RV, Spijker J, Beekman AT, Vollebergh WA (2003), Temporal sequencing of lifetime mood disorders in relation to comorbid anxiety and substance use disorders Findings from the Netherlands Mental Health Survey and Incidence Study, *Social Psychiatry and Psychiatric Epidemiology* 38: 1-11

244. Alonso J, Angermeyer MC, Bernert S, Bruffaerts R, Brugha TS, Bryson H, de GG, Graaf R, Demyttenaere K, Gasquet I, Haro JM, Katz SJ, Kessler RC, Kovess V, Lepine JP, Ormel J, Polidori G, Russo LJ, Vilagut G, Almansa J, rbabzadeh-Bouchez S, Autonell J, Bernal M, Buist-Bouwman MA, Codony M, Domingo-Salvany A, Ferrer M, Joo SS, Martinez-Alonso M, Matschinger H, Mazzi F, Morgan Z, Morosini P, Palacin C, Romera B, Taub N, Vollebergh WA (2004), 12-Month comorbidity patterns and associated factors in Europe: results from the European Study of the Epidemiology of Mental Disorders (ESEMeD) project, *Acta Psychiatr.Scand.Suppl* 28-37

245. Galbaud du FG, Newman SC, Boothroyd LJ, Bland RC (1999), Treatment seeking for depression: role of depressive symptoms and comorbid psychiatric diagnoses, *Journal of Affective Disorders* 52: 31-40

246. Felker B, Yazel JJ, Short D (1996), Mortality and medical comorbidity among psychiatric patients: a review, *Psychiatric Services* 47: 1356-1363

247. Westert GP, Satariano WA, Schellevis FG, Van den Bos GA (2001), Patterns of comorbidity and the use of health services in the Dutch population, *Eur.J.Public Health* 11: 365-372

248. Evans DL, Charney DS, Lewis L, Golden RN, Gorman JM, Krishnan KR, Nemeroff CB, Bremner JD, Carney RM, Coyne JC, Delong MR, Frasure-Smith N, Glassman AH, Gold PW, Grant I, Gwyther L, Ironson G, Johnson RL, Kanner AM, Katon WJ, Kaufmann PG, Keefe FJ, Ketter T, Laughren TP, Leserman J, Lyketsos CG, McDonald WM, McEwen BS, Miller AH, Musselman D, O'Connor C, Petitto JM, Pollock BG, Robinson RG, Roose SP, Rowland J, Sheline Y, Sheps DS, Simon G, Spiegel D, Stunkard A, Sunderland T, Tibbits P, Jr., Valvo WJ (2005), Mood disorders in the medically ill: scientific review and recommendations, *Biol.Psychiatry* 58: 175-189

249. Gill D, Hatcher S (1999), A systematic review of the treatment of depression with antidepressant drugs in patients who also have a physical illness, *Journal of Psychosomatic Research* 47: 131-143

250. Goodwin RD, Pine DS (2002), Respiratory disease and panic attacks among adults in the United States, *Chest* 122: 645-650

251. DiMarco F, Verga M, Reggente M, Maria CF, Santus P, Blasi F, Allegra L, Centanni S (2006), Anxiety and depression in COPD patients: The roles of gender and disease severity, *Respir.Med.*

252. Carney RM, Freedland KE.Depression and Medical Illness. In: Berkman LF and Kawachi I eds. *Social Epidemiology.* 2000;191-212.

253. Kubzansky LD, Kawachi I.Affective States and Health. In: Berkman LF and Kawachi I eds. *Social Epidemiology.* 2000;213-241.

254. Frasure-Smith N, Lesperance F (2006), Recent evidence linking coronary heart disease and depression, *Canadian Journal of Psychiatry* 51: 730-737

255. Lin E, Goering PN, Lesage A, Streiner DL (1997), Epidemiologic assessment of overmet need in mental health care, *Social Psychiatry and Psychiatric Epidemiology* 32: 355-362

256. ten Have M, Vollebergh W, Bijl R, Ormel J (2002), Combined effect of mental disorder and low social support on care service use for mental health problems in the Dutch general population, *Psychological Medicine* 32: 311-323

257. Goering P, Lin E, Campbell D, Boyle MH, Offord DR (1996), Psychiatric disability in Ontario, *Canadian Journal of Psychiatry* 41: 564-571

258. Bijl RV, Ravelli A (2000), Current and residual functional disability associated with psychopathology: findings from the Netherlands Mental Health Survey and Incidence Study (NEMESIS), *Psychological Medicine* 30: 657-668

259. ten Have M, Vollebergh W, Bijl R, Ormel J (2002), Combined effect of mental disorder and low social support on care service use for mental health problems in the Dutch general population, *Psychological Medicine* 32: 311-323

260. Lin E, Parikh SV (1999), Sociodemographic, clinical, and attitudinal characteristics of the untreated depressed in Ontario, *Journal of Affective Disorders* 53: 153-162

261. Black BS, Rabins PV, German P, Roca R, McGuire M, Brant LJ (1998), Use of formal and informal sources of mental health care among older African-American public-housing residents, *Psychological Medicine* 28: 519-530

262. Albizu-Garcia CE, Alegria M, Freeman D, Vera M (2001), Gender and health services use for a mental health problem, *Social Science and Medicine* 53: 865-878

263. Alegria M, Robles RR, Vera M (1988), Psychiatric symptomatology and health care utilization, *Puerto Rico Health Sciences Journal* 7: 15-19

264. Connelly JE, Philbrick JT, Smith GR, Jr., Kaiser DL, Wymer A (1989), Health perceptions of primary care patients and the influence on health care utilization, *Medical Care* 27: S99-109

265. Connelly JE, Smith GR, Philbrick JT, Kaiser DL (1991), Healthy patients who perceive poor health and their use of primary care services, *Journal of General Internal Medicine* 6: 47-51

266. Bellon JA, Delgado A, Luna JD, Lardelli P (1999), Psychosocial and health belief variables associated with frequent attendance in primary care, *Psychological Medicine* 29: 1347-1357

267. Frostholm L, Fink P, Christensen KS, Toft T, Oernboel E, Olesen F, Weinman J (2005), The patients' illness perceptions and the use of primary health care, *Psychosomatic Medicine* 67: 997-1005

268. Kapur N, Hunt I, Lunt M, McBeth J, Creed F, Macfarlane G (2004), Psychosocial and illness related predictors of consultation rates in primary care--a cohort study, *Psychological Medicine* 34: 719-728

269. Kessler RC (1997), The effects of stressful life events on depression, *Annu.Rev.Psychol.* 48: 191-214

270. Ystgaard M, Tambs K, Dalgard OS (1999), Life stress, social support and psychological distress in late adolescence: a longitudinal study, *Social Psychiatry and Psychiatric Epidemiology* 34: 12-19

271. Vasiliadis HM, Lesage A, Adair C, Boyer R (2005), Service use for mental health reasons: cross-provincial differences in rates, determinants, and equity of access, *Canadian Journal of Psychiatry* 50: 614-619

272. Lesage A, Vasiliadis HM, Gagne MA, Dudgeon S, Kasman N, Hay C. Prevalence of Mental Illness and Related Service Utilization in Canada: An analysis of the Canadian Community Health Survey. Report prepared for the Canadian Collaborative Mental Health Initiative, Mississauga, Ontario, Canada. 2006.

273. Frise S, Steingart A, Sloan M, Cotterchio M, Kreiger N (2002), Psychiatric Disorders and Use of Mental Health Services by Ontario Women, *Canadian Journal of Psychiatry* 47: 849-856

274. Wittchen HU, Lieb R, Wunderlich U, Schuster P (1999), Comorbidity in primary care: presentation and consequences, *Journal of Clinical Psychiatry* 60 Suppl 7: 29-36

275. Goodwin RD (2002), Anxiety disorders and the onset of depression among adults in the community, *Psychological Medicine* 32: 1121-1124

276. de Graaf R, Bijl RV, Spijker J, Beekman AT, Vollebergh WA (2003), Temporal sequencing of lifetime mood disorders in relation to comorbid anxiety and substance use disorders Findings from the Netherlands Mental Health Survey and Incidence Study, *Social Psychiatry and Psychiatric Epidemiology* 38: 1-11

277. de Graaf R, Bijl RV, Ten HM, Beekman AT, Vollebergh WA (2004), Pathways to comorbidity: the transition of pure mood, anxiety and substance use disorders into comorbid conditions in a longitudinal population-based study, *Journal of Affective Disorders* 82: 461-467

278. Wakefield JC (1997), Diagnosing DSM-IV--Part I: DSM-IV and the concept of disorder, *Behav.Res.Ther.* 35: 633-649

279. Frances A. Problems in defining clinical significance in epidemiological studies. Archives of General Psychiatry 55, 119. 1998.

280. Kessler RC, Merikangas KR, Berglund P, Eaton WW, Koretz DS, Walters EE (2003), Mild disorders should not be eliminated from the DSM-V, *Archives of General Psychiatry* 60: 1117-1122

281. Barney LJ, Griffiths KM, Jorm AF, Christensen H (2006), Stigma about depression and its impact on help-seeking intentions, *Australian and New Zealand Journal of Psychiatry* 40: 51-54

282. Angermeyer MC, Matschinger H (2005), Have there been any changes in the public's attitudes towards psychiatric treatment? Results from representative population surveys in Germany in the years 1990 and 2001, *Acta Psychiatrica Scandinavica* 111: 68-73

283. Boyle MH, Offord DR, Campbell D, Catlin G, Goering P, Lin E, Racine YA (1996), Mental health supplement to the Ontario Health Survey: methodology, *Canadian Journal of Psychiatry* 41: 549-558

284. Folstein MF, Folstein SE, McHugh PR (1975), "Mini-mental state". A practical method for grading the cognitive state of patients for the clinician, *Journal of Psychiatric Research* 12: 189-198

285. Gravel R, Beland Y (2005), The Canadian Community Health Survey: mental health and well-being, *Canadian Journal of Psychiatry* 50: 573-579

286. Statistics Canada. Update on the release, analysis and diffusion of CCHS1.2 Presentation given by Lorna Bailie at the 2003 Annual Scientific Meeting, Canadian Academy of Psychiatric Research. Halifax, Nova Scotia, October 30th, 2003. 2003.

287. Gonthier D, Hotton T, Cook C, Wilkins R. Merging area-level census data with survey data in Statistics Canada Research Data Centres. Information and Technical Bulletin 3[1], 21-39. 2006.

288. CIHI. Canadian Institute for Health Information. www.cihi.ca . 2006.

289. Robins LN, Wing J, Wittchen HU, Helzer JE, Babor TF, Burke J, Farmer A, Jablenski A, Pickens R, Regier DA, . (1988), The Composite International Diagnostic Interview. An epidemiologic Instrument suitable for use in conjunction with different diagnostic systems and in different cultures, *Archives of General Psychiatry* 45: 1069-1077

290. Andrews G, Peters L (1998), The psychometric properties of the Composite International Diagnostic Interview, *Social Psychiatry and Psychiatric Epidemiology* 33: 80-88

291. Janca A, Ustun TB, Sartorius N (1994), New versions of World Health Organization instruments for the assessment of mental disorders, *Acta Psychiatrica Scandinavica* 90: 73-83

292. Kessler RC, Wittchen HU, Abelson JM, McGonagle KA, Schwarz N, Kendler KS, Knauper B, Zhao S (1998), Methodological studies of the Composite International Diagnostic Interview (CIDI) in the US National

Comorbidity Survey., *International Journal of Methods in Psychiatric Research* 7: 33-55

293. Kessler RC, Wittchen HU, Abelson J et al. Methodological issues in assessing psychiatric disorder with self-reports. In: Stone AA, Turrkan CA, Bachrach J et al. eds. *The Science of Self-Report: Implications for Research and Practice.* 2000;229-255.

294. Regier DA, Kaelber CT, Rae DS, Farmer ME, Knauper B, Kessler RC, Norquist GS (1998), Limitations of diagnostic criteria and assessment instruments for mental disorders. Implications for research and policy, *Archives of General Psychiatry* 55: 109-115

295. Statistics Canada. Postal Code Conversoin File September 2002 Postal Codes: Reference Guide. [92F0153GIE]. 2002. Ottawa, Statistics Canada.

296. DiMarco F, Verga M, Reggente M, Maria CF, Santus P, Blasi F, Allegra L, Centanni S (2006), Anxiety and depression in COPD patients: The roles of gender and disease severity, *Respir.Med.*

297. Bowen S. Language barriers in access to health care. 2001. Ottawa, Health Canada.

298. Canadian Heritage. Health and Social Services for Canada's Multicultural Population: Challenges for Equity, Available at: http://www.canadianheritage.gc.ca/progs/multi/canada2017/4_e.cfm#10

299. Li HZ, Browne AJ (2000), Defining mental illness and accessing mental health services: perspectives of Asian Canadians, *Canadian Journal of Community Mental Health* 19: 143-159

300. Cohen CI, Magai C, Yaffee R, Walcott-Brown L (2005), Comparison of users and non-users of mental health services among depressed, older, urban African Americans., *American Journal of Geriatric Psychiatry* 13: 545-553

301. Kendler KS (1995), Is seeking treatment for depression predicted by a history of depression in relatives? Implications for family studies of affective disorder., *Psychological Medicine* 25: 807-814

302. Sullivan PF, Wells JE, Joyce PR, Bushnell JA, Mulder RT, Oakley Browne MA (1996), Family history of depression in clinic and community samples., *Journal of Affective Disorders* 40: 159-168

303. Cooper AE, Corrigan PW, Watson AC (2003), Mental illness stigma and care seeking, *Journal of Nervous and Mental Disease* 191: 339-341

304. Corrigan P (2004), How stigma interferes with mental health care, *American Psychologist* 59: 614-625

305. Rost K, Smith GR, Taylor JL (1993), Rural-urban differences in stigma and the use of care for depressive disorders, *Journal of Rural Health.* 1993 Winter;9: 57-62

306. Sirey JA, Bruce ML, Alexopoulos GS, Perlick DA, Raue P, Friedman SJ, Meyers BS (2001), Perceived stigma as a predictor of treatment discontinuation in young and older outpatients with depression, *American Journal of Psychiatry* 158: 479-481

307. Stuart H (2005), Why stigma matters and why it should be beaten, *World Psychiatry* 4: 6-7

308. Harris KM, Edlund MJ, Larson SL (2006), Religious involvement and the use of mental health care, *Health Services Research* 41: 395-410

309. Ettner SL (1996), The timing of preventive services for women and children: the effect of having a usual source of care, *American Journal of Public Health* 86: 1748-1754

310. Lambrew JM, DeFriese GH, Carey TS, Ricketts TC, Biddle AK (1996), The effects of having a regular doctor on access to primary care, *Medical Care* 34: 138-151

311. Sherbourne CD, Dwight-Johnson M, Klap R (2001), Psychological distress, unmet need, and barriers to mental health care for women, *Womens Health Issues* 11: 231-243

312. Snijders TAB, Bosker RJ*Multilevel Analysis: An Introduction to Basic and Advanced Level Multilevel Modeling*, London: SAGE Publications, 1999.

313. Molenberghs G, Verbeke G.Fitting Generalized Liear Mixed Models with SAS. *Models for Discrete Longitudinal Data (Springer Series in Statistics).* 2005.

314. Kessler RC, Chiu WT, Demler O, Merikangas KR, Walters EE (2005), Prevalence, severity, and comorbidity of 12-month DSM-IV disorders in the National Comorbidity Survey Replication, *Archives of General Psychiatry* 62: 617-627

315. Wang PS, Lane M, Olfson M, Pincus HA, Wells KB, Kessler RC (2005), Twelve-month use of mental health services in the United States: results from the National Comorbidity Survey Replication, *Archives of General Psychiatry* 62: 629-640

316. The Daily. Canadian Community Health Survey: Mental health and well-being,

317. Bergeron E, Poirier LR, Fournier L, Roberge P, Barrette G (2005), Determinants of service use among young Canadians with mental disorders, *Canadian Journal of Psychiatry* 50: 629-636

318. Chandra A, Minkovitz CS (2006), Stigma starts early: gender differences in teen willingness to use mental health services., *Journal of Adolescent Health* 38: 754.e1-754e.8

319. Canadian Task Force oon Preventive Health Care. Prevention of Suicide, Available at: http://www.canadiancrc.com/Can_Preventive_Care_suicide.htm

320. Richardson LA (2001), Seeking and obtaining mental health services: what do parents expect?, *Archives of Psychiatric Nursing.* 15: 223-231

321. Wright A, Jorm AF, Harris MG, McGorry PD (2007), What's in a name? Is accurate recognition and labelling of mental disorders by young people associated with better help-seeking and treatment preferences?, *Social Psychiatry and Psychiatric Epidemiology* 42: 244-250

322. Santor DA, Poulin C, LeBlanc JC, Kusumakar V (2007), Online health promotion, early identification of difficulties, and help seeking in young people, *Journal of the American Academy of Child and Adolescent Psychiatry* 46: 50-59

323. Stuart H (2006), Reaching out to high school youth: the effectiveness of a video-based antistigma program, *Canadian Journal of Psychiatry* 51: 647-653

324. Craven M, Nikolaou L, Allen CJ, Crustolo AM, Kates N (2005), Patient education materials for mental health problems in family practice: does location matter?, *Patient.Educ.Couns.* 56: 192-196

325. Patten SB, Beck C (2004), Major depression and mental health care utilization in Canada: 1994 to 2000, *Canadian Journal of Psychiatry* 49: 303-309

326. Langlois S, Morrison P (2002), Suicide deaths and suicide attempts, *Health Rep.* 13: 9-22

327. Meryn S, Jadad AR (2001), The future of men and their health., *BMJ* 323: 1013-1014

328. Meyer JA (2003), Improving men's health: developing a long-term strategy., *American Journal of Public Health* 93: 709-711

329. Epperly TD, Moore KE (2000), Health issues in men: Part II. Common psychosocial disorders., *Am.Fam.Physician* 62: 117-124

330. Malcher G (2005), Men's health, GPs, and 'GPs4Men'., *Aust Fam.Physician* 34: 21-23

331. Dobson AJ, Fletcher R, Higginbotham N (2001), Men's perceived health needs., *N.S.W.Public.Health.Bull.* 12: 327-329

332. Fletcher RJ, Higginbotham N, Dobson A (2002), Men's Perceived Health Needs, *Journal of Health Psychology* 7: 233-241

333. Aronsson G, Gustafsson K, Dallner M (2000), Sick but yet at work. An empirical study of sickness presenteeism., *Journal of Epidemiology and Community Health* 54: 502-509

334. Dewa CS, Lin E (2000), Chronic physical illness, psychiatric disorder and disability in the workplace, *Soc.Sci.Med.* 51: 41-50

335. Dewa CS, Goering P, Lin E, Paterson M (2002), Depression-related short-term disability in an employed population, *J.Occup.Environ.Med.* 44: 628-633

336. Dewa CS, Hoch JS, Lin E, Paterson M, Goering P (2003), Pattern of antidepressant use and duration of depression-related absence from work, *Br.J.Psychiatry* 183: 507-513

337. Dewa CS, Lesage A, Goering P, Craveen M (2004), Nature and prevalence of mental illness in the workplace, *Healthc.Pap.* 5: 12-25

338. Goldner E, Bilsker D, Gilbert M, Myette L, Corbiere M, Dewa CS (2004), Disability management, return to work and treatment, *Healthcare Papers* 5: 76-90

339. Sederer LI, Clemens NA (2002), Economic grand rounds: the business case for high-quality mental health care, *Psychiatric Services* 53: 143-145

340. Gabriel P. Mental Health in the Workplace: Situation Analysis: United States. 2000. Geneva, International Labour Office.

341. Conti DJ, Burton WN (1994), The economic impact of depression in a workplace, *Journal of Occupational Medicine* 1994 Sep;36: 983-988

342. Conti DJ, Burton WN (1995), The cost of depression in the workplace, *Behav.Healthc.Tomorrow.* 4: 25-27

343. Goetzel RZ, Ozminkowski RJ, Sederer LI, Mark TL (2002), The business case for quality mental health services: why employers should care about the mental health and well-being of their employees, *J.Occup.Environ.Med.* 44: 320-330

344. Goldman W, McCulloch J, Sturm R (1998), Costs and use of mental health services before and after managed care, *Health Affairs* 17: 40-52

345. Sullivan S (2005), Promoting health and productivity for depressed patients in the workplace, *J.Manag.Care Pharm.* 11: S12-S15

346. Lo Sasso AT, Rost K, Beck A (2006), Modeling the impact of enhanced depression treatment on workplace functioning and costs: a cost-benefit approach, *Medical Care* 44: 352-358

347. Rost K, Smith JL, Dickinson M (2004), The effect of improving primary care depression management on employee absenteeism and productivity. A randomized trial, *Medical Care* 42: 1202-1210

348. Langlieb AM, Kahn JP (2005), How much does quality mental health care profit employers?, *J.Occup.Environ.Med.* 47: 1099-1109

349. Conti DJ, Burton WN (1994), The economic impact of depression in a workplace, *Journal of Occupational Medicine* 1994 Sep;36: 983-988

350. Dewa CS, Lin E (2000), Chronic physical illness, psychiatric disorder and disability in the workplace, *Soc.Sci.Med.* 51: 41-50

351. Dewa CS, Hoch JS, Lin E, Paterson M, Goering P (2003), Pattern of antidepressant use and duration of depression-related absence from work, *Br.J.Psychiatry* 183: 507-513

352. Chan BTB. From perceived surplus to perceived shortage: What happened to Canada's physician workforce in the 1990s? 2002. Ottawa, Canadian Institute for Health Information.

353. Currie J. The marketization of depression: the prescribing of SSRI antidepressants to women. 2005.

354. Gilbody S, Wilson P, Watt I (2004), Direct-to-consumer advertising of psychotropics., *British Journal of Psychiatry* 185: 1-2

355. Kessler RC, Nelson CB, McGonagle KA, Liu J, Swartz M, Blazer DG (1996), Comorbidity of DSM-III-R major depressive disorder in the general population: results from the US National Comorbidity Survey, *British Journal of Psychiatry* 168: 17-30

356. Frank R, Berndt E, Donohue J. Trends in Direct-to-Consumer Advertising of Prescription Drugs. Kaiser Family Foundation, Publication 3162. 2002.

357. Donohue JM, Berndt ER (2004), Effects of direct-to-consumer advertising on medication choice: the case of antidepressants., *Journal of PUblic Policy and Marketing* 23: 115-127

358. Mintzes B, Barer ML, Kravitz RL, Bassett K, Lexchin J, Kazanjian A, Evans RG, Pan R, Marion SA (2003), How does direct-to-consumer advertising (DTCA) affect prescribing? A survey in primary care environments with and without DTCA., *CMAJ.* 169: 405-412

359. Gardner P (2003), Distorted Packaging: Marketing depression as illness, drugs as cure., *J.Med.Humanities.* 24: 105-130

360. Jorm AF, Christensen H, Griffiths KM (2006), Changes in depression awareness and attitudes in Australia: the impact of beyondblue: the national depression initiative, *Aust N.Z.J.Psychiatry* 40: 42-46

361. Jorm AF, Christensen H, Griffiths KM (2005), The impact of beyondblue: the national depression initiative on the Australian public's recognition of depression and beliefs about treatments, *Aust N.Z.J.Psychiatry* 39: 248-254

362. Ontario Ministry of Health. Making It Happen: Operational Framework for the Delivery of Mental Health Services and Supports. 1999.

363. Jayabarathan A (2004), Shared mental health care. Bringing family physicians and psychiatrists together, *Canadian Family Physician* 50: 341-346

364. Canadian Psychiatric Association and theCollege of Family Physicians of CanadaCollaborative Working Group on Shared Mental Health Care. Shared mental health care in Canada: A Compendium of Current Projects. Kates, N. and Ackerman, S. 2002.

365. Kates N, Ackerman S, Crustolo AM, Mach M. Collaboration between mental health and primary care services. A planning and implementation toolkit for health care providers and planners. 2006. Mississauga, ON, Canadian Collaborative Mental Health Initiative.

366. Katon W, Von KM, Lin E, Simon G, Walker E, Bush T, Ludman E (1997), Collaborative management to achieve depression treatment guidelines, *Journal of Clinical Psychiatry* 58 Suppl 1: 20-23

367. Turner T, de SA (1997), Sharing psychiatric care with primary care physicians: the Toronto Doctors Hospital experience (1991-1995), *Canadian Journal of Psychiatry* 42: 950-954

368. Kates N, Craven MA, Crustolo AM, Nikolaou L, Allen C, Farrar S (1997), Sharing care: the psychiatrist in the family physician's office, *Canadian Journal of Psychiatry* 42: 960-965

369. Farrar S, Kates N, Crustolo AM, Nikolaou L (2001), Integrated model for mental health care. Are health care providers satisfied with it?, *Canadian Family Physician* 47: 2483-2488

370. Collaborative Working Group on Shared Mental Health Care. Shared mental health care in Canada: A Compendium of Current Projects. Kates, N. and Ackerman, S. 2007. Canadian Psychaitric Association and the College of Family Physicians of Canada.

371. Dewa CS, Hoch JS, Goering P (2001), Using financial incentives to promote shared mental health care, *Can.J.Psychiatry* 46: 488-495

372. Kates N, Ackerman S, Crustolo AM, Mach M. Collaboration between mental health and primary care services. A planning and implementation toolkit for health care providers and planners. 2006. Mississauga, ON, Canadian Collaborative Mental Health Initiative.

373. Turner T, de SA (1997), Sharing psychiatric care with primary care physicians: the Toronto Doctors Hospital experience (1991-1995), *Canadian Journal of Psychiatry* 42: 950-954

374. Dewa CS, Hoch JS, Goering P (2001), Using financial incentives to promote shared mental health care, *Can.J.Psychiatry* 46: 488-495

375. Patten SB (2002), Progress against major depression in Canada, *Canadian Journal of Psychiatry* 47: 775-780

376. Schulz K. Did Antidepressants depress Japan? New York Times . 2004.

377. Vickery GK. A Cold Of The Heart: Japan Strives To Normalize Depression. 2005.

378. Kirsch I, Deacon BJ, Huedo-Medina TB, Scoboria A, Moore TJ, Johnson BT (2008), Initial severity and antidepressant benefits: A metaanalysis of data submitted to the Food and Drug Administration., *PLoS Medicine* 5: e45

379. Patten SB, Beck C (2004), Major depression and mental health care utilization in Canada: 1994 to 2000, *Canadian Journal of Psychiatry* 49: 303-309

380. Statistics Canada (1999), Health care services - recent trends, *Health Rep.* 11: 91-112

381. Statistics Canada. Access to Health Care Services in Canada, 2001,

382. Nelson CH, Park J (2006), The nature and correlates of unmet health care needs in Ontario, Canada, *Social Science and Medicine* 62: 2291-2300

383. Patten SB (2005), Modelling major depression epidemiology and assessing the impact of antidepressants on population health, *International Review of Psychiatry* 17: 205-211

384. van Haaster I, Lesage AD, Cyr M, Toupin J (1994), Problems and needs for care of patients suffering from severe mental illness, *Social Psychiatry and Psychiatric Epidemiology* 29: 141-148

385. Bebbington PE, Marsden L, Brewin CR (1997), The need for psychiatric treatment in the general population: the Camberwell Needs for Care Survey, *Psychological Medicine* 27: 821-834

386. Bebbington P, Brewin CR, Marsden L, Lesage A (1996), Measuring the need for psychiatric treatment in the general population: the community version of the MRC Needs for Care Assessment, *Psychological Medicine* 26: 229-236

387. Bebbington PE, Marsden L, Brewin CR (1997), The need for psychiatric treatment in the general population: the Camberwell Needs for Care Survey, *Psychological Medicine* 27: 821-834

388. Bebbington P, Brugha T, Meltzer H, Jenkins R, Ceresa C, Farrell M, Lewis G (2003), Neurotic disorders and the receipt of psychiatric treatment, *Int.Rev.Psychiatry* 15: 108-114

389. Mechanic D (2003), Is the prevalence of mental disorders a good measure of the need for services?, *Health Affairs* 22: 8-20

390. Spitzer RL (1998), Diagnosis and need for treatment are not the same, *Archives of General Psychiatry* 55: 120

391. Lefebvre J, Cyr M, Lesage A, Fournier L, Toupin J (2000), Unmet needs in the community: can existing services meet them?, *Acta Psychiatrica Scandinavica* 102: 65-70

392. Sareen J, Cox BJ, Afifi TO, Clara I, Yu BN (2005), Perceived need for mental health treatment in a nationally representative Canadian sample, *Canadian Journal of Psychiatry* 50: 643-651

393. Joska J, Flisher AJ (2005), The assessment of need for mental health services, *Social Psychiatry and Psychiatric Epidemiology* 40: 529-539

394. Wing J, Brewin CR, Thornicroft G.Defining mental health needs. In: Thornicroft G ed. *Measuring Mental Health Needs.* 2nd ed. ed. 2001;1-21.

395. Phelan M, Slade M, Thornicroft G, Dunn G, Holloway F, Wykes T, Strathdee G, Loftus L, McCrone P, Hayward P (1995), The Camberwell Assessment of Need: the validity and reliability of an instrument to assess the needs of people with severe mental illness, *British Journal of Psychiatry* 167: 589-595

396. Issakidis C, Teesson M (1999), Measurement of need for care: a trial of the Camberwell Assessment of Need and the Health of the Nation Outcome Scales, *Australian and New Zealand Journal of Psychiatry* 33: 754-759

397. Meadows G, Harvey C, Fossey E, Burgess P (2000), Assessing perceived need for mental health care in a community survey: development of the Perceived Need for Care Questionnaire (PNCQ), *Social Psychiatry and Psychiatric Epidemiology* 35: 427-435

398. Meadows G, Burgess P, Fossey E, Harvey C (2000), Perceived need for mental health care, findings from the Australian National Survey of Mental Health and Well-being, *Psychological Medicine* 30: 645-656

399. Meadows G, Liaw T, Burgess P, Bobevski I, Fossey E (2001), Australian general practice and the meeting of needs for mental health care., *Social Psychiatry and Psychiatric Epidemiology* 36: 595-603

400. Sareen J, Cox BJ, Afifi TO, Stein MB, Belik SL, Meadows G, Asmundson GJ (2007), Combat and peacekeeping operations in relation to prevalence of mental disorders and perceived need for mental health care: findings from a large representative sample of military personnel, *Archives of General Psychiatry* 64: 843-852

401. Lefebvre J, Cyr M, Lesage A, Fournier L, Toupin J (2000), Unmet needs in the community: can existing services meet them?, *Acta Psychiatrica Scandinavica* 102: 65-70

402. Donelan K, Blendon RJ, Schoen C, Davis K, Binns K (1999), The cost of health system change: public discontent in five nations, *Health Affairs* 18: 206-216

403. Sanmartin C, Ng E, Blackwell D, Gentleman J, Martinez M, Simile C. Joint Canada/United States Survey of Health, 2002-03. Statistics Canada , 1-32. 2004.

404. Rabinowitz J, Gross R, Feldman D (1999), Correlates of a perceived need for mental health assistance and differences between those who do and do not seek help, *Social Psychiatry and Psychiatric Epidemiology* 34: 141-146

405. Lefebvre J, Cyr M, Lesage A, Fournier L, Toupin J (2000), Unmet needs in the community: can existing services meet them?, *Acta Psychiatrica Scandinavica* 102: 65-70

406. Wang J (2006), Perceived barriers to mental health service use among individuals with mental disorders in the Canadian general population, *Medical Care* 44: 192-195

407. Bergeron E, Poirier LR, Fournier L, Roberge P, Barrette G (2005), Determinants of service use among young Canadians with mental disorders, *Canadian Journal of Psychiatry* 50: 629-636

408. Nguyen CT, Fournier L, Bergeron L, Roberge P, Barrette G (2005), Correlates of depressive and anxiety disorders among young Canadians, *Canadian Journal of Psychiatry* 50: 620-628

409. Rhodes AE, Lin E, Mustard CA (2002), Self-reported use of mental health services versus administrative records: should we care?, *International Journal of Methods in Psychiatric Research* 11: 125-133

410. Rhodes AE, Fung K (2004), Self-reported use of mental health services versus administrative records: care to recall?, *Int J.Methods Psychiatr.Res.* 13: 165-175

411. Neutel CI, Walop W (2000), Comparing two different approaches to measuring drug use within the same survey, *Chronic Diseases in Canada* 21: 150-156

412. de Boer AG, Wijker W, de Haes HC (1997), Predictors of health care utilization in the chronically ill: a review of the literature, *Health Policy* 42: 101-115

413. Wittchen HU, Essau CA, Krieg JC (1991), Anxiety disorders: similarities and differences of comorbidity in treated and untreated groups, *Br.J.Psychiatry Suppl* 23-33

414. Goodwin RD (2002), Anxiety disorders and the onset of depression among adults in the community, *Psychological Medicine* 32: 1121-1124

415. de Graaf R, Bijl RV, Spijker J, Beekman AT, Vollebergh WA (2003), Temporal sequencing of lifetime mood disorders in relation to comorbid anxiety and substance use disorders Findings from the Netherlands Mental Health Survey and Incidence Study, *Social Psychiatry and Psychiatric Epidemiology* 38: 1-11

416. Parker G, Wilhelm K, Mitchell P, Austin MP, Roussos J, Gladstone G (1999), The influence of anxiety as a risk to early onset major depression, *Journal of Affective Disorders* 52: 11-17

417. Zimmerman M, Chelminski I (2003), Clinician recognition of anxiety disorders in depressed outpatients, *J.Psychiatr.Res.* 37: 325-333

418. US Department of Health and Human Services OoMH. Cuturally and Linguistically Appropriate Services (CLAS) in Health Care. 2000. United States Government Printing Office.

419. Health Resources and Service Administration. Cultural Competence Works: Using Cultural Competence to Improve teh Quality of Health Care for Diverse Populatoins and Add Value to Managed Care Arrangements. 2001. US Department of Health and Human Services.

420. Kirmayer LJ, Groleau D, Guzder J, Blake C, Jarvis E (2003), Cultural consultation: a model of mental health service for multicultural societies, *Canadian Journal of Psychiatry* 48: 145-153

421. Lo HT, Fung KP (2003), Culturally competent psychotherapy, *Canadian Journal of Psychiatry* 48: 161-170

422. Government of CAnada. The human face of mental health an dmental illnes in Canada 2006. 2006.

423. Jenkins R, Strathdee G (2000), The integration of mental health care with primary care, *International Journal of Law and Psychiatry* 23: 277-291

8 Appendices

Appendix 1. Diagnostic Criteria for DSM III-R and DSM-IV

DSM-III-R	DSM-IV
Major Depressive Episode A. At least five of the following symptoms have been present during the same 2-week period and represent a change from previous functioning; at least one of the symptoms is either (1) depressed mood or (2) loss of interest or pleasure. (Do note include symptoms that are clearly due to a physical condition, mood-incongruent delusions or hallucinations, incoherence, or marked loosening of associations.) (1) depressed mood (or can be irritable mood in children and adolescents) most of the day, nearly every day, as indicated by either subjective account or observation by others. (2) markedly diminished interest or pleasure in all, or almost all, activities most of the day, nearly every day (as indicated by either subjective account or observation made by others of apathy most of the time) (3) significant weight loss or weight gain when not dieting (e.g., more than 5% of body weight in a month), or decrease or increase in appetite nearly every day. **(**In children, consider failure to make expected weight gains.) (4) insomnia or hypersomnia nearly every day (5) psychomotor agitation or retardation nearly every day	**Major Depressive Episode** A. Five (or more) of the following symptoms have been present during the same 2-week period and represent a change from previous functioning; at least one of the symptoms is either (1) depressed mood or (2) loss of interest or pleasure. **Note:** Do note include symptoms that are clearly due to a general medical condition, or mood-incongruent delusions or hallucinations. (1) depressed mood most of the day, nearly every day, as indicated by either subjective report (e.g., feels sad or empty) or observation made by others (e.g., appears tearful). **Note:** In children and adolescents, can be irritable mood. (2) markedly diminished interest or pleasure in all, or almost all, activities most of the day, nearly every day (as indicated by either subjective account or observation made by others) (3) significant weight loss when not dieting or weight gain (e.g., a change of more than 5% of body weight in a month), or decrease or increase in appetite nearly every day. **Note:** In children, consider failure to make expected weight gains. (4) insomnia or hypersomnia nearly every day (5) psychomotor agitation or retardation nearly every day

(observable by others, not merely subjective feelings of restlessness or being slowed down) (6) fatigue or loss of energy nearly every day (7) feelings of worthlessness or excessive or inappropriate guilt (which may be delusional) nearly every day (not merely self-reproach or guilt about being sick) (8) diminished ability to think or concentrate, or indecisiveness, nearly every day (either by subjective account or as observed by others) (9) recurrent thoughts of death (not just fear of dying), recurrent suicidal ideation without a specific plan, or a suicide attempt or a specific plan for committing suicide B. (1) It cannot be established that an organic factor initiated and maintained the disturbance (2) The disturbance is not a normal reaction to the death of a loved one (Uncomplicated Bereavement) Note: Morbid preoccupation with worthlessness, suicidal ideation, marked functional impairment or psychomotor retardation, or prolonged duration suggest bereavement complicated by Major Depression. C. At no time during the disturbance have there been delusions or hallucinations for as long as two weeks in the absence of prominent mood symptoms (i.e., before the mood symptoms developed or after they have remitted). D. Not superimposed on Schzophrenia, Schizophreniform	(observable by others, not merely subjective feelings of restlessness or being slowed down) (6) fatigue or loss of energy nearly every day (7) feelings of worthlessness or excessive or inappropriate guilt (which may be delusional) nearly every day (not merely self-reproach or guilt about being sick) (8) diminished ability to think or concentrate, or indecisiveness, nearly every day (either by subjective account or as observed by others) (9) recurrent thoughts of death (not just fear of dying), recurrent suicidal ideation without a specific plan, or a suicide attempt or a specific plan for committing suicide B. The symptoms do not meet criteria for a Mixed Episode. C. The symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of functioning. D. The symptoms are not due to the direct physiological effects of a substance (e.g., a drug of abuse, a medication) or a general medical condition (e.g., hypothyroidism). E. The symptoms are not better accounted for by Bereavement, i.e., after the loss of a loved one, the symptoms persist for longer than 2 months or are characterized by marked functional impairment, morbid preoccupation with worthlessness, suicidal ideation,

Disorder, Delusional disorder, or Psychotic Disorder NOS.	psychotic symptoms, or psychomotor retardation.
Major Depressive Disorder Single Episode A. A single Major Depressive Episode B. Has never had a Manic Episode, or an unequivocal Hypomanic Episode. Specify if seasonal pattern Recurrent A. Two or more Major Depressive Episodes, each separated by at least two months of return to more or less usual functioning. (If there has been a previous Major Depressive Episode, the current episode of depression need not meet the full criteria for a Major Depressive Episode). B. Has never had a Manic Episode, or an unequivocal Hypomanic Episode. Specify if seasonal pattern	**Major Depressive Disorder** Single Episode A. Presence of a single Major Depressive Episode B. The Major Depressive Episode is not better accounted for by Schizoaffective Disorder and is not superimposed on Schizophrenia, Schizophreniform Disorder, Delusional Disorder, or Psychotic Disorder Not Otherwise Specified. C. There has never been a Manic Episode, a Mixed Episode, or a Hypomanic Episode. **Note**: This exclusion does not apply if all the manic-like, mixed-like, or hypomanic-like episodes are substance or treatment induced or are due to the direct physiological effects of a general medical condition. Recurrent A. Presence of two or more Major Depressive Episodes. **Note**: To be considered separate episodes, there must be an interval of at least 2 consecutive months in which criteria are not met for a Major Depressive Episode. B. The Major Depressive Episodes are not better accounted for by Schizoaffective Disorder and are not superimposed on Schizophrenia, Schizophreniform Disorder, Delusional Disorder, or Psychotic Disorder Not Otherwise Specified.

	C. There has never been a Manic Episode, a Mixed Episode, or a Hypomanic Episode. **Note**: This exclusion does not apply if all the manic-like, mixed-like, or hypomanic-like episodes are substance or treatment induced or are due to the direct physiological effects or a general medical condition.
Panic Attack & Panic Disorder A. At some time during the disturbance, one or more panic attacks (discrete periods of intense fear or discomfort) have occurred that were (1) unexpected, i.e., did not occur immediately before or on exposure to a situation that almost always caused anxiety, and (2) not triggered by situations in which the person was the focus of others' attention B. Either four attacks, as defined in criterion A, have occurred within a four-week period, or one or more attacks have been followed by a period of at least a month of persistent fear of having another attack. C. At least four of the following symptoms developed during at least one of the attacks: 1) shortness of breath (dyspnea) or smothering situations 2) dizziness, unsteady feelings, or faintness 3) palpitations or accelerated heart rate (tachycardia) 4) trembling or shaking 5) sweating 6) choking	**Panic Attack** A discrete period of intense fear or discomfort, in which four (or more) of the following symptoms developed abruptly and reached a peak within 10 minutes: 1) palpitations, pounding heart, or accelerated heart rate 2) sweating 3) trembling or shaking 4) sensations of shortness of breath or smothering 5) feeling of choking 6) chest pain or discomfort 7) nausea or abdominal distress 8) feeling dizzy, unsteady, lightheaded, or faint 9) derealization (feelings of unreality) or depersonalization (being detached from oneself) 10) fear of losing control or going crazy 11) fear of dying 12) paresthesias (numbness or tingling sensations) 13) chills or hot flushes **Panic Disorder**

7) nausea or abdominal distress 9) depersonalization or derealization 10) numbness or tingling sensations (paresthesias) 11) chest pain or discomfort 12) fear of dying 13) fear of going crazy or of doing something uncontrolled Note: Attacks involving four or more symptoms are panic attacks; attacks involving fewer than four symptoms are limited symptom attacks (see Agoraphobia without history of panic disorder) D. During at least some of the attacks, at least four of the C symptoms developed suddenly and increased in intensity within ten minutes of the beginning of the first C symptom noticed in the attack E. It cannot be established that an organic factor initiated and maintained the disturbance, i.e., Amphetamine or Caffeine Intoxication, hyperthyroidism **Note**: Mitral valve prolapse may be an associated condition, but does not preclude a diagnosis of Panic Disorder	A) Both (1) and (2) (1) recurrent unexpected Panic Attacks (2) at least one of the attacks has been followed by 1 month (or more) of one (or more) of the following: (a) persistent concern about having additional attacks (b) worry about the implications of the attack or its consequences (e.g., losing control, having a heart attack, "going crazy") (c) a significant change in behavior related to the attacks B) The Panic Attacks are not due to the direct physiological effects of a substance (e.g., a drug of abuse, a medication) or a general medical condition (e.g., hyperthyroidism). C) The Panic Attacks are not better accounted for by another mental disorder, such as Social Phobia (e.g., occurring on exposure to feared social situations), Specific Phobia (e.g., on exposure to a specific phobic situation), Obsessive-Compulsive Disorder (e.g., on exposure to dirt in someone with an obsession about contamination), Posttraumatic Stress Disorder (e.g., in response to stimuli associated with a severe stressor), or Separation Anxiety Disorder (e.g., in response to being away from home or close relatives).

Panic Disorder with Agoraphobia	**Agoraphobia**
A. Meets criteria for Panic Disorder B. Fear of being in places or situations from which escape might be difficult (or embarrassing) or in which help might not be available in the event of a Panic Attack. (Include cases in which persistent avoidance behavior originated during an active phase of Panic Disorder, even if the person does not attribute the avoidance behavior to fear of having a panic attack. AS a result of this fear, the person either restricts travel or needs a companion when away from home, or else endures agoraphobic situations despite intense anxiety. Common agoraphobic situations include being outside the home alone; being in a crowd, or standing in a line; being on a bridge; and traveling in a bus, train, or car.	A) anxiety about being in places or situations from which escape might be difficult (or embarrassing) or in which help may not be available in the event of having an unexpected or situationally predisposed Panic Attack or panic-like symptoms. Agoraphobic fears typically involve characteristic clusters of situations that include being outside the home alone; being in a crowd, or standing in a line; being on a bridge; and traveling in a bus, train, or automobile. B) The situations are avoided (e.g., travel is restricted) or else are endured with marked distress or with anxiety about having a Panic Attack or panic-like symptoms, or require the presence of a companion. C) The anxiety or phobic avoidance is not better accounted for by another mental disorder, such as Social Phobia (e.g., avoidance limited to social situations because of fear of embarrassment), Specific Phobia (e.g., avoidance limited to a single situation like elevators), Obsessive-Compulsive Disorder (e.g., avoidance of dirt in someone with an obsession about contamination), Posttraumatic Stress Disorder (e.g., avoidance of stimuli associated with a severe stressor), or Separation Anxiety Disorder (e.g., avoidance of leaving home or relatives).
Panic Disorder without Agoraphobia	**Panic Disorder is divided into with or without agoraphobia**

A. Meets criteria for Panic Disorder B. Absence of Agoraphobia	
SOCIAL PHOBIA	**SOCIAL PHOBIA**
A. A persistent fear of one or more situations (social phobic situations) in which the person is exposed to possible scrutiny by others and fears that he or she may do something or act in a way that will be humiliating or embarrassing. Examples include: being unable to continue talking while speaking in public, choking on food when eating in front of others, being unable to urinate in public lavatory, hand-trembling when writing in the presence of others, and saying foolish things or not being able to answer questions in social situations.	A. A marked and persistent fear of one or more social and performance situations in which the person is exposed to unfamiliar people or to possible scrutiny by others. The individual fears that he or she will act in a way (or show anxiety symptoms) that will be humiliating or embarrassing. **Note**: In children, there must be evidence of the capacity for age-appropriate social relationships with familiar people and the anxiety must occur in peer settings, not just in interactions with adults.
B. If an Axis III or another Axis I disorder is present, the fear in A is unrelated to it, e.g., the fear is not of having a panic attack (Panic Disorder), stuttering (Stuttering), trembling (Parkinson's disease), or exhibiting abnormal eating behavior (Anorexia Nervosa or Bulimia Nervosa).	B. Exposure to the feared social situation almost invariably provokes anxiety, which may take the form of a situationally bound or predisoposed Panic Attack. **Note**: In children, the anxiety may be expressed by crying, tantrums, freezing, or shrinking from social situations with unfamiliar people.
C. During some phase of the disturbance, exposure to the specific phobic stimulus (or stimuli) almost invariably provokes an immediate anxiety response.	C. The person recognizes that the fear is excessive or unreasonable. **Note**: In children, this feature may be absent
D. The phobic situation(s) is avoided, or is endured with intense anxiety	D. The feared social or performance situation are avoided or else are endured with intense anxiety or distress
E. The avoidant behavior interferes with occupational functioning or with usual social activities or relationships with	E. The avoidance, anxious anticipation, or distress in the feared social or performance situation(S) interferes significantly with the person's normal routine, occupational (academic) functioning, or social activities or relationships, or there is

others, or there is marked distress about having the fear. F. The person recognizes that his or her fear is excessive or unreasonable. G. If the person is under 18, the disturbance does not meet the criteria for Avoidant Disorder of Childhood and Adolescence **Specify Generalized type**: if the phobic situation includes most social situations (also consider the additional diagnosis of Avoidant Personality Disorder)	marked distress about having the phobia. F. In individuals under age 18 years, the duration is at least 6 months G. The fear or avoidance is not due to the direct physiological effects of a substance (e.g., a drug of abuse, a medication) or a general medical condition and is not better accounted for by another mental disorder (e.g., Panic Disorder With or Without Agoraphobia, Separation Anxiety Disorder, Body Dysmorphic Disorder, a Pervasive Developmental Disorder, or Schizoid Personality Disorder). H. If a general medical condition or another mental disorder is present, the fear in Criterion A is unrelated to it, e.g., the fear is not of Stuttering, trembling in Parkinson's disease, or exhibiting abnormal eating behavior in Anorexia Nervosa or Bulimia Nervosa. Specify if: **Generalized**: if the fears include most social situations (also consider the additional diagnosis of Avoidant Personality Disorder)

Appendix 2. Bootvar programme for variance estimation

```
*                                   WARNING

* The Government of Canada (Statistics Canada) is the owner of all intellectual
* property rights (including copyright) in this software.  Subject to the terms below,
* you are granted a non-exclusive and non-transferable licence to use this software.
*
* This software is provided "as-is", and the owner makes no warranty, either express
* or implied, including but not limited to, warranties of merchantability and fitness
* for any particular purpose.  In no event will the owner be liable for any indirect,
* special, consequential or other similar damages.  This agreement will terminate
* automatically without notice to you if you fail to comply with any term of this
* agreement.;

/*****************************************************************/
/* Date: April 2002                                              */
/* Modified:  April 2002                                         */
/*****************************************************************/

/*************************************************************************/
/***                                                                   ***/
/***                          BOOTVARE_V20.SAS                         ***/
/***                                                                   ***/
/*** This program calculates variance estimates using the bootstrap weights    ***/
/*** for different types of estimators.  Using SAS macros, this program can    ***/
/*** calculate variance estimates for totals, ratios and differences between   ***/
/*** ratios.  It can also calculate variance estimates for the parameters      ***/
/*** of a regression or a logistic regression. This program can also be        ***/
/*** customized for other types of analyses.                                   ***/
/***                                                                          ***/
/*** The program is divided in 2 sections. Throughout the program, it is       ***/
/*** indicated where the user has to make changes.                             ***/
/***                                                                          ***/
/*** Section 1: Declaration of the macro variables                             ***/
/***            This is where variables that are going to be used throughout   ***/
/***            the program have to be defined.  Some changes must be made     ***/
/***            by the user.  This is also where the files containing the      ***/
/***            variables to analyze and the bootstrap weights are read in.    ***/
/***                                                                          ***/
/*** Section 2: Declaration of the macros                                      ***/
/***            This is where the user indicates what analysis they wish to    ***/
/***            perform.  Given the large number of observations to analyze,   ***/
/***            it is recommended that the number of analyses be limited,      ***/
/***            especially in the case of regressions.                         ***/
/***                                                                          ***/
/*** This program calls the program MACROE_V20.SAS.  MACROE_V20.SAS contains   ***/
/*** different macros that enable variance estimation.  For standard use of the***/
/*** variance estimation program, no modification by the user to MACROE_V20.SAS***/
/*** is necessary.  Changes may be required in certain cases explained in      ***/
/*** section 2 of the program.                                                 ***/
/***                                                                          ***/
/***                                                                          ***/
/*** Before using the program BOOTVARE_V20.SAS, the user has to prepare        ***/
/*** an analysis file that contains the variables to analyze.                  ***/
/***                                                                          ***/
/*** To calculate a total, ratio or difference between ratios, the             ***/
/*** estimates are obtained by summing the weights of the records that have    ***/
/*** the characteristic of interest.  Therefore, a dummy variable must be      ***/
/*** created for each of the variables to be analyzed.  This variable takes a  ***/
/*** value of 1 when the record has the characteristic and 0 otherwise.        ***/
/***                                                                          ***/
/*** NOTE: This file should only contain the records necessary for the         ***/
/*** analysis (ex: if the analysis is performed on the age group 12 and over,  ***/
/*** only the records for individuals 12 and over should be included in        ***/
/*** the file.)                                                                ***/
/*************************************************************************/


/*************************************************************************/
/***                              SECTION 1                            ***/
/*************************************************************************/
/***                                                                   ***/
```

```
/***   This section lets the user specify the different parameters of      ***/
/***   interest (variable names, directory names, file names, etc.)        ***/
/***                                                                       ***/
/*************************************************************************/


**************************************************************************
** SPECIFY THE NAME OF THE FOLLOWING 2 DIRECTORIES (directories only): **
**************************************************************************;

      libname in1 "name_of_the_directory_containing_analysis_file_(step 1)";    /* (ex:
c:\data) */
      libname out "name_of_the_directory_to_save_results_in";                   /* (ex:
c:\output)*/


******************************************************************************
** SPECIFY THE NAME OF THE ANALYSIS FILE (CREATED IN STEP 1) (without extension):  **
******************************************************************************;

      %let Mfile = in1.Name_of_analysis_file;


**************************************************************************
** SPECIFY THE NAME OF THE FILE CONTAINING THE BOOTSTRAP WEIGHTS:       **
**        NB: Only run one of the two following series of commands      **
**        (comment the other one out, or erase it):                     **
**************************************************************************;

    *  EXECUTE THIS PART IF THE BOOTSTRAP WEIGHTS ARE IN SAS FORMAT (remove the " * ")
       ------------------------------------------------------------------------------;

        *             libname in2 "directory_name_containing_bootstrap_weights_file"; /*
(ex: c:\bootstrp)*/
        *                   %let  bsamp=in2.SAS_file_name_containing_the_weights_(without
extension) ;

    *  EXECUTE THIS PART IF THE BOOTSTRAP WEIGHTS ARE IN ASCII (.TXT) FORMAT (remove the
" * ")
       ------------------------------------------------------------------------------;

        *            data bootwt;
        *                                                                        %let
datafid="(directory)location_and_bootstrap_weights_file_(with_extension) ";
        *                                                                    %include
"(directory)location_and_file_name_of_layout_(with_extension)";
        *            run;
        *            %let bsamp=bootwt;


********************************************************************************
**  SPECIFY,  IF  DESIRED,  THE  BREAKDOWN  VARIABLE(S)  (EG:  PROVINCE,  SEX,  ETC...):
**
**                  Write    the    name    of    the    breakdown    variable(s)    below.
**
**
**      -  If the analysis includes all of the data in the file created in step 1, put
**
**                                        a     dot.     (%let     classes     =.     )
**
**          -    If  more  than  one  variable,  leave  a  blank  between  each  variable
**
**                                                 (%let      classes=var1      var2)
**
**                  -       DO    NOT    ERASE    OR    COMMENT    OUT    THIS    COMMAND
**
********************************************************************************;

      %let classes = breakdown_variable(s)_or_a_dot ;


********************************************************************************
**      SPECIFY      THE      NUMBER      OF      BOOTSTRAP      WEIGHTS      TO      USE:
**
**      IMPORTANT:  IT IS NECESSARY TO USE ALL THE BOOTSTRAP WEIGHTS WHEN PERFORMING THE
**
```

```
**           FINAL ANALYSIS.  THE COMPLETE BOOTVARE_V20.SAS PROGRAM MUST THEN BE RUN.**
**
**
**                    - Refer to Appendix C in the documentation to find the number of
**
**                                        weights  that  the  weights  file  contains.
**
**                                           -   For   testing,   B   must   be   >=   2.
**
*******************************************************************************************;

      %let B = number_of_weights_to_use ;


*****************************************************************************
** SPECIFY THE DIRECTORY AND THE NAME OF THE FILE THAT CONTAINS THE MACROS     **
** (THE PROGRAM MACROE_V20.SAS IF NO MODIFICATIONS HAVE BEEN MADE BY THE USER) **
*****************************************************************************;

      %include "directory_name_of_macroe_v20.sas\MACROE_V20.SAS";


/*************************************************************************/
/***                              SECTION 2                            ***/
/*************************************************************************/
/***                                                                   ***/
/*** This section lets the user specify the different analyses of interest.***/
/***                                                                   ***/
/*************************************************************************/


/*****************************************************************************/
/*** Variance estimates are calculated using the SAS macros defined in the       ***/
/*** MACROE_V20.SAS program.  These SAS macros can be submitted in this program, ***/
/*** to suit the user's needs.                                                   ***/
/***                                                                            ***/
/*** To submit a macro, the statement must specify the macro name and parameters ***/
/*** to use.  In this program, the parameters indicate which variables will be   ***/
/*** used.                                                                       ***/
/***                                                                            ***/
/*** Each macro submission gives an estimate of the variance of only one         ***/
/*** parameter. If more than one parameter and variance need to be               ***/
/*** calculated, the macro then must be submitted several times.                 ***/
/***                                                                            ***/
/*** A statement for each possible type of analysis appears in the program. They ***/
/*** are commented out and the user only needs to run those that are desired.    ***/
/***                                                                            ***/
/***                                                                            ***/
/*** COMMENT ABOUT DIFFERENCES BETWEEN RATIOS:                                   ***/
/***  ----------------------------------------                                  ***/
/***                                                                            ***/
/*** The confidence interval is calculated for a single comparison of ratios.  If***/
/*** multiple comparisons are made, the method used to calculate the confidence  ***/
/*** interval must take this into account.  For this reason,  in the case of     ***/
/*** multiple comparisons, the Z value from the normal distribution used in the  ***/
/*** calculation of the confidence interval must be corrected in the diff_rat    ***/
/*** macro in the MACROE_V20.SAS program using, for example, the Bonferroni      ***/
/*** approach for multiple comparisons.                                          ***/
/***                                                                            ***/
/*****************************************************************************/


* TO OBTAIN VARIANCE ESTIMATES OF A TOTAL, RUN:
  -------------------------------------------;

       *  %total(variable_name);


* TO OBTAIN VARIANCE ESTIMATES OF A RATIO, RUN:
  -------------------------------------------;

       *  %ratio (numerator_variable, denominator_variable);


* TO OBTAIN VARIANCE ESTIMATES OF A DIFFERENCE BETWEEN RATIOS, RUN:
```

```
  ----------------------------------------------------------------;
                  *NOTE: see the comment at the beginning of section 2 ... ;

        *  %diff_rat(VAR1,VAR2,VAR3,VAR4);

                *  where:  var1   : the numerator variable of the first ratio     *
                *          var2   : the denominator variable of the first ratio   *
                *          var3   : the numerator variable of the second ratio    *
                *          var4   : the denominator variable of the second ratio  *;


* TO OBTAIN VARIANCE ESTIMATES OF REGRESSION PARAMETERS, RUN:
  ----------------------------------------------------------;

       *   %regress(dependent_variable, independent_variables_(no comma)) ;


* TO OBTAIN VARIANCE ESTIMATES OF LOGISTIC REGRESSION PARAMETERS, RUN:
  ------------------------------------------------------------------;

       *   %logreg(dependent_variable, independent_variables_(no comma));


%output;  /*Displays the results on the screen.  Do not modify. */


* TO SAVE THE RESULTS IN A FILE, RUN: (remove the "*")
  ---------------------------------------------------;

       *  data out.Results_filename ;
       *    set &result ;
       *  run;


/* end of BOOTVARE_V20.SAS program  */
```

Appendix 3. Ethics Approval Letters from McGill University Institutional Review Board

McGill

Faculty of Medicine
3655 Promenade Sir William Osler
Montreal, QC H3G 1Y6

Faculté de médecine
3655, Promenade Sir William Osler
Montréal, QC, H3G 1Y6

Fax/Télécopieur: (514) 398-3595

October 7, 2003

Dr. Rebecca Fuhrer
Department of Epidemiology & Biostatistics
1020 Pine Avenue West
Montreal, Quebec
H3A 1A2

Dear Dr. Fuhrer,

The study A10-B30-03A entitled "Depression and Anxiety: Patterns and Predictors of Mental Health Service Utilization Over Time" was presented for corroborative approval at the Full Board meeting of the Institutional Review Board on October 6, 2003, on behalf of your PhD candidate Ritsuko Kakuma.

We are pleased to inform you that approval for the study was provided by the Board and enclosed you will find the certificate of approval.

Yours sincerely,

Neil MacDonald, M.D.
Chair
Institutional Review Board

cc: Ritsuko Kakuma
A10-B30-03A

McGill

Faculty of Medicine
3655 Promenade Sir William Osler
Montreal, QC H3G 1Y6

Faculté de médecine
3655, Promenade Sir William Osler
Montréal, QC, H3G 1Y6

Fax/Télécopieur: (514) 398-3595

October 5, 2004

Dr. Rebecca Fuhrer
Department of Epidemiology & Biostatistics
1020 Pine Avenue West
Montreal, Quebec
H3A 1A2

Dear Dr. Fuhrer:

We are writing in response to your request for continuing review by the Institutional Review Board of the study A10-B30-03A "Depression and Anxiety: Patterns and Predictors of Mental Health Service Utilization Over Time"

The progress report was reviewed and we are pleased to inform you that re-approval for the study was provided on *October 4, 2004*, valid until *October 3, 2005*. The certification of annual review has been enclosed.

We ask that you take note of the investigator's responsibility to assure that the current protocol, study amendments and consent document are deposited on an annual basis with the Research Ethics Boards of each hospital where patient enrollment or data collection is carried out.

Should further study revision or an unanticipated development occur prior to the next review, please advise the IRB promptly.

Yours sincerely,

C. Celeste Johnston

Celeste Johnston, DEd, RN.
Co-Chair
Institutional Review Board

cc: Ritsuko Kakuma
A10-B30-03A

McGill

Faculty of Medicine
3655 Promenade Sir William Osler
Montreal, QC H3G 1Y6

Faculté de médecine
3655, Promenade Sir William Osler
Montréal, QC, H3G 1Y6

Fax/Télécopieur: (514) 398-3595

October 4, 2005

Dr. Rebecca Fuhrer
Department of Epidemiology & Biostatistics
1020 Pine Avenue West
Montreal, Quebec
H3A 1A2

Dear Dr. Fuhrer:

We are writing in response to your request for continuing review by the Institutional Review Board of the study A10-B30-03A "Depression and Anxiety: Patterns and Predictors of Mental Health Service Utilization Over Time"

The progress report was reviewed and we are pleased to inform you that re-approval for the study was provided on ***October 3, 2005***, valid until ***October 2, 2006***. The certification of annual review has been enclosed.

We ask that you take note of the investigator's responsibility to assure that the current protocol, study amendments and consent document are deposited on an annual basis with the Research Ethics Boards of each hospital where patient enrollment or data collection is carried out.

Should further study revision or an unanticipated development occur prior to the next review, please advise the IRB promptly.

Yours sincerely,

Celeste Johnston, DEd, RN.
Co-Chair
Institutional Review Board

cc: Ritsuko Kakuma
A10-B30-03A