

An Examination of the Prevalence and Correlates of Chronic Major
Depression in the Canadian Community Health Survey, Cycle 1.2

by

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A thesis submitted to the Faculty of Graduate Studies
in partial fulfillment of the requirements of the degree of

Master of Science

Department of Community Health Sciences

University of Manitoba

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MASTER OF SCIENCE

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1.1 Abstract

Chronic major depression has been identified as a relatively common and debilitating illness. It has an impact on physical health, mental health, occupational function, and social well-being. There is relatively little known about the epidemiology of this clinical entity.

The Canadian Community Health Survey, Cycle 1.2 (CCHS 1.2), the first nationally representative survey of mental health in Canada, provides a number of unique opportunities to explore the prevalence and correlates of this illness. The sample size of the CCHS 1.2 allows for a sufficiently large cohort of chronically depressed participants. The demography, comorbidity, disability, suicidality, and use of health resources associated with this illness are explored. Participants in the CCHS 1.2 were divided into three groups: 1) no lifetime diagnosis of major depressive disorder; 2) non-chronic major depressive disorder; and 3) chronic major depressive disorder. Multinomial regression and simple frequency tables were used to carry out analyses. The data were analyzed according to Statistics Canada recommendations.

Compared to non-chronic depression, chronic major depression appears to be associated with significantly earlier onset of illness, older age, less educational attainment, greater psychiatric and physical health comorbidities, and greater disability. The present study's findings suggest that chronic major depression accounts for a large percentage of the socioeconomic impact of major depression. It raises the question of what model of treatment is appropriate for this illness.

1.2 Definition of chronic major depression

Depression in clinical literature is usually defined as a major depressive disorder, as defined either by the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR) or by the World Health Organization International Classification of Diseases, 10th edition (ICD-10) (1,2). The manuals are intended to be used by experienced clinicians to assist in diagnosing mental disorders and set out descriptive observable features of mental disorders, and as such are often referred to as atheoretical in that they do not depend on theories of etiology or causation (3). These manuals have been used mostly in Western countries for the identification of mental illnesses.

The DSM criteria have been the most widely used criteria in epidemiological studies. This is largely due to the number of interview schedules based on DSM-IV criteria (4,5). Prior to these current criteria, psychiatric diagnoses were heavily influenced by psychoanalytic theories (6) and were highly unreliable (7). The Research Diagnostic Criteria of Spitzer et al. marked the beginning of reliable psychiatric diagnoses and arguably psychiatric epidemiology (8). Prior to this, there were virtually no statistics on incidence and prevalence of psychiatric illness in North America, although there were epidemiologic studies that measured symptomatology (8). DSM-III (9) and subsequent revisions of the DSM marked the beginning of widely used descriptive psychiatric diagnoses.

DSM-IV specifies the duration as well as the specific criteria necessary to diagnose a major depressive episode (5). Appendix A contains the full criteria, but the key features include a minimum duration of 2 weeks, and that the person must have

experienced either a markedly depressed mood or a marked decrease in interest most of the day nearly every day(5). According to DSM-IV, major depressive episodes can occur either in Major Depressive Disorder or in Bipolar Mood Disorders (5). Bipolar disorders are usually regarded as being substantially different both in character and the treatments required, and will not be discussed further in this thesis. Appendix B contains the criteria for Major Depressive Disorder. The focus will be on major depressive episodes that occur in the context of Major Depressive Disorder.

Chronic depression can refer to a number of different clinical presentations. The DSM-IV-TR criteria for using the chronic specifier is that the major depressive episode must have lasted continuously for at least 2 years (1). Appendix C contains selected specifiers for Major Depressive Episodes and Major Depressive Disorder. Dysthymic disorder refers to a chronic form of depression which is of at least 2 years duration but is less severe than a major depressive episode; as such, it is sometimes referred to in older literature as chronic minor depression (10). The term “double depression” refers to the occurrence of a major depressive episode in a patient with a preexisting dysthymic disorder (10). Double depression differs from chronic major depression in that chronic major depression begins from the outset with an acute major depressive episode (11). Some also consider a recurrent major depression without complete interepisode recovery to be chronic depression (12). Others have considered the recurrence of a major depressive episode (regardless of interepisode function) as evidence for the chronicity of major depressive disorder (13). Of the two forms of chronic depression identified in the DSM – chronic major depression and dysthymia – dysthymia is the less severe form and one would anticipate it would be less debilitating than the more severe chronic major

depression. In addition, while dysthymia has been studied relatively extensively (6,14), by comparison, chronic major depression is less well studied.

1.3 Prevalence of chronic depression

Given the data regarding the degree to which major depression is disabling, it is surprising how little is known about chronic major depression in the community. Many large epidemiologic studies have neglected to determine prevalence of chronic major depression (15-17).

The Epidemiologic Catchment Area (ECA) study was the first large psychiatric epidemiologic study (18,19). In many ways, it brought in a new era in psychiatric epidemiology (19). It was not only much larger in terms of the number of persons surveyed (over 18 000), but was also methodologically more rigorous than many previous studies (19). It examined a number of psychiatric disorders, including dysthymia (19). The ECA study did not differentiate between dysthymia and chronic major depression; all those who had depressive symptoms for greater than 2 years were labeled as suffering from dysthymia (6). So the combined lifetime prevalence of dysthymia and chronic major depression in the ECA was 3.1% (20). Given the uncertainty as to whether these are separate and distinctive identities (12,21) or whether all affective disorders should be placed in a spectrum (22), this does not provide a satisfactory answer. The National Comorbidity Survey (NCS) also examined dysthymia and found a prevalence of 6.4%(15). However, given the likelihood of considerable overlap between dysthymia and chronic major depression, the lack of examination of the prevalence of chronic major depression from a population perspective remains a significant gap in the literature.

From clinical studies, the prevalence of chronic depressive disorders has been estimated to be between 15-30% of all depressed patients (23,24). One particular study worthy of mention is by Keller et al. in which patients suffering from dysthymia were specifically excluded (25). They conducted a naturalistic study in which patients seeking both inpatient and outpatient treatment at a number of public and private settings meeting Research Diagnostic Criteria for Major Depressive Disorder were included and prospectively determined whether patients meet criteria for the chronic specifier (25). They did not specify whether age was a criterion for exclusion although this may have been determined by the settings chosen for inclusion in their study. They determined that about 21% of patients with depression go on to meet criteria for the chronic specifier in a study involving the first 97 patients of a total cohort of 955. Of the total cohort, 431 (45.1%) met criteria for the chronic specifier (26).

Gilmer et al. (27) recently conducted a study in which they included outpatients seeking treatment at a number of clinical sites. Persons meeting DSM-IV criteria for non-psychotic Major Depressive Disorder and having a 17-item Hamilton Depression Rating Scale of at least 14 were included in their study. Like Keller et al., they excluded patients who had a history of schizoaffective disorder or bipolar disorder. In addition, Gilmer et al. excluded anyone younger than 18 or older than 75 years of age, patients with schizophrenia, patients with a lifetime history of psychosis, current eating disorder, obsessive-compulsive disorder, active substance dependence requiring detoxification, and other patients who at study entry were felt to be unstable enough that they would require hospitalization within 6 months of study entry. Furthermore, it is worth noting that patients with a history of dysthymia were not excluded. They relied on patient self-report to determine length of depressive illness. They found that 21.2% of the patients assessed

(N=1380) for depression met criteria for the chronic specifier (27). The inclusion of patients with dysthymia may be a confounder in this study. Both Keller et al.'s and Gilmer et al.'s studies used treatment seeking samples (they are both clinical populations) and neither can in any way be considered nationally representative or generalizable (25, 27). The prevalence of chronic major depression on a population level is not known.

1.4 Significance of chronicity: correlates and comorbidity

The differences between chronic and non-chronic forms of major depression have been the subject of a number of clinical studies; there have been few population-based studies on this subject. There are a number of psychosocial correlates, including disability, which have been studied. In addition, there have been studies which have examined the differential effects of chronic and non-chronic depression on both physical and psychiatric comorbidities (the presence of other illnesses that may complicate treatment of the illness of interest).

Psychosocial correlates

While it seems clear that depression occurs more frequently in females than in males, whether this holds true in chronic depression remains controversial (15-17,28). It has been argued that women experience greater severity of illness, and have a poorer quality of life when compared to men with chronic depression (28). Women seem to have a younger age of onset of the illness and are less likely to be married (28). Early age of onset may result in some persons being labeled as suffering from a personality disorder (as opposed to chronic major depression) resulting in a lower likelihood of receiving appropriate treatment (12). It has been suggested that longer duration of illness prior to seeking treatment, being married, and lower family income can all predict whether a major depressive episode will become chronic depression (25). While most

authors findings suggest that early onset (usually in adolescence) seems to be more associated with chronicity, others have observed that chronic depression is more common in the elderly than in the young (29). Other markers for persistence of depressive episodes appear to be the severity of the index episode, longer duration of previous episodes, chronic physical illness, and lack of social support (30). Race and level of education may also be important factors (27). It has been suggested that persons of Hispanic ethnicity and black race may be more likely to have persistent depressive episodes (27). Similarly, it has been suggested that persons with less education may be more likely to have persistent depressive episodes (27). Developmental factors, such as early neglect or maltreatment, trauma, poor early home environment, early loss of significant family members, have been implicated in depressive episodes becoming chronic (14). In addition, chronic stress, such as that associated with care giving for those less able to care for themselves, and neuroticism (emotional instability, vulnerability to stress, and a proneness to anxiety) have also been implicated (14). Many of these factors have been identified in non-Western societies as being related to chronic depression (43). While both chronic and non-chronic depressions have been associated with an increased risk of suicide attempts, and suicide compared with non-depressed persons, chronic depression has been associated with increased stress and increased suicide attempts compared with non-chronic major depression (14,32-37).

Physical health comorbidities

It has been estimated that there is an 88% increase in rate of developing cancer in elderly persons with chronic depression (38). Chronic depression, as opposed to non-chronic depression, predicted mortality in a cohort of over 650 older patients, even when adjusted for age, gender, chronic diseases, and functional limitations (39). There have

been many reports suggesting that chronic and non-chronic major depression result in increased physical health problems (20,38-41). There are also reports that depression is more common or more persistent in medically-ill persons (13,27,30,40-42). It has long been suggested that persons suffering from chronic depressive disorders use health services to a greater degree (20). The nature of such use is not altogether clear. In addition, recent studies suggest that the greatest unmet needs are in those who are already receiving services (43).

Biological differences have also been noted between those with chronic depression and those with non-chronic depression. Some have noted a higher incidence of tumours among first-degree relatives, less frequent dexamethasone suppression test non-suppression, and a blunted thyroid stimulating hormone response to thyrotropin releasing hormone (36). While differences in sleep physiology, immunological factors, and genetic factors have been noted between dysthymia and depression, it remains unclear if these findings apply to chronic major depression as well (14,22). Total lifetime duration of depression has been associated with hippocampal volume loss in women, suggesting that chronic depression may be associated with structural changes in the brain (44).

Psychiatric comorbidity

While psychiatric comorbidity is often referred to in psychiatric epidemiology, this appears to have been little studied in chronic major depression (14). From the dysthymia literature, it appears that anxiety disorders and substance use disorders are frequently comorbid with dysthymia (14). The presence of a family history of dysthymia, great adversity, depressive personality traits, and personality disorders have all been implicated in dysthymia (21). Cognitive factors, such as negative interpretation

of new events, rumination, dysfunctional attitudes, depressive attributional style, and an overly general autobiographical memory have been also implicated in dysthymia (21). Interpersonal factors, such as the tendency of depressed persons to seek assurances of love and support, have also been implicated in dysthymia (21). Many of these factors may also play an important role in chronic major depression, although a recent report suggests that substance abuse is not associated with chronicity (27). Antisocial, avoidant, and schizoid personality disorders have all been associated with chronic depression (45). Miller et al. (46) found chronic depression to be associated with severe impairments in psychosocial functioning affecting quality of life, work functioning, interpersonal functioning, overall functioning and physical health. They found that even when compared to double depression (major depressive episode superimposed on dysthymic disorder), chronic major depression had decreased employment levels and decreased weekly hours worked (46).

Thus, there appears to be some data from clinical studies indicating that chronic depression is associated with poorer health and increased stress. There is also data about social consequences of early onset chronic depression. What is surprisingly lacking however is data about psychiatric comorbidity with chronic major depression.

1.5 Treatment of chronic depression

There are numerous treatment options available for major depressive disorder. Canadian and American treatment guidelines for MDD have been developed and disseminated (47-54). The Canadian guidelines address chronic depression, but the evidence on which they rely is rather sparse (47-53). The little available evidence regarding treatment suggests that chronic depression differs from non-chronic depression in usually requiring combination therapy (use of medication and psychotherapy) rather

than monotherapy (medication alone or psychotherapy alone) (49,51). In addition, treatment response appears to be slower (which can have major effects on determining whether to abandon a treatment modality in favour of another) (55,56,57).

One of the major issues facing treatment of all depressive disorders, including chronic depression, is patients not completing the treatment. A recent study which examined this issue in chronic depression seems to suggest that ethnic minorities, lower income, the use of monotherapy (rather than combination therapy – usually medication and psychotherapy), comorbid anxiety disorders, and a young age were all associated with increased risk of dropping out of treatment prematurely (58).

Until relatively recently, randomized controlled trials in chronic depression were essentially non-existent. The most prominent study of this type compared nefazodone, Cognitive Behavioral-Analysis System of Psychotherapy, and the combination of these for treating chronic depression (59). This study by Keller et al. examined treatment response in persons suffering from chronic major depression, dysthymic disorder with a superimposed major depressive episode (double depression), and recurrent major depressive disorder with incomplete remission between episodes (59). Their main findings were that combined therapy had a better response rate (73% versus 48% for each monotherapy) (59) in the acute phase. There have since been many subsequent papers which have examined various aspects of this study, including examining the treatments in the maintenance phase (60,61), and switching treatments when one is not effective (62). They demonstrated a clear role for psychotherapy in the treatment of chronic depression. In addition, these studies have been important in that they clearly demonstrate that good treatment responses are obtainable in chronic depression (chronic depression was seen as very difficult to treat with few positive outcomes prior to these studies). Keller et al. (56)

reviewed the response rate in trials of antidepressant medication, and regardless of the medication used, the response rate was approximately 50%. This rate is comparable to the response rate in episodic forms of depression (55), further providing evidence to suggest that chronic depression is not necessarily treatment-resistant.

There are however a number of limitations to these studies. While CBASP was designed specifically for treating chronic depression, it is not widely disseminated (12,63). As a result, all of the studies thus far involving CBASP have been published by a single research group who have a vested interest in the psychotherapeutic modality. In addition, nefazodone is no longer available in Canada due to concerns about hepatotoxicity of the drug. While the promoters of CBASP argue that it is more effective than Cognitive-Behavioural Therapy (CBT), there seems to be evidence for the use of both CBT and Interpersonal Therapy (IPT) in chronic depression, although they appear to have been studied more for the maintenance phase than the acute phase (24,51,64,65). There have yet to be any studies which have directly compared CBASP to any other psychotherapy, especially CBT and IPT. There has also not been any studies of CBASP in non-chronically depressed persons to see if there is anything unique about the response of chronic depression to this form of psychotherapy. In addition, it is not clear based on Keller et al.'s study whether there is a differential response between the recurrently depressed persons, the double depressed persons, and the chronically depressed persons included in their study (59).

One of the questions that clinicians sometimes face is whether a patient is likely to recover at all. Keller et al. have shown that of a cohort followed for 5 years, 12% had not recovered during that period (56). Of those that did not remit after 5 years, during a further 5 years of follow-up, an additional 38% remitted (57), suggesting some value in

continuing treatment. Another group often seen as very difficult to treat is those with comorbid personality disorders. Yet, there is data suggesting that the response rate in this group is similar to those who have not been diagnosed with a personality disorder (66). It is also being increasingly recognized that patients need to be treated to remission in order to reduce the risk of relapse or recurrence (26,67). Surprisingly, while treatment of depression appears to improve psychological and biological markers, it does not appear to improve survival (37).

There is an emerging literature on the differences between treating chronic major depression and non-chronic depression. Gelenberg et al. (12) suggest that it is uncertain as to what should be considered first-line treatment for chronic depression, and that patient preference should play a large role, whereas the Canadian guidelines (49) emphasize the need for using combination therapy in chronic depression. In addition, there does not appear to be any clear data indicating which pharmacologic agent (if any) is superior to the others, but tolerability should be a consideration (40). Keller et al. have suggested that at least in the acute phase of treatment, combination of psychotherapy and medication is the preferred choice (59). Keller et al. have also demonstrated that the highest rate of relapse from chronic depression occurs soon after remission, and have strongly advocated for longer term pharmacotherapy after achieving remission to prevent relapse (68). The Canadian guidelines (48) and Dunner (11,24) suggest that once remission is achieved, pharmacotherapy should be continued for at least 2 years (which differs considerably from the treatment of non-chronic depression), while others seem to indicate that at least 1 year should be attempted (61,65). Keller et al. have found that chronic depression responds more slowly than non-chronic forms, suggesting that clinicians should not change pharmaceutical agents as quickly as they may in non-chronic

depression (55). Thase (64) emphasizes the need for psychoeducation, teaching about recurrence risks, inclusion of family, monitoring adherence and ongoing psychotherapy to maintain remission in the maintenance phase. These appear to be somewhat different goals than are often articulated for continuation treatment in non-chronic treatment (where there does not appear to be an emphasis on the maintenance phase) (60,64).

Current treatments for depression are not effective for all patients (69). In fact, a significant minority of patients continue to have persistent symptoms of depression despite “optimal” treatment. Increasingly, there are suggestions that treatment of depression should move from a focus on symptom elimination to a focus on symptom management (69). The adoption of a “disease management” model, similar to that used in other chronic diseases like asthma and diabetes, are being increasingly advocated in depression (69,70).

In summary, treatment of chronic major depression appears to differ from treatment of non-chronic depression in the emphasis of combination therapy (pharmacotherapy and psychotherapy), the length of treatment following remission, the more likely need for a disease management model, and the emphasis on interventions to prevent recurrence.

1.6 Why is chronic major depression chronic?

It remains largely unknown why certain persons with depression go on to have a chronic course, while others do not. This is a question which has been examined in a number of clinical studies, and there are a number of possible theories to explain the chronicity of certain persons' depressive disorders. The two major suggestions include that persons who have a chronic major depressive disorder have a more severe variant of illness, and alternatively that there may be a number of factors extrinsic to the actual

depressive episode, such as premorbid personality factors and life stresses, which may explain the chronicity of the illness.

It is worth noting that the clinical literature suggests that chronic depression is more severe by a number of markers. It has long been regarded that chronically depressed persons may be at increased risk of suicide attempts (33). Keller et al. (56), citing a previously reported study by the same group (25), claim that chronic major depression is characterized by increased severity of depressive episodes. It is worth noting that the original article in which Keller et al. (25) reported the prospective follow-up of a naturalistic cohort of major depressive disordered patients (inpatients and outpatients) explicitly states that "Neither of the quantitatively scaled measures of severity of the illness at or before entry predicted subsequent course..." A study by Yang and Dunner (22), in which they selected patients from psychopharmacological research studies, seems to also suggest that chronic major depression may not be characterized by increased severity, as their comparison with a non-chronically depressed cohort seems to show little difference in the following scales: 17 item Hamilton Depression Rating Scale, Hamilton Anxiety Scale, Montgomery Asberg Depression Rating Scale, and the Global Assessment of Functioning Scale. However, there are at least two larger studies which continue to suggest that persistence of depression may be associated with the severity of the episode. Spijker et al. (30) prospectively examined new onset depressive episodes in a community sample that did not have a depressive episode at study entry. They found that severity of depressive episode, as measured by DSM-III-R criteria for severity, was a strong predictor of persistence of depressive episodes (30). In a more recent effectiveness study of treatment seeking outpatients (who were not necessarily chronically depressed), they found that higher remission rates were associated with lesser

severity of illness (71). The measures of severity used in this last study were the 17 item Hamilton Depression Rating Scale and the Quick Inventory of Depressive Symptomatology Self Report. Although it remains controversial, the clinical literature seems to place a great amount of emphasis on episode severity as accounting for at least some of the chronicity of depression.

A number of other factors have been attributed to explaining the chronicity of depressive episodes. Chronic physical illness and lack of social supports have been cited by Spijker et al. (30) as likely contributing to the chronicity of depressive episodes. Thase (64) has suggested that in elderly persons, different physiologic processes related to vascular pathology as well as declining economic status may also contribute to chronicity of depressive episodes. Others (14) have suggested that personality features, such as neuroticism, as well as developmental factors, such as early childhood losses, and chronic psychosocial stresses, such as related to caregiving, may be determinants of chronicity in depression.

While there is no clear explanation for the chronicity of depression in some individuals, it seems likely that many of the psychosocial factors mentioned above, coupled with both physical and psychiatric comorbidities and illness severity all play important roles. Clearly, this is an area which requires further definitive studies.

2.1.1 Objectives

The objectives of this study are as follows:

1. to determine the lifetime prevalence of chronic depression in the Canadian population;
2. to establish demographic factors associated with chronic depression;
3. to investigate differences in physical health of chronic versus non-chronic depression;

4. to determine differences in suicidality associated with chronic versus non-chronic depression;
5. to determine differences in psychiatric comorbidity associated with chronic versus non-chronic depression;
6. to determine differences in time lost to disability associated with chronic versus non-chronic depression; and
7. to investigate health service utilization associated with chronic depression.

2.1.2 Unique advantages and disadvantages of using the Canadian Community

Health Survey, Cycle 1.2 (CCHS 1.2)

There are a number of advantages to using the CCHS 1.2. These include the sampling strategy, the use of a diagnostic instrument based on the DSM-IV criteria, and the multitude of correlates inquired about. It should be noted that the CCHS 1.2 is the first survey to administer a structured psychiatric interview to a nationally representative sample of the Canadian population and this should not be overlooked; most previous studies have focused on specific regions (72). There was extensive consultation with many interested parties in the content of the CCHS 1.2, ensuring that the survey met many of the needs of governments and academics, amongst others (73). The survey focused attention on mental health, as opposed to including a smaller mental health section as part of a larger, general health survey (74).

The CCHS 1.2 was a large, nationally representative survey which has the potential to provide useful information to policy makers and clinicians alike. The large survey population (over 36 000 people) allows for a number of detailed statistical analyses to be conducted. The response rate among subjects in the CCHS 1.2 was high

(77%) (72). A conservative estimate of chronic depression lifetime prevalence of 2% would provide a sample of over 700 persons who may meet criteria for chronic major depression. This would allow (again by a conservative estimate of 50 subjects per variable) at least 14 variables that could be examined (76). The sampling frame employed is well-established (73,77). The sampling strategy was a multistage stratified cluster design (73), which when coupled with appropriate weighting can allow for the results to be generalizable to most Canadian populations.

Although expensive and time-consuming, face-to-face interviews (which were employed in most CCHS 1.2 interviews) remain the preferred method of conducting surveys (78). In addition, professionally-trained interviewers were used for all the interviews (79). Interviews were conducted in four languages (English, French, Chinese, and Punjabi) (80) in an attempt to ensure that the sample frame was as large as possible. The use of a community sample (as opposed to a clinical sample) allows the results to be more generalizable than clinical studies (40). This is especially useful when examining the question of comorbid disorders in that Berkson's bias (finding multiple comorbidities and increased severity in a treatment-seeking population) is avoided (81).

The instrument used in the CCHS 1.2 was a modified version of the World Mental Health Composite International Diagnostic Interview (WMH-CIDI). This is an internationally recognized diagnostic instrument for mental disorders which incorporates the latest ICD-10 and DSM-IV criteria (82,83). It is designed for use by lay interviewers, facilitating its use in large-scale surveys. It has made a number of improvements on the previous version (82). The inclusion in the CCHS 1.2 of duration of illness questions

allows the persons who suffer from depression to be divided into chronic and non-chronic forms of depression.

There are a number of correlates which can be examined in the CCHS 1.2. All subjects were asked about a number of chronic medical conditions which they may or may not suffer from. Basic demographic factors were asked of all respondents. These factors facilitate description of clinical profiles in which chronic depression may be more commonly associated. In addition, all respondents were asked questions with regards to suicidality (both suicide attempts and suicidal ideation), allowing comparisons between those who suffer from a mental illness and those who do not. There were also many questions with regards to the use of health care services. The responses to these questions may be helpful to health policy makers if there are substantial differences between chronically depressed persons and non-chronically depressed persons.

There are also a number of limitations to the use of the CCHS 1.2. These include its cross-sectional design, the use of lay interviewers, populations excluded from the sampling frame, and errors in administration of the survey. The survey was a cross-sectional survey; it therefore cannot be used to assess causality of illnesses, nor can it be used for disease surveillance (84,85). Neither of these are the goals of the current study. The self-report nature of the survey, however, without any reliance on other sources of data, makes responses susceptible to both recall and reporting biases (74,83). The questions pertaining to physical illness may be prone to reporting biases (86).

The sampling frame used for this study excluded the northern territories of Canada, full-time members of the Canadian Armed Forces, people living on Indian reservations, and institutionalized populations (73). While the study population could,

arguably, be generalized to the Canadian population as a whole due to the relatively small numbers of people in each of these groups, the psychopathology in these groups likely will be significantly different from the Canadian population as a whole.

There were at least a couple errors in the skip patterns programmed into the CCHS 1.2. Perhaps the most glaring of these, is the omission of questions regarding lifetime prevalence of substance dependence (87). In addition, some persons with irritable mood were excluded from further questions regarding bipolar disorder (75).

Clearly, not all mental illnesses could be assessed; however this does limit the analyses that can be conducted (85,88,89). The examination of substance use disorders included only substance dependence disorders, and not substance use disorders (87). None of the disorders evaluated had measures of the severity of the illnesses, potentially another important omission (90). In addition, the lack of detailed assessment of treatment quality may limit the degree to which public policy questions can be answered (88).

2.1.3 Hypotheses

Prevalence of Chronic Depression

The lifetime prevalence of chronic major depression was expected to be between 3-4%.

Demographic factors

It was expected that the prevalence of chronic major depression in women would be nearly twice the rate in men, a finding which would be consistent with prevalence rates in non-chronic depression.

It was predicted that chronic major depression would be less common in the elderly (than in most other age groups) in this study, a finding that would be consistent

with other studies that have employed the WMH-CIDI to assess non-chronic depression (17,91).

It was anticipated that chronically depressed persons would have lower incomes, less education, and would be less likely to be married than persons with non-chronic depression.

Physical health

It was hypothesized that most medical illnesses would be more common in chronically depressed persons than in non-chronic depressed persons, given the previously reported association between medical illness and chronic depression. In addition, it was anticipated that chronically depressed persons would endorse more restrictions in their level of activity due to physical health concerns.

Suicidality

It was predicted that both suicide attempts and suicidal ideation would be much more common among the chronically depressed, than non-chronically depressed given other reports of this finding.

Psychiatric comorbidity

It was hypothesized that chronically depressed persons would have greater psychiatric comorbidity than non-chronically depressed persons.

Disability

It was expected that chronically depressed persons would have greater time lost from work and more disability specifically associated with their mental illness than non-chronic depressed persons.

Use of health care services

It was predicted that chronically depressed persons would use a greater degree of both mental health and other health services, and that they continue to endorse a higher level of unmet needs, given suggestions in the literature that those who are already receiving services are the ones who express the greatest unmet need.

Methods

The CCHS 1.2 was a national survey conducted by Statistics Canada in 2002 to study mental health and well-being (73). The sample size was 36 984 and the response rate was 77% (73). The sampling method was a multistage stratified cluster design and the sampling frame consisted of non-institutionalized persons aged 15 years or older (73,75).

The analyses were conducted by obtaining access to the CCHS 1.2 data. This data is stored by Statistics Canada and can be accessed by researchers, provided that they agree to the privacy requirements that they have in place. Ethics approval from The University of Manitoba Research Ethics Board was obtained, and access to the CCHS 1.2 stored in the Research Data Centres was granted.

The nature of this study is secondary data analysis of data which has already been gathered by Statistics Canada. Participants in the CCHS 1.2 were divided into three groups: 1) no lifetime diagnosis of major depressive disorder; 2) non-chronic major depressive disorder; and 3) chronic major depressive disorder. Multinomial regression, and simple frequency tables were used to carry out analyses as appropriate. Subjects with a history of mania or hypomania were excluded because they would be classified as suffering from a bipolar disorder (1). In addition, any persons who had a depressive episode but did not provide any data on duration of depressive episode were excluded. Separating chronic and non-chronic depressions allows comparison of both non-

chronically depressed persons with chronically depressed persons, as well as comparisons with non-depressed persons. Using a non-depressed comparator (as opposed to no psychiatric diagnosis comparator) does not force the selection of an “ultra-healthy” cohort with which to compare the depressed groups.

The data were analyzed using the data in the Research Data Centre in Winnipeg. Statistics Canada weights were used and bootstrapping was used to correct variance estimates. Any variables with greater than 10% of values missing were not analyzed. Odds ratios for the multinomial regressions are presented. There were three groups that were compared. The non-chronic depression group was used as the comparator; the primary comparison is with the chronic depression group, with the non-depressed group used for an additional reference point. 3 types of odds ratios were calculated: unadjusted odds ratio (OR), adjusted odds ratio 1 (AOR1) which adjusts for sociodemographic differences in the groups being compared, and adjusted odds ratio 2 which adjusts for sociodemographic and both psychiatric and physical comorbidity differences in the groups compared. All data presented has been analyzed by a Statistics Canada analyst to ensure that disclosure of sensitive data does not occur.

4.1 Results

Prevalence and sociodemographics

There were a total of 35323 subjects in this study after removal of subjects endorsing manic episodes and subjects who did not provide information with regards to the length of depressive episodes. The prevalence of chronic depression in this study was 2.68%. The chronically depressed subjects in this study did not differ in gender from non-chronically depressed persons (Table 1). Chronically depressed persons were older in age than non-chronically depressed persons. Compared to non-chronically depressed

persons, chronically depressed subjects had either much less educational achievement (less than secondary education) or much higher levels of education (beyond secondary education). Chronically depressed persons were more frequently widowed, divorced, or separated compared to non-chronically depressed persons. Income was not examined as there were greater than 10% of values missing.

Physical comorbidities

In general, chronically depressed persons had a higher burden of physical illness than non-chronically depressed persons (Table 2). They had a greater total number of physical health problems, as well as greater proportion of a number of specific health conditions, including chronic fatigue syndrome, gastrointestinal ulcers, chronic bronchitis, migraine headaches, high blood pressure, arthritis, and back problems.

Psychiatric comorbidities

Chronic depression had a greater degree of psychiatric comorbidity than non-chronic depression in this study (Table 3). The chronically depressed subjects had a greater total number of psychiatric conditions and had a greater frequency of every comorbid condition examined.

Suicidality

Chronically depressed persons, compared to non-chronically depressed subjects, had more lifetime suicide thoughts and more lifetime suicide attempts (Table 4).

Disability

Chronically depressed persons, compared to non-chronically depressed persons, were more frequently unemployed (Table 5). In addition, they more frequently had disability days due to mental health, and more frequently reduced their activities due to their mental health. They endorsed participation limitations, difficulty in social

situations, and identified the need for help for a series of tasks more frequently than non-chronically depressed persons.

Health service utilization

Chronically depressed persons were more likely than non-chronically depressed persons to be hospitalized for their mental health condition and were more likely to use a variety of mental health resources (Table 6). They, however, were no more likely than non-chronically depressed persons to seek professional consultation, were no more likely to have sought out at least a single mental health resource, and their hospitalizations were not of longer duration.

5.1 Discussion

The prevalence of chronic major depression has not been reported in any major epidemiologic study that has been published. This is surprising, given a recent resurgence in interest in the clinical literature with regards to treatment of chronic depression. Our findings show a prevalence rate comparable to that which Weissman et al. (20) found for dysthymia almost 20 years ago, although it is slightly lower than we had predicted. Despite this, it is striking that nearly a quarter (24.8%) of depressed persons in this study met criteria for the DSM-IV-TR chronic specifier (1).

There has been considerable uncertainty regarding demographic factors that are of importance in chronic major depression. Our findings confirm suggest that the predominance of females being affected by non-chronic depression also holds in the case of chronic depression, in keeping with the findings of Kornstein (28). Our findings with regards to age are curious and not readily explainable. As we had predicted and has been suggested by Patten et al. (17), there may be a tendency for the structured interview schedule used in this study to not adequately detect depression in the elderly, hence the

very strong odds ratio predicting that the oldest age group (age 65 years and over) are most likely to be in the not depressed group. However, the finding of progressively increasing odds ratios with age in the chronic depression group is striking and we are unaware of similar findings in the published literature. It may be that there may be a small, but significant cohort of chronically depressed older persons who have previously not been noted in other population-based studies because the depression group was not broken down into groups based on chronicity. The findings with regards to marital status, similarly, do not have an obvious explanation. Our prediction that chronically depressed persons were less likely to be married was not validated. They were, however, more likely to be separated, widowed, or divorced. Interestingly, single persons had lower odds for chronic depression. As predicted, persons with the least education seem to be at higher risk for chronic depression. Chronically depressed persons appear to have an earlier onset of their illness (using the DSM-IV-TR age of onset specifier for dysthymia) (1), as we had predicted a priori. (There is no universally agreed upon age of onset specifier for chronic major depression; some authors (35) have used 18 years as the cut-point.) It is noteworthy that similar findings (both sociodemographic, as well as comorbidity and disability issues discussed below) have been found in a large clinical sample (27).

Based on the results of our study, having multiple physical comorbidities is strongly correlated with chronic depression even when sociodemographic factors are controlled. In addition, despite controlling for sociodemographic differences, there were strong associations between chronic depression and a number of specific physical conditions including rheumatism or arthritis, back problems, high blood pressure, migraine headaches, chronic bronchitis, stomach or intestinal ulcers, and chronic fatigue

syndrome. The correlates of chronic depression with physical illness have been poorly studied from a population perspective. A prospective epidemiologic study in The Netherlands has suggested that chronic physical illness is a determinant of the duration of depressive episodes (30). Patten has also demonstrated a similar relationship using the CCHS 1.1 database (92).

Psychiatric comorbidities were strongly associated with chronic depression. All of the psychiatric illnesses which were enquired about in a structured manner were more strongly associated with chronic depression than with non-chronic depression. In addition, there were a greater number of psychiatric comorbidities associated with chronic depression compared with non-chronic depression. Our study, because of its cross-sectional nature, could not examine whether the comorbid conditions resulted in chronic depression or whether the comorbid conditions occurred subsequent to the onset of chronic major depression.

Suicidality, as measured by both lifetime suicide thoughts and suicide attempts, was strongly associated with chronic depression compared with non-chronic depression. This relationship remained significant despite correction for sociodemographic differences, and despite adjusting for the number of physical and psychiatric comorbidities. In other words, the high level of physical and psychiatric comorbidity of chronic depression did not likely account for the association between chronic depression and suicidality.

Chronicity of depression appeared to markedly increase the degree of disability experienced by depressed persons. Chronic depression was significantly more strongly associated with lack of employment in the previous year. In addition, persons with chronic depression were significantly more likely to have had disability days in the two

weeks prior to their interview and to have had at least one day of reduced activity in the two weeks prior to their interview. Persons with chronic depression were more likely to endorse activity or participation limitations due to a health condition, difficulty in social situations due to their health condition, and difficulty with a series of tasks than non-chronically depressed persons. All of these relationships remained present despite adjusting for the sociodemographic differences and differences in the number of physical and psychiatric comorbidities. The disability experienced by chronically depressed persons in this study was only partly explained by the comorbid conditions many of these subjects had.

Chronically depressed persons, when compared with non-chronically depressed persons, were more likely to have had a hospitalization over their lifetime for mental health reasons and were more likely to have used a greater number of resources to deal with mental health issues. These findings mirror the findings of Weissman et al. (20) in epidemiologic studies of dysthymia. These findings are all the more impressive when one considers that Wang et al. (90) have found that chronic conditions and comorbid anxiety disorders (both of which were controlled for in our study) were significantly associated with help-seeking behaviour. It should be noted that the AOR1 for all of the health service utilization variables examined were significant; this suggests while chronically depressed persons used more health services, the extent of health service utilization in chronic depression is partially explained by their comorbid conditions.

While many studies have examined sociodemographic factors, comorbid conditions, health service utilization and disability in major depression and dysthymia (15-18,20,93), the present study has examined a substantial minority of depressed persons who have a more severe illness in terms of suicidality, comorbidity, and lifetime

impairment in social and occupational functioning. We are unaware of a population-based study involving a cohort of patients with chronic major depression.

The WHO determined that depression was the fourth leading cause of disability in 2000 (94), and depression is projected to rank first in disease burden by 2020 in developed countries (95). Some authors for example have estimated that treatment costs are 70% higher for persons with depression (96). Katon has highlighted that several studies have shown increased adverse health-risk behaviours associated with depression (97). Others have highlighted that depression appears to cause more physical disability than chronic physical illness (95). Depression is frequently cited as the most important risk factor for suicide (95,96). While some authors have suggested that treating depression may be a cost-saving intervention, others have suggested that cost-saving should not be the primary motivation for treatment but rather whether as a society the benefits are worth the costs (90,98,99).

While this study did not directly address issues with regards to costs of chronic depression, there are a number of substantial costs associated with depression – time lost from work, increased use of general medical services, decreased quality of life (100). The indirect costs of depression – disability, time lost from work, depression at work – consistently have been shown to be far in excess of treatment costs (100-103). The high indirect costs of major depression have been attributed to the high prevalence of the illness, the tendency for the illness to have its onset either before or during prime working years, the substantial impairments in work performance, the effects on limiting further educational attainment, the large proportion who either do not seek treatment or are inadequately treated, and the chronicity of the illness in many cases (103). In fact, major depression has been found to be the most burdensome disease in the middle adult years

and the burden has been found to be more than double the burden of any other disease (102). Depressed persons have been found to be 27 times more likely to miss work time than non-psychiatrically ill persons (102). While few studies have examined costs of depression in Canada, Stephens and Joubert estimated the indirect cost of depression in 2001 to be \$1.4 billion (104). The present findings suggest that chronic major depression is associated with more disability, more suicidality, and more resource use than non-chronic depression.

The potential to make policy decisions which encourage treatment of such conditions, and restore functionality to many of these disabled persons have wide-ranging implications, including for future research. Sobocki et al. (105) have highlighted the paradox that while costs resulting from depression have been estimated to be 1% of the GDP in the European Union, comparatively little is spent on neuroscience research and only a fraction of that on depression. They also point out that 90% of countries do not have a national mental health policy (105). The present study suggests that chronic major depression should specifically be targeted as a group who have significant (and likely persistent) disability.

Unfortunately, there is little attention paid to chronic forms of this illness in the economic cost literature, and minimal attention even to basic psychosocial functioning (46,106). Given that chronic depression is more impairing, represents a substantial minority of depressed persons, and is likely of significantly longer duration, it is surprising that it has been so little studied. It would not be surprising to discover that the majority of direct and indirect costs of depression are in fact due to chronic major depression, although this is a question beyond the scope of this study.

In addition, health provision for depressive disorders continues to operate under the premise that these disorders are episodic. While this is gradually changing in the minds of some clinicians, many continue to regard these illnesses as episodic and not requiring long-term care. There may be a role for continuing education of clinicians regarding the chronic nature of this illness.

There are some limitations of this study. These would include the use of a single variable to determine the duration of the longest depressive period, the use of lay interviewers, and the exclusive dependence on self-report of the subjects. The derived variable that was used was compiled based on responses to a number of questions with regards to depressive episode length during the survey. Although, based on the extensive use of this database in the present study and other published reports, we feel it is unlikely that there are errors in compiling this variable, there are also possible biases that respondents may have had to these questions.

The use of lay interviewers in mental health epidemiologic surveys may not match the accuracy of experienced clinicians. In this survey, Statistics Canada employed professional interviewers who were given specific training in administering mental health surveys (79). This likely reduced the errors considerably.

Self-report is subject to reporting and recall biases. Use of collateral histories, either from close family members or from archival sources, such as hospital charts, may have improved the accuracy of reported information, but would have required a considerably greater amount of expense and difficulty. The risk of attempting to obtain such additional information may be decreased response rates, as the topic of this survey is clearly of a sensitive nature.

The cross-sectional nature of the study precludes determining causality of findings. We are not able to determine whether any of the associations reported are causal in nature. This is especially important when considering the findings of this study – the multiple comorbidities found within the chronic depression group may be secondary to adverse health behaviours or alternatively the dysfunction associated with these comorbidities may be the cause for chronic depression. A survey of a cross-sectional nature is unable to answer such questions.

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Table 1: Sociodemographics

Variable	Category		Not depressed	Non-chronic depression	Chronic depression
Gender	Female	N (%)	16660 (49.15%)	1894 (63.97%)	735 (63.43%)
		OR (CI)	0.544 (0.480-0.618)	1.0	0.977(0.779-1.224)
Age	15-25	N (%)	5289 (18.46%)	454 (16.62%)	107 (10.52%)
		OR (CI)	1.135 (0.983-1.311)	1.0	0.590 (0.430-0.809)
	26-45	N (%)	10651 (37.62%)	1266 (45.59%)	363 (35.92%)
		OR (CI)	0.720 (0.641-0.809)	1.0	0.669 (0.538-0.832)
	46-64	N (%)	8347 (28.09%)	890 (30.82%)	448 (40.17%)
		OR (CI)	0.877 (0.771-0.997)	1.0	1.507 (1.192-1.906)
	65+	N (%)	7087 (15.63%)	253 (6.97%)	168 (13.39%)
		OR (CI)	2.509 (2.097-3.003)	1.0	2.063 (1.536-2.770)
Marital status	Married or common law	N (%)	16784 (63.05%)	1296 (56.20%)	456 (57.72%)
		OR (CI)	1.330 (1.186-1.492)	1.0	1.064 (0.874-1.296)
	Single	N (%)	8200 (25.28%)	820 (26.03%)	246 (18.77%)
		OR (CI)	0.962 (0.846-1.093)	1.0	0.657 (0.522-0.826)
	Widowed, separated or divorced	N (%)	6390 (11.66%)	747 (17.77%)	384 (23.51%)
		OR (CI)	0.611 (0.537-0.695)	1.0	1.422 (1.152-1.755)

Table 1: Sociodemographics (cont'd)

Variable	Category		Not depressed	Non-chronic depression	Chronic depression
Education	Less than secondary education	N (%)	9291 (25.99%)	571 (17.92%)	321 (27.90%)
		OR (CI)	1.608 (1.388-1.863)	1.0	1.772 (1.374-2.286)
	Secondary graduate	N (%)	5578 (19.11%)	479 (18.74%)	187 (16.79%)
		OR (CI)	1.024 (0.870-1.206)	1.0	0.875 (0.679-1.128)
	Beyond secondary level	N (%)	16505 (54.91%)	1813 (63.34%)	578 (55.30%)
		OR (CI)	0.705 (0.625-0.795)	1.0	0.716 (0.579-0.887)
Age of onset	<21	N (%)		986 (36.17%)	482 (46.29%)
		OR (CI)		1.0	1.521 (1.247-1.854)

Table 2: Physical comorbidities

Variable		Not depressed	Non-chronic depression	Chronic depression
3 or more comorbid (physical) conditions	N (%)	7655 (19.98%)	886 (27.64%)	518 (45.85%)
	AOR1 (CI)	0.560 (0.487-0.643)	1.0	1.873 (1.453-2.414)
Has food allergies	N (%)	2500 (7.18%)	345 (11.59%)	150 (13.06%)
	AOR1	0.663 (0.559-0.786)	1.0	1.173 (0.876-1.570)
Has allergies other than food allergies	N (%)	8789 (27.89%)	1112 (37.72%)	452 (38.70%)
	AOR1	0.705 (0.615-0.808)	1.0	1.111 (0.883-1.398)
Has Asthma	N (%)	2590 (7.83%)	343 (10.90%)	158 (14.22%)
	AOR1	0.736 (0.610-0.889)	1.0	1.381 (0.994-1.919)
Has fibromyalgia	N (%)	396 (1.17%)	77 (2.80%)	66 (5.32%)
	AOR1	0.451 (0.304-0.669)	1.0	1.736 (0.994-3.030)
Has arthritis or rheumatism	N (%)	6803 (16.71%)	593 (18.50%)	378 (30.30%)
	AOR1	0.685 (0.587-0.799)	1.0	1.441 (1.143-1.818)

Table 2: Physical comorbidities (cont'd)

Variable		Not depressed	Non-chronic depression	Chronic depression
Has back problem	N (%)	6566 (19.39%)	829 (25.02%)	418 (39.87%)
	AOR1	0.684 (0.595-0.786)	1.0	1.828 (1.463-2.284)
Has high blood pressure	N (%)	5669 (14.74%)	425 (14.05%)	264 (22.89%)
	AOR1	0.770 (0.639-0.928)	1.0	1.350 (1.023-1.781)
Has migraines	N (%)	2884 (9.33%)	510 (17.64%)	238 (21.64%)
	AOR1	0.573 (0.486-0.676)	1.0	1.387 (1.076-1.790)
Has chronic bronchitis	N (%)	1052 (2.80%)	149 (4.64%)	102 (7.97%)
	AOR1	0.550 (0.417-0.725)	1.0	1.477 (1.012-2.155)
Has diabetes	N (%)	1832 (4.84%)	128 (3.96%)	78 (7.06%)
	AOR1	0.885 (0.669-1.169)	1.0	1.363 (0.877-2.117)
Has heart disease	N (%)	2326 (5.36%)	170 (4.76%)	98 (9.77%)
	AOR1	0.668 (0.519-0.861)	1.0	1.473 (0.969-2.238)
Has stomach or intestinal ulcers	N (%)	1251 (3.52%)	169 (4.84%)	114 (10.74%)
	AOR1	0.671 (0.528-0.853)	1.0	2.119 (1.365-3.289)
Has a bowel disorder/Crohn's disease	N(%)	936 (2.52%)	139 (3.78%)	76 (6.09%)
	AOR1	0.679 (0.522-0.884)	1.0	1.500 (0.988-2.276)

Table 2: Physical comorbidities (cont'd)

Variable		Not depressed	Non-chronic depression	Chronic depression
Has cataracts	N (%)	1982 (4.78%)	99 (3.05%)	59 (4.18%)
	AOR1	0.856 (0.560-1.308)	1.0	0.832 (0.474-1.459)
Has a thyroid condition	N (%)	2007 (5.49%)	196 (6.31%)	85 (6.09%)
	AOR1	0.865 (0.701-1.066)	1.0	0.790 (0.535-1.168)
Has chronic fatigue syndrome	N (%)	270 (0.80%)	65 (2.59%)	70 (7.16%)
	AOR1	0.316 (0.203-0.490)	1.0	2.554 (1.507-4.331)
Suffers from multiple chemical sensitivities	N (%)	672 (2.11%)	109 (3.64%)	80 (5.61%)
	AOR1	0.582 (0.438-0.774)	1.0	1.441 (0.963-2.156)
Obesity	N (%)	5591 (16.62%)	560 (19.42%)	257 (22.85%)
	AOR1	0.775 (0.657-0.915)	1.0	1.147 (0.875-1.504)

Table 3: Psychiatric comorbidities

Variable		Not depressed	Non-chronic depression	Chronic depression
2 or more comorbid (psychiatric) conditions excluding depression	N (%)	350 (1.15%)	149 (4.15%)	137 (12.10%)
	AOR1 (CI)	0.282 (0.207-0.385)	1.0	3.621 (2.557-5.128)
Has substance dependence (12 month)	N (%)	799 (2.45%)	139 (4.14%)	72 (6.40%)
	AOR1	0.495 (0.380-0.645)	1.0	2.123 (1.444-3.121)
Has agoraphobia	N (%)	302 (1.00%)	102 (3.37%)	69 (6.38%)
	AOR1	0.347 (0.244-0.492)	1.0	1.903 (1.206-3.002)
Has panic disorder	N (%)	740 (2.48%)	250 (8.25%)	168 (16.37%)
	AOR1	0.308 (0.246-0.386)	1.0	2.252 (1.669-3.040)
Has social phobia	N (%)	1687 (5.61%)	578 (17.89%)	331 (32.72%)
	AOR1	0.291 (0.251-0.337)	1.0	2.479 (1.926-3.192)

Table 4: Suicidality

Variable		Not depressed	Non-chronic depression	Chronic depression
Lifetime suicide thought	N (%)	2873 (8.90%)	1061 (34.92%)	553 (51.76%)
	AOR1	0.197 (0.173-0.225)	1.0	2.202 (1.738-2.790)
	AOR2	0.238 (0.207-0.275)	1.0	1.742 (1.352-2.244)
Lifetime suicide attempt	N (%)	575 (1.67%)	267 (8.05%)	201 (16.23%)
	AOR1	0.229 (0.184-0.285)	1.0	2.395 (1.795-3.196)
	AOR2	0.309 (0.246-0.389)	1.0	1.820 (1.344-2.465)

Table 5: Disability

Variable		Not depressed	Non-chronic depression	Chronic depression
Did not work in last year	N (%)	7953 (23.70%)	634 (20.95%)	419 (35.31%)
	AOR1	1.048 (0.887-1.239)	1.0	1.548 (1.186-2.019)
	AOR2	1.085 (0.911-1.293)	1.0	1.500 (1.144-1.966)
At least 1 disability days due to MH in last two weeks	N (%)	212 (0.54%)	83 (2.56%)	75 (6.38%)
	AOR1	0.221 (0.154-0.317)	1.0	2.754 (1.716-4.421)
	AOR2	0.317 (0.215-0.468)	1.0	1.938 (1.186-3.166)
At least 1 day of reduced activity due to MH in last 2 weeks	N (%)	164 (0.40%)	73 (2.18%)	66 (5.39%)
	AOR1	0.194 (0.128-0.292)	1.0	2.637 (1.567-4.440)
	AOR2	0.277 (0.180-0.427)	1.0	1.829 (1.072-3.119)

Table 5: Disability (cont'd)

Variable		Not depressed	Non-chronic depression	Chronic depression
At least 1 day of extra effort due to mental health in last 2 weeks	N (%)	240 (0.64%)	122 (4.11%)	94 (7.06%)
	AOR1	0.166 (0.116-0.238)	1.0	1.811 (1.187-2.762)
	AOR2	0.243 (0.166-0.355)	1.0	1.191 (0.761-1.864)
Often has participation or activity limitation due to health	N (%)	4332 (11.16%)	470 (15.07%)	345 (29.01%)
	AOR1	0.570 (0.471-0.689)	1.0	1.877 (1.472-2.393)
	AOR2	0.719 (0.582-0.888)	1.0	1.472 (1.142-1.898)
Difficulty in social situations due to health condition	N (%)	1000 (2.84%)	221 (6.48%)	191 (15.74%)
	AOR1	0.379 (0.303-0.474)	1.0	2.417 (1.753-3.333)
	AOR2	0.557 (0.438-0.708)	1.0	1.654 (1.168-2.344)
Needs help with a series of tasks due to health condition	N (%)	4717 (11.78%)	453 (14.71%)	342 (30.16%)
	AOR1	0.604 (0.505-0.723)	1.0	2.000 (1.558-2.568)
	AOR2	0.773 (0.639-0.935)	1.0	1.583 (1.230-2.036)

Table 6: Health service utilization

Variable		Not depressed	Non-chronic depression	Chronic depression
Lifetime hospitalization due to mental health	N (%)	1109 (2.79%)	392 (12.08%)	291 (24.14%)
	AOR1	0.204 (0.165-0.253)	1.0	2.060 (1.551-2.736)
	AOR2	0.261 (0.203-0.334)	1.0	1.558 (1.157-2.098)
Lifetime professional consultation due to mental health	N (%)	5232 (16.15%)	1951 (68.14%)	833 (75.63%)
	AOR1	0.100 (0.088-0.114)	1.0	1.542 (1.203-1.978)
	AOR2	0.113 (0.099-0.130)	1.0	1.127 (0.852-1.489)
Lifetime use of resources due to mental health	N (%)	5904 (18.02%)	2023 (70.79%)	858 (77.62%)
	AOR1	0.101 (0.089-0.114)	1.0	1.496 (1.154-1.939)
	AOR2	0.114 (0.099-0.131)	1.0	1.096 (0.817-1.469)
Hospitalized 7 or more days due to mental health	N (%)	597 (1.38%)	258 (7.87%)	194 (14.88%)
	AOR1	0.151 (0.115-0.199)	1.0	1.726 (1.221-2.442)
	AOR2	0.188 (0.136-0.260)	1.0	1.314 (0.931-1.854)

Table 6: Health service utilization (cont'd)

Variable		Not depressed	Non-chronic depression	Chronic depression
Use of 3 or more types of resources due to mental health	N (%)	1407 (3.87%)	858 (28.47%)	495 (42.16%)
	AOR1	0.115 (0.100-0.132)	1.0	1.896 (1.524-2.359)
	AOR2	0.145 (0.124-0.169)	1.0	1.349 (1.054-1.726)

Appendix A: Criteria for 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 not 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. 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., 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, psychotic symptoms, or psychomotor retardation.

Appendix B: Major Depressive Disorder, Recurrent (Note: if only a single episode, then illness is referred to as Major Depressive Disorder, Single Episode)

A. Presence of two or more Major Depressive Episodes.

Note: To be considered separated 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 of 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.

Appendix C: Criteria for Specifiers

Mild: Few, if any, symptoms in excess of those required to make the diagnosis and symptoms result in only minor impairment in occupational functioning or in usual social activities or relationships with others.

Moderate: Symptoms or functional impairment between “mild” and “severe”.

Severe Without Psychotic Features: Several symptoms in excess of those required to make the diagnosis, and symptoms markedly interfere with occupational functioning or with usual social activities or relationships with others.

Severe With Psychotic Features: Delusions or hallucinations. If possible, specify whether the psychotic features are mood-congruent or mood-incongruent:

Mood-Congruent Psychotic Features: Delusions or hallucinations whose content is entirely consistent with the typical depressive themes of personal inadequacy, guilt, disease, death, nihilism, or deserved punishment.

Mood-Incongruent Psychotic Features: Delusions or hallucinations whose content does not involve typical depressive themes of personal inadequacy, guilt, disease, death, nihilism, or deserved punishment. Included are such symptoms as persecutory delusions (not directly related to depressive themes), thought insertion, thought broadcasting, and delusions of control.

In partial remission: Symptoms of a Major Depressive Episode are present but full criteria are not met, or there is a period without any significant symptoms or a Major Depressive Episode lasting less than 2 months following the end of the Major Depressive Episode. (If the Major Depressive Episode was superimposed on Dysthymic Disorder, the diagnosis of Dysthymic Disorder alone is given once the full criteria for a Major Depressive Episode are no longer met.)

In Full Remission: During the past 2 months, no significant signs or symptoms of the disturbance were present.

Unspecified

Chronic (can be applied to the current or most recent Major Depressive Episode in Major Depressive Disorder and to a Major Depressive Episode in Bipolar I or II Disorder only if it is the most recent type of mood episode): Full criteria for a Major Depressive Episode have been met continuously for at least the past 2 years.

With Full Interepisode Recovery: if full remission is attained between the two most recent Mood Episodes

Without Full Interepisode Recovery: if full remission is not attained between the two most recent Mood Episodes