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Research Report

Why is major depression prevalence not changing?



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ABSTRACT

Background: Increasing provision of treatment should theoretically lead to a decreased burden of major depressive episodes (MDE) in the population. However, there is no evidence yet that this has occurred. Among possible explanations are that: (1) treatment may not be sufficiently accessible, effective or effectively delivered to make a difference at the population level or (2) treatment benefits such as diminished episode duration may be offset by other trends such as increasing episode incidence, or vice versa.

Methods: MDE prevalence has been assessed in a series of national surveys and in a single national longitudinal study in Canada. These studies included a short form version of the Composite International Diagnostic Interview module for major depression. Indicators of incidence and episode duration of MDE were estimated. Meta-regression methods were used to examine trends over time.

Results: No evidence of increasing incidence nor of diminishing duration of MDE was found. The analysis failed to uncover evidence that the epidemiology of this condition has been changing.

Limitations: Most studies included in this analysis used an abbreviated interview for MDE which may lack sensitivity and/or specificity. These studies could not address potential benefits of treatment on prevention of suicide. Some potentially offsetting effects could not be assessed, e.g. economic or societal changes.

Conclusion: These results suggest that more effective efforts to prevent MDE, or to improve the volume or quality of treatment, are necessary to reduced burden of MDE in the population.

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1. Introduction

During the past 2 decades the annual period prevalence of major depressive episode (MDE) has been estimated in many countries (Kessler and Üstün, 2008). In some countries repeated surveys have been carried out, but interview modifications have generally precluded comparisons over time. In Canada several national surveys have used an identical assessment instrument, but these studies have failed to find evidence that prevalence is changing over time (Patten et al., 2015b). This is surprising since the use of antidepressant medications has increased over the same interval in many countries (OECD, 2013), largely as a result of

increased duration of use (Moore et al., 2009). It is likely that access to evidence-based psychotherapies has also increased. In Canada there has been a tripling of antidepressant use since 1994, although the increase appears now to have stopped (Patten et al., 2014). It should be noted that some of this increase reflects the use of these medications for treatment conditions other than MDE such as anxiety disorders and non-psychiatric indications such as chronic pain.

Point prevalence of any disorder is determined by the inflow of new cases (incidence) into the prevalence pool and the outflow of cases due to recovery or mortality. In the case of MDE, inflow into the prevalence pool occurs from new onset episodes, but also from recurrence among those with existing disorders. Effective treatments for depression should lead to diminished prevalence if they reduce the recurrence of MDE (e.g. during the long-term use of antidepressant medications) or if they reduce the mean duration of episodes during acute treatment. The biggest impact on population health can be expected to arise from the former rather than

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the latter effect (Katon et al., 1997; Vos et al., 2004). In view of evidence of increased treatment, a lack of improvement in prevalence is therefore puzzling. This issue is not unique to Canada and has also been reported in the US (Mojtabai and Jorm, 2015), Australia (Reavley et al., 2011) and the UK (Spiers et al., 2011; Spiers et al., 2012). An American (Compton et al., 2006) and an Australian study (Goldney et al., 2010) even reported increasing prevalence.

The lack of documented progress in reducing the prevalence of MDE may indicate that current approaches have failed to accomplish their intended objectives. A possible interpretation is that the health system has failed to sufficiently improve outcomes for this condition. In turn, this could have many explanations including factors that affect treatment seeking (e.g. literacy, stigma) or the effectiveness of treatment received (e.g. adherence). This conclusion could also prompt a reevaluation of current strategies, perhaps supporting consideration of a change in direction, such as an increased emphasis on prevention (Jorm, 2014). On the other hand, it is possible that the health system has been improving outcomes, for example in episode duration but that such improvements have been offset by increased incidence. The latter could potentially occur due to increasing exposure to risk factors in the population (e.g. higher levels of stress, more frequent threatening life events, diminished adequacy of sleep, changes in social determinants such as the global financial crisis, increased prevalence of comorbidities etc.).

The goal of this study was to determine whether there is any evidence of (1) diminishing mean duration of MDE in the population over time, and (2) to discern whether any such changes are being offset by increasing incidence.

2. Methods

The study used data from 2 sources, the National Population Health Survey (NPHS) and the Canadian Community Health Survey (CCHS). The NPHS was a longitudinal survey conducted by Statistics Canada (2013) that prospectively followed a representative cohort initially consisting of 15,254 respondents interviewed every two years from 1994 to 2010. In 1994, 75% of the interviews with the longitudinal respondents were conducted in person, but after this initial cycle approximately 95% of its interviews were conducted by telephone. The CCHS is a survey program consisting of a series of cross-sectional general health surveys, also conducted by Statistics Canada (2015). The CCHS has been repeated every one or two years since 2001 providing sample sizes (assessed for MDE) ranging between 21,000 and 128,000 respondents (Patten et al., 2015a). Depressive episodes were assessed as optional content (selected by specific provinces). There were 7 cross-sectional CCHS surveys conducted between 2001 and 2013, all of which were included in the current analysis. Sample sizes available from these surveys are summarized in Tables 1 and 2. In the cross sectional CCHS, approximately 40% of the interviews were conducted in person and 60% by telephone. Both the longitudinal NPHS and cross-sectional CCHS surveys used probability samples drawn from the general household population and both included the Composite International Diagnostic Interview – Short Form for Major Depression (CIDI-SFMD), a brief measure of MDE (Kessler et al., 1998).

To address the possibility of secular trends, meta-regression methods with survey-level pooling have been previously used to combine data from these various sources. No change in prevalence over time was observed (Patten et al., 2015a). The decision to pool survey estimates rather than individual-level data was motivated by a need to incorporate sampling weights and bootstrap variance estimation procedures in order to account for survey design

Table 1

Sample size available^a for estimating mean episode duration (weeks depressed in past year) in the cross-sectional CCHS.

Survey	Total survey sample size	Sample size with weeks depressed in past year ^b
CCHS 1.1	131,535	8521
CCHS 2.1	135,573	2471
CCHS 3.1	132,947	3064
CCHS 2007/08	131,959	2471
CCHS 2009/10	124,870	2666
CCHS 2011/12	125,645	1109
CCHS 2013	64,346	1024
Total		21,326

^a Estimates arising from these samples are presented in Fig. 1.

^b Available for each member of the sample that had MDE based on the CIDI-SFMD, which was optional content and therefore not selected for inclusion in all provinces.

Table 2

Sample size available^a for estimates of weeks depressed in past year and episode incidence from the longitudinal NPHS.

Survey N=15,254	Sample size available for estimating weeks depressed in past year from the NPHS ^b	Sample size available for estimating of incidence of MDE from the NPHS
NPHS 1994	836	–
NPHS 1996	601	11,815
NPHS 1998	552	11,459
NPHS 2000	552	10,190
NPHS 2002	483	9074
NPHS 2004	470	8295
NPHS 2006	398	7491
NPHS 2008	337	6689
NPHS 2010	305	6195

^a Numbers are influenced by leaving the sampling frame due to mortality and attrition and also by non-response. The response rate up to 2010 was 69.7% (more information available on the Statistics Canada website).

^b Pooled estimates arising from these samples presented in Fig. 2 (weeks depressed in past year) and Fig. 3 (episode incidence).

effects. Statistics Canada produces sets of 500 replicate bootstrap weights for use in variance estimation for each survey. The weights are calculated with reference to the general population at the time of that survey and incorporate adjustments for design elements and non-response. These survey weights were not designed for use in individual-level pooled analyses.

The CIDI-SFMD is a branched interview. For those endorsing the syndrome of MDE an item asks: “Reviewing what you just told me, you had 2 weeks in a row during the past 12 months when you were sad, blue or depressed and also had some other things like (key phrases reflecting earlier responses are inserted to complete this sentence). About how many weeks altogether did you feel this way during the past 12 months?” As an indicator of episode duration, the weighted mean number of reported weeks depressed in the past year among respondents with MDE was estimated. As an indicator of incidence, the weighted proportion of respondents without MDE at the start of one NPHS cycle, but who had a new MDE detected at the subsequent cycle was also estimated. As the NPHS included 9 cycles (data collected between 1994 and 2010), it was possible to produce 8 estimates of this approximation of MDE incidence.

Estimates were initially examined using forest plots by province, survey, and year. We examined heterogeneity between survey estimates (I^2) and used a chi-square test (Q statistic) to evaluate its significance. As heterogeneity was found, random effects meta-regression was conducted to assess change over time. The intercept term in the meta-regression linear equation represented the baseline estimate from 1994, and the slope term

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