Gender Differences in the Prevalence of Depression Among Canadian Adolescents

John Cairney, MA

Unlike studies of adult depression,[1,2] there are inconsistencies in the literature concerning gender differences in depression among adolescents.[3-17] One reason for this may be the differences in age ranges across studies. Recent work has suggested that gender differences do not emerge until after the age of 15.[18] Using a large representative sample of Canadian adolescents aged 12 to 19, this study investigates whether or not gender differences in depression vary by age among adolescents.

METHODS

The following analyses were conducted using the National Population Health Survey (NPHS) by Statistics Canada.[19] Using a multi-staged stratified, random sampling procedure, a survey of 19,600 households across Canada was done in which one person per household was selected to provide detailed personal information for the longitudinal component of the survey. People living in Native reserves, military bases, institutions, and some remote areas in Ontario and Quebec were excluded. Of the 18,342 possible respondents aged 12 or older, 17,626 participated resulting in a response rate of 96%. Only those respondents aged 12 to 14 (N=637) and those aged 15 to 19 (N=1,210) were selected for this study, reducing the total

sample to 1,847. All analyses were computed using the standardized weighting scheme suggested by Statistics Canada.[19]

Dependent variables

Major Depressive Episode (MDE) is derived from the UM-CIDI (short form), a major depressive diagnostic instrument to provide one-year population prevalence rates of diagnosable depression. For a complete description of this instrument, see references 20 and 21. This instrument is a shortened version of the original CIDI and UM-CIDI, providing a diagnosis of depressed mood based upon criteria from the DSM-III-R and the ICD-10. This diagnostic instrument predicts caseness based on two central dimensions of depression: feeling sad, blue, or depressed and/or losing interest in most things. If respondents reported experiencing either dimension at least most of the day, almost every day, or for a period of two weeks in the previous 12 months, they were prompted to answer "yes" or "no" to a series of symptoms. Respondents answering "yes" to 4 or more symptoms had a probability for caseness of 0.90 and were classified as having a MDE. Field trials of the CIDI, conducted by the World Health Organization, have documented good interrater reliability,[22] test-retest reliability,[23] and validity for most

diagnoses.[24,25] Recent research has suggested that DSM-III-R criteria is appropriate for adolescent populations.[26]

Independent variables

Dummy variables were created to define two age groups: those aged 12 to 14 and those 15 to 19; the reference category was 12 to 14. A dummy variable was also created for gender comparing females to males (reference category). Income adequacy was composed of five levels indicating increasing income and was calculated by adjusting data on total household income by household size. The criterion for each category was based on Statistics Canada low income cutoffs.[27] Provinces were divided into both regions and provinces: East, Quebec, the Prairies, British Columbia, and Ontario (reference category).

The analysis proceeded in two stages. First, crosstabulations between gender and depression were performed for the entire sample, and then separately for both the 12 to 14, and 15 to 19 age groups. Second, logistic regression analyses were conducted.

RESULTS

Bivariate analysis confirms that gender differences do not emerge until after the

Centre for Health and Well-Being, Department of Sociology, The University of Western Ontario.
Correspondence and reprint requests: John Cairney, Centre for Health and Well-Being, Social Science Centre, University of Western Ontario, London, Ontario, Canada, N6A 5C2.
Financial support provided to John Cairney by a Fellowship from the Social Science and Humanities Research Council of Canada and the Centre for Health and Well-Being at the University of Western Ontario.

TABLE I				
Prevalence Estimates for Major Depressive Episode by Age and Gender				
Sample	**No. of Cases/Sample (Weighted Data)**	**Prevalence**	**Chi Square Value**	**p-value**
Ages 12 to 19				
Males	62/1236	4.78%	15.080, 1 df	0.001
Females	103/1082	8.66%		
Ages 12 to 14				
Males	14/505	2.71%	0.100, 1 df	0.922
Females	12/447	2.61%		
Ages 15 to 19				
Males	48/730	6.16%	17.860, 1 df	0.001
Females	91/637	12.46%		

TABLE II
Logistic Regression of Major Depressive Episode onto Gender, Age and Gender by Age†

Variables	Model 1 b	Model 1 Odds Ratios	Model 2 b	Model 2 Odds Ratios	Model 3 b	Model 3 Odds Ratios
Female	0.667	1.948*	0.647	1.910*	0.020	1.020
Ages 15 to 19			1.312	3.714*	0.895	2.446*
Female* 15 to 19					0.762	2.143

* p<0.01
† All models control for income adequacy and region.

age of 15 as there are no significant gender differences among adolescents aged 12 to 14 (see Table I). However, among the group aged 15 to 19, the prevalence of depression for females is almost double that of males.

The findings from the multivariate analysis are found in Table II. After controlling for income adequacy and region of the country, adolescent females are more likely to have had a major depressive episode in the previous year. Adolescents aged 15 to 19 are more than three times as likely to have suffered from depression than those aged 12 to 14. Although the results of the crosstabulations suggest an interaction between gender and age, these findings were not confirmed in multivariate analysis.

DISCUSSION

The results of the bivariate analysis confirm that gender differences in adolescent depression do not emerge until after the age of 15.[18] However, multivariate analysis did not find gender differences to vary by age. The failure to detect a significant interaction is most likely due to sample size. Depression is a rare event among those aged 12 to 14; thus, even in a sample size of 637, very few cases of major depression are reported. More research with a larger sample of "younger" adolescents is necessary to confirm the results of the bivariate analysis.

There are several limitations to this study. For example, in these data, age was coded in intervals. It was therefore not possible to assess the prevalence of depression for different age groups (i.e., 12 to 14, 15 to 17, 18 to 19) or to treat age as a con-

tinuous variable. Also, the only covariates available for analysis were income adequacy and place of residence. It is important to note, however, that even though there are many other correlates of depression which need to be included as controls in future work, previous research has identified income as the most significant socioeconomic predictor of depression among children and adolescents.[14] Finally, these data are cross-sectional and therefore it cannot be concluded that depression increased with age. The differences between age groups may be attributable to other factors such as a cohort effect. In other words, risk factors specific to one cohort (i.e., those aged 15 to 19) may be the cause of increased prevalence estimates. Longitudinal data which follow the same cohort through adolescence are required to test the hypothesis that gender differences in depression do not emerge until after the age of 15.

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