One-Year Prevalence of Psychiatric Disorder in Ontarians 15 to 64 Years of Age

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Objective: *To present the one-year prevalence of 14 psychiatric disorders in a community sample of Ontarians aged 15 to 64 years.*

Method: *Data on psychiatric disorders were collected on 9953 respondents using the University of Michigan revision of the Composite International Diagnostic Interview (UM-CIDI). DSM-III-R criteria were used to define the psychiatric disorders.*

Results: *Almost 1 in 5 Ontarians (18.6%) had one or more of the disorders measured in the survey. Among 15- to 24-year-olds, 1 in 4 was affected. The distribution of individual disorders varied by sex and age.*

Conclusion: *Because of the immense burden of suffering associated with psychiatric disorders, clinical and research efforts in this area should receive high priority within the health budget.*

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Key Words: *psychiatric disorder, epidemiology, prevalence, community sample*

Unbiased, precise estimates of the prevalence of psychiatric disorders in the general population can provide useful information on the magnitude and distribution of these conditions. Further, the combination of prevalence estimates and data on the utilization of mental health services will indicate the extent to which services are targeted accurately, give information on the extent of current need, and allow the identification of geographic areas that are relatively under- or overserviced.

This paper presents one-year prevalence rates of psychiatric disorders from the Mental Health Supplement (the Supplement) to the Ontario Health Survey. The results are compared with 3 other community surveys of psychiatric disorders using lay interviewer-administered structured interviews and DSM-III (1) or DSM-III-R (2) diagnostic criteria. The first, the Epidemiologic Catchment Area Study (3), was carried out in the early 1980s in 5 different sites in the United States. The sample included approximately 20 000 residents of 18 years of age or older from both household dwellings and institutions. The Diagnostic Interview Schedule (DIS) (4) was used to classify psychiatric disorders according to DSM-III criteria. The second survey (5), also using the DIS, was carried out in Edmonton, Alberta, between 1983 and 1986. Data were collected on 3258 community residents aged 18 years and older. The third survey, the National Comorbidity Survey (NCS) (6), collected information on a probability sample of persons, aged 15 to 54 years, in the noninstitutionalized civilian population of the United States. Lay interviewers collected data in 1990 and 1991 on 8098 respondents using a revised version of the Composite International Diagnostic Interview (CIDI) (7) called the UM-CIDI (6). This

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version enabled prevalence estimates of psychiatric disorders to be obtained using DSM-III-R diagnostic criteria.

Methods

The methodology of the Supplement is covered in detail in Part I of this series (p 549). Briefly, the Supplement was a province-wide, cross-sectional, epidemiologic survey of psychiatric disorders among those aged 15 years and older living in household dwellings in Ontario. Respondents for the Supplement were drawn from households (N = 13 002) participating in the Ontario Health Survey. One person per household was selected, and 9953 (76.5%) participated. The instrument used to measure psychiatric disorder (the UM-CIDI) was identical to that used in the NCS (6). The CIDI is a state-of-the-art structured diagnostic interview based on the DIS. Field trials of the CIDI carried out by the World Health Organization reveal good interrater reliability, test–retest reliability, and validity of almost all diagnoses except psychosis (8). The modifications of the CIDI by Dr Kessler and colleagues at the Institute for Survey Research at the University of Michigan are provided in our companion paper (p 549) and elsewhere (6). A major change from the DIS is that in the UM-CIDI, the screening questions for each disorder were consolidated into a diagnostic screen that preceded the rest of the questions in the interview. In the DIS, the screening questions for each disorder preceded the detailed questions for each disorder, which were asked only of respondents who answered the screening questions positively. The UM-CIDI strategy was followed so that respondents would answer all the screening questions before they would discover the consequences of a "yes" response, namely, a series of burdensome follow-up questions.

In the Supplement, the UM-CIDI provided prevalence data on 14 DSM-III-R psychiatric disorders: anxiety disorders (social phobia, simple phobia, agoraphobia, panic disorder, generalized anxiety disorder); affective disorders (major depressive disorder, dysthymia, manic disorder); bulimia; substance use disorders (alcohol abuse/dependence, marijuana abuse/dependence, other substance abuse/dependence); and antisocial behaviours (antisocial personality and adult antisocial behaviour). Schizophrenia and related psychoses, although assessed in the Supplement, were not reported as a separate category because the number of respondents meeting the diagnostic criteria were too small to provide reliable estimates. Interviewers experienced difficulty distinguishing whether examples given by respondents of psychotic-like symptoms were plausible or not. Only 6 of 8116 respondents qualified for this disorder and 5 of the 6 had other disorders; all 6 respondents were included in the overall estimate of mental disorder. Anorexia nervosa was excluded because of a mistake in the questionnaire that prevented accurate classification of this disorder. Of the 1837 respondents aged 65 years and older, 91 (5.0%) made more than 10 errors on the Standardized Mini-Mental State Examination (9), and these were excluded from the remainder of the interview. Concerns about the burden of the lengthy interview on these older respondents led to a shortened diagnostic section for those over 64. Eligible respondents were screened only for dysthymia, major depression, and substance abuse. Furthermore, the prevalence rates of mental disorders among eligible respondents were too low to provide precise prevalence estimates (2.3% of males and 2.1% of females had one or more disorders). We decided, therefore, that the respondents over 64 years of age would be excluded from this report. Consequently, the data reported here are based on the 15- to 64-year-old portion of the sample (raw n = 8116).

All prevalence estimates of psychiatric disorders are weighted (see Part I, p 549). Because of the complex sampling design, statistical tests were calculated using statistical procedures from SUDAAN (10). The significance level of 0.01 was chosen because of the large number of comparisons made.

Results

Table I presents the results of the one-year prevalence of psychiatric disorders by age and sex. Beginning with anxiety disorders, it can be seen that for the population 15 to 64 years of age, the prevalence of one or more anxiety disorders is 12.2%. For all age groups, the prevalence is significantly higher in women than men, and the highest rate (19.5%) is in 15- to 24-year-old women. For both genders, the prevalence rates decrease with age. Social phobia and simple phobia are the 2 most common disorders within the anxiety domain, with overall prevalence rates of 6.7% and 6.4%, respectively. They too are the most common in women 15 to 24 years of age, and they decrease with age. Agoraphobia, panic disorder, and generalized anxiety disorder all have overall prevalences between 1% and 2%. While agoraphobia is significantly more common in women 15 to 64 years of age than in men of the same age group, this pattern does not occur in generalized anxiety disorder.

Affective disorders have an overall prevalence rate of 4.5%, with a significantly higher frequency in women than men (5.9% versus 3.2%). As with anxiety disorders, affective disorders are most common in young women, 15 to 24 years of age, for whom the prevalence rate (7.1%) is significantly higher than the comparable male rate (4.0%). The most common disorder within the affective disorder group is depression. It too has its highest frequency in young women (6.5%). The overall prevalence rates for depression reveal that the frequency in women (5.4%) is almost double that in men (2.8%). Dysthymia and manic disorder are rare, with prevalence rates less than 1.0%. Bulimia, too, is rare, having a prevalence rate of 0.5%.

Table I

One-Year Prevalence of Psychiatric Disorders by Age and Sex: Percentage and Standard Error

Disorder	Age Groups						Totals		
	15 to 24		25 to 44		45 to 64				
	Male (n = 728 079)	Female (n = 697 289)	Male (n = 1 613 276)	Female (n = 1 643 875)	Male (n = 965 270)	Female (n = 987 888)	Male (n = 3 306 625)	Female (n = 3 329 052)	Total (n = 6 653 677)
Anxiety disorders									
Social phobia	8.2 (1.3)[a]	12.7 (1.6)	6.1 (0.9)	7.1 (0.8)	2.3 (0.7)[b]	5.9 (1.4)[a]	5.4 (0.6)	7.9 (0.7)	6.7 (0.5)
Simple phobia	—	9.4 (1.6)	5.6 (0.9)	9.9 (1.3)	—	6.7 (1.0)[a]	4.1 (0.5)	8.9 (0.8)	6.4 (0.5)
Agoraphobia	—	—	—	3.1 (0.6)	—	—	0.7 (0.2)	2.5 (0.4)	1.6 (0.2)
Panic disorder	—	—	—	1.7 (0.4)	—	—	—	1.5 (0.3)	1.1 (0.2)
Generalized anxiety disorder	—	—	—	2.0 (0.5)	—	—	0.9 (0.2)	1.2 (0.3)	1.1 (0.2)
One or more anxiety disorders	11.2 (1.5)	19.5 (1.9)	10.3 (1.1)	16.1 (1.4)	4.8 (1.0)[a]	11.4 (1.6)	8.9 (0.8)	15.5 (0.9)	12.2 (0.6)
Affective disorders									
Major depressive episode	—	6.5 (1.2)[a]	3.8 (0.7)	5.6 (0.8)	—	4.2 (1.0)[a]	2.8 (0.4)	5.4 (0.5)	4.1 (0.4)
Dysthymia	—	—	—	—	—	—	—	0.8 (0.2)	0.8 (0.2)
Manic disorder	—	—	—	—	—	—	—	0.6 (0.1)	0.6 (0.1)
One or more affective disorders	—	7.1 (1.2)	4.0 (0.7)	6.2 (0.8)	—	4.4 (1.0)	3.2 (0.4)	5.9 (0.5)	4.5 (0.4)
Bulimia	—	—	—	—	—	—	—	1.0 (0.2)	0.5 (0.1)
Substance use disorders									
Alcohol abuse/dependence	10.4 (1.5)	2.7 (1.6)	8.3 (0.9)	2.2 (0.6)	2.7 (0.6)	—	7.1 (0.6)	1.8 (0.3)[a]	4.4 (0.3)
Marijuana abuse/dependence	—	—	2.0 (0.6)	—		—	1.7 (0.3)	0.4 (0.1)	1.1 (0.2)
Other substance abuse/ dependence	—	—	—	—	—	—	—	—	0.5 (0.1)
One or more substance abuses/dependences	11.8 (1.6)	3.3 (0.6)	10.0 (1.0)	2.7 (0.7)[a]	—	—	8.2 (0.6)	2.1 (0.4)	5.2 (0.4)
Antisocial behaviours									
Antisocial personality	8.8 (1.8)	—	2.6 (0.5)	—	—	—	2.9 (0.4)	0.5 (0.1)	1.7 (0.2)
Adult antisocial behaviour	—	—	—	—	—	—	0.5 (0.1)	—	0.5 (0.1)
One or more antisocial behaviours	11.8 (2.0)	—	3.3 (0.5)	—	—	—	3.9 (0.4)	0.6 (0.1)[b]	2.2 (0.2)
One or more disorders	24.6 (1.9)	24.5 (2.2)	20.5 (1.4)	19.9 (1.5)	8.4 (1.2)	14.9 (1.8)	17.9 (0.9)	19.4 (1.0)	18.6 (0.7)
One disorder only	18.0 (1.7)	19.1 (2.0)	15.4 (1.3)	14.4 (1.3)	6.0 (1.0)	13.5 (1.8)	13.2 (0.8)	15.1 (0.9)	14.2 (0.6)
Two or more disorders	6.6 (1.2)	5.4 (1.1)	5.1 (0.8)	5.5 (0.8)	—	—	4.6 (0.5)	4.3 (0.5)	4.5 (0.4)

[a]Coefficient of variation is between 25.1% and 33.3%.
[b]Coefficient of variation is between 16.6% and 25.0%.

Substance abuse or dependence is much more common in men than women in all age groups where male-to-female comparisons are possible. Overall, one or more substance abuse/dependence disorders are almost 4 times more common in men than women (8.2% versus 2.1%). The highest rate in men is in the youngest age group, where the prevalence is 11.8%, which is similar to the frequency in the 25- to 44-year-old age group, 10.0%. Alcohol abuse/dependence follows the same pattern as substance abuse/dependence disorders overall. In all age groups where comparisons are possible, the rate in men is far greater than the rate in women. For example, in the 15- to 64-year-old age group, the prevalence rate in males is almost 4 times that in females (7.1% versus 1.8%). The 15- to 24-year-old age group has the highest male rate, 10.4%, and this is only slightly higher than the rate in the 25- to 45-year-old age group (8.2%). Antisocial behaviours are also male-dominated. One or more antisocial behaviours are over 6 times more common in men than women over the 15- to 64-year-old age range (3.9% versus 0.6%). Antisocial personality follows a similar pattern, having overall prevalence rates for males and females of 2.9% and 0.5%, respectively.

The prevalence rates of one or more disorders are highest in the youngest age group, 15 to 24 years of age, where one-quarter of men and women have at least one psychiatric disorder (males, 24.6%; females, 24.5%). The rates drop slightly in 25- to 45-year-olds, but are similar in the 2 genders. In the 45- to 64-year-old age group, the prevalence rate in women is significantly higher than that in men (14.9% versus 8.4%). Overall, the rates in men and women are similar, and the rate for both sexes together is 18.6%. The patterns of prevalence rates for one disorder only are similar to the pattern in one or more disorders, where again the highest rates are in the youngest age group. Lastly, the co-occurrence of 2 or more individual disorders (comorbidity) is not rare. It is highest in young males (6.6%) and in 25- to 44-year-old females (5.5%). In all age and sex groups where data are

available, among those with at least one disorder, over one-fifth will have one or more disorders. These prevalences vary from a low of 22.2% (5.4/24.5) in women aged 15 to 24 to a high of 27.6% (5.5/18.9) in women aged 25 to 44.

Discussion

The findings emphasize the high burden of suffering associated with psychiatric disorders. Almost 1 in 5 (18.6%) Ontarians 15 to 64 years of age had at least one of the disorders covered in the Supplement. Among the young (15 to 24 years of age), the prevalence rates were especially high, with approximately 1 in 4 having at least one disorder. The distribution of disorders by sex is in agreement with previous studies (3,5,6), with anxiety disorders and depression being more common in women and substance abuse disorders and antisocial behaviours having higher prevalence rates in men. Comorbidity of disorders over a one-year span is high, with almost 1 in 4 respondents (24.2%) classified as having one disorder reporting at least one additional disorder. This finding has implications for both treatment and research. The clinician should be alert to the necessity of diagnosing and treating disorders co-occurring with the one for which the patient sought treatment. In the research domain, if the patterns of the sequences of the onset of disorders can be ascertained, then it will be possible not only to treat the initial disorder but also perhaps to prevent the onset of future disorders.

A detailed examination of the differences in one-year prevalence rates of psychiatric disorder, as well as the reasons for these discrepancies between the Supplement and the other 3 similar surveys, is beyond the scope of this paper. Preliminary comparisons, however, can be made. The Supplement's one-year prevalence rate of one or more psychiatric disorders (18.6%) is similar to that reported in the ECA (20.0%) and in the Edmonton study (21.0%), but it is lower than the rate in the NCS (29.5%). Among individual disorders, a similar pattern holds: the prevalence rates on the NCS are higher than in the other 3 surveys. For example, for major depressive episode, the one-year prevalence rates for the Supplement, the ECA, and the Edmonton study are 4.1%, 3.7%, and 4.6%, respectively, while the rate on the NCS is 10.3%. Similarly, in the case of any anxiety disorder or any substance abuse/dependence disorder, the one-year prevalence rates in the NCS are much higher than in the Supplement. The NCS one-year prevalence rate of any anxiety disorder is 17.2% compared with the rates on the Supplement and the Edmonton study of 12.2% and 14.9%, respectively. Further, the NCS one-year prevalence rate of any substance abuse/dependence disorder is 11.3%, which is over twice the Supplement rate (5.2%) and higher than the Edmonton rate of 9.1%. It is clear that sorting out the reasons for differences in prevalence rates in these surveys will be a complex task. It will compare many aspects of the surveys including sampling, strategies, disorders covered, diagnostic criteria, instruments, field procedures, and inputation procedures. Perhaps the most interesting discrepancy to be explored is the consistently higher prevalence rates found in the NCS compared with the Supplement, even though the same instrument and diagnostic criteria were used in the 2 surveys and similar field procedures were employed.

In any case, the one-year prevalence rates from the Supplement emphasize the high burden of suffering associated with psychiatric disorders. Almost 1 in 5 Ontarians between 15 and 64 years of age had at least one of the disorders measured in the Supplement. This has important implications for the well-being of society because persons who suffer from psychiatric disorders have, in addition to their symptoms, associated impairments and disadvantages such as impaired social relationships and increased rates of poverty (3). Further, older adolescents and young adults are especially affected by these disorders, with the prevalence rate approaching 25% in this population. The occurrence of a disorder at this crucial time in the life cycle can result in disruptions of important tasks such as establishing a career and starting a family. Clearly, measures to reduce the burden of suffering from mental disorders deserve a high priority within the health budget in terms of funds for both clinical services and research initiatives.

Clinical Implications

- Because of the high prevalence of psychiatric disorders (18.6%), strategies to reduce psychiatric suffering deserve high priority.
- The older adolescent and young adult population deserves special emphasis because of the particularly high prevalence in this age group.
- The high rate of comorbidity indicates that attention should be given to diagnosing and treating co-occurring disorders.

Limitations

- The survey is cross-sectional, thus providing only a "snapshot" of the frequency and distribution of psychiatric disorders.
- The classification of disorders is based on data from lay-administered structured interviews, not on information from reliably trained clinicians.
- The elderly are excluded, as are certain psychiatric disorders (for example, schizophrenia and anorexia nervosa).

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References

1. American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 3rd ed. Washington (DC): American Psychiatric Association; 1980.
2. American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 3rd ed. Revised. Washington (DC): American Psychiatric Association; 1987.
3. Robins LN, Regier DA, editors. Psychiatric disorders in America: the epidemiologic catchment area study. New York: Free Press; 1991.
4. Robins LN, Helzer JE, Croughan JL, Ratcliff KS. National Institute of Mental Health diagnostic interview schedule: its history, characteristics and validity. Arch Gen Psychiatry 1981;38:381–9.
5. Bland RC, Newman SC, Orn H. Epidemiology of psychiatric disorders in Edmonton. Acta Psychiatr Scand 1988;77(338 Suppl):1S–80S.
6. Kessler RC, McGonagle KA, Zhao S, Nelson CB, Hughes M, Eshleman S, and others. Lifetime and 12-month prevalence of DSM-III-R psychiatric disorders in the United States: results from the national comorbidity study. Arch Gen Psychiatry 1994;51:8–19.
7. Robins LN, Wing J, Wittchen H-U, Helzer JE, Babor TF, Burke J. The composite international diagnostic interview: an epidemiologic instrument suitable for use in conjunction with different diagnostic systems and in different cultures. Arch Gen Psychiatry 1988;45:1069–77.
8. Wittchen H-U. Reliability and validity studies of the WHO-composite international diagnostic interview (CIDI): a critical review. J Psychiatr Res 1994;28:57–84.
9. Folstein MF, Folstein SE, McHugh PR. Mini-mental state: a practical method for grading the cognitive status of patients for the clinician. J Psychiatr Res 1975;12:189–98.
10. Shah BV, Barnwell BG, Hunt PN, Lavange LM. SUDAAN user's manual, release 6.0. North Carolina: Research Triangle Institute; 1992.

Résumé

Objectif : *Présenter la prévalence au cours d'un an de 14 troubles psychiatriques dans un échantillon communautaire composé d'Ontariens âgés de 15 à 64 ans.*

Méthode : *Au moyen de la version remaniée par l'Université du Michigan de la* Composite International Diagnostic Interview (UM-CIDI), *on a recueilli des données auprès de 9 953 répondants. Les critères du DSM-III-R ont servi à définir les troubles psychiatriques.*

Résultats : *Près d'un Ontarien sur 5 (18,6 %) souffrait d'au moins un des troubles mesurés dans l'étude. Chez les jeunes de 15 à 24 ans, une personne sur 4 était touchée. La répartition de chaque trouble variait en fonction du sexe et de l'âge.*

Conclusion : *Puisque les troubles psychiatriques constituent un immense fardeau, le budget de la santé devrait accorder une grande priorité aux efforts déployés par les cliniciens et les chercheurs afin d'en réduire l'incidence.*