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Supplement to
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How healthy are Canadians?

2004 ANNUAL REPORT



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Health Statistics Division

Health Reports

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Note of Appreciation

Canada owes the success of its statistical system to a long-standing partnership between Statistics Canada, the citizens of Canada, its businesses, governments and other institutions. Accurate and timely statistical information could not be produced without their continued cooperation and goodwill.

SYMBOLS

The following standard symbols are used in Statistics Canada publications:

- not available for any reference period
- not available for specific reference period
- ... not applicable
- P preliminary figures
- † revised figures
- x suppressed to meet the confidentiality requirements of the *Statistics Act*
- E use with caution
- F too unreliable to be published

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Focus on Mental Health

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The year 2004 marks the fifth year of a collaborative project by Statistics Canada and the Canadian Institute for Health Information, aimed at enriching Canada's health information system. Annually, Statistics Canada focuses on the population's health in its series *How Healthy are Canadians?*. The Canadian Institute for Health Information reports on the performance of the health care system in a complementary series entitled *Health Care in Canada*.

This year's report from Statistics Canada—*Focus on Mental Health*—features articles based on data from the first nationwide survey of mental and emotional health: The Canadian Community Health Survey (CCHS), cycle 1.2—Mental Health and Well-being. A total of 36,984 people were interviewed; the information from these respondents is representative of the population of all provinces. The purposes of this survey were:

- to provide timely, reliable estimates of selected major mental disorders;
- to describe the physical health and personal and socio-demographic characteristics associated with mental disorders;
- to estimate the burden of illness and degree of disability associated with selected mental disorders; and
- to compare access to and use of mental health services with the perceived need for such services.

The CCHS collected information about some of the more prevalent mental health problems. These included mood disorders (major depressive disorder, bipolar disorder), anxiety disorders (panic attack, agoraphobia, social anxiety disorder), and substance-related disorders. Mainly because of the difficulty of assessment using a lay-administered questionnaire, the survey did not collect data on all mental health problems—notably schizophrenia and other psychotic disorders, and personality disorders.

The burden of mental illness is considerable—not only for those who are personally affected, but also for their family members, friends and colleagues at work. Impaired mental or emotional health seriously limits day-to-day functioning and compromises quality of life. According to the World Health Organization, 5 of the 10 top-ranking causes of lifetime disability are related to mental disorders. This is because mental illnesses typically appear at an early age and usually recur. The economic impact is also appreciable: in 1998, the estimated direct and indirect costs of mental illness in Canada amounted to \$14.4 billion—nearly \$500 for every Canadian

Relative to other diseases, mental and emotional disorders have been acknowledged as medical entities only fairly recently. For example, the first time the *International Classification of Diseases* included mental disorders was in its 6th edition, published in 1948. Over the past few decades, understanding of the mechanisms underlying mental disorders has increased tremendously and, with this knowledge, society has moved toward greater acceptance of the legitimacy of these illnesses. Not all of the stigma attached to mental illness has disappeared, however. For instance, depression is still sometimes disparaged as a “disease of convenience,” and manic episodes and panic attacks may be trivialized as resulting from a lack of self-control. Social anxiety continues to be thought of as extreme shyness that will disappear with age and maturity.

As analyses of CCHS data confirm, mental illness is common. An estimated 3 million Canadians have experienced major depression sometime in their lives, and in 2002, 1.2 million Canadians had a major depressive episode. Nearly 750,000 people were

affected by social anxiety disorder that year. Panic disorder was experienced by an estimated 376,000 people, and 239,000 had a manic episode. An estimated 641,000 Canadians were dependent on alcohol; another 194,000, on illicit drugs. The typical pattern of recurrent episodes amplifies the impact of mental disorders.

Focus on Mental Health exploits much of the new data provided by the CCHS on mental health and well-being. Detailed analyses are presented for alcohol and illicit drug dependence, bipolar I disorder, panic disorder, and social anxiety disorder.

This report adds to the accumulating evidence that mental illness does not usually occur as a discrete disease entity, but in an intricate complex of co-existent emotional and physical problems. People with bipolar disorder are much more likely than others to be diagnosed with migraine or to be dependent on alcohol or illicit drugs, and it is common for people with panic disorder to also have agoraphobia or suffer from depression. Depression and panic disorder are much more prevalent among people with social anxiety disorder than among those without the condition. People who are alcohol-dependent are also at an elevated risk of depression. Clearly, this frequency of comorbidity in people with mental disorders has implications for service delivery. Clinical facilities, for example, must be prepared to diagnose and provide care for people with multiple conditions.

The topic of mental health in Canada will continue to be addressed in upcoming regular issues of *Health Reports*. It is expected that data from the CCHS will be a prime source of mental health information for years to come. ■

About Statistics Canada

Statistics Canada is authorized under the Statistics Act to collect, analyze and publish statistics relating to the social, economic and general activities and condition of Canadians. The Health Statistics Division's primary objective is to provide statistical information and analyses about the health of the population, determinants of health, and the scope and utilization of Canada's health care sector.

About the Canadian Institute for Health Information

CIHI is a national, not-for-profit organization with a mandate to coordinate the development and maintenance of an integrated approach to health care information. The Institute provides information that is needed to establish health care policies and to manage the health care system effectively.

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Health Reports is a peer-reviewed quarterly journal produced by the Health Statistics Division at Statistics Canada. It is designed for a broad audience that includes health professionals, researchers, policy makers, educators and students. Its mission is to provide high quality, relevant, and comprehensive information on the health status of the population and the health care system.

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Alcohol and illicit drug dependence

- In 2002, more than 600,000 Canadians were dependent on alcohol, and nearly 200,000, on illicit drugs.
- Depression was common among people who were alcohol- or drug-dependent.
- Heavy drinking tended to lead to depression, but at the same time, depression led to heavy drinking.

Abstract

Objectives

This article estimates the prevalence of alcohol and illicit drug dependence among Canadians aged 15 or older. Comorbidity with depression is examined.

Data sources

The data are from the 2002 Canadian Community Health Survey: Mental Health and Well-being and the National Population Health Survey.

Analytical techniques

Cross-tabulations were used to estimate the prevalence of alcohol and illicit drug dependence by selected characteristics. Multiple logistic regression models were used to determine if associations persisted after controlling for potentially confounding factors, and to test temporal relationships between frequent heavy drinking and depression.

Main results

In 2002, an estimated 641,000 people (2.6% of the household population aged 15 or older) were dependent on alcohol, and 194,000 (0.8%), on illicit drugs. These people had elevated levels of depression compared with the general population. Heavy drinking more than once a week was a risk factor for a new episode of depression, and depression was a risk factor for new cases of frequent heavy drinking.

Key words

substance-related disorders, street drugs, alcoholism, social problems, depression, mental health, comorbidity

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Michael Tjepkema

A large majority of Canadians regularly drink alcohol,¹ and a considerable share have used illicit drugs.² For some of these people, substance use has become dependence. The social, emotional and economic disruption this dependence causes the individuals, their families and communities is well-documented.³ Substance dependence also has medical consequences: higher morbidity⁴ and shorter life expectancy⁵⁻⁷ than the general population, due, in part, to more chronic conditions, injuries,^{5,8} and suicide attempts.⁹ As well, substance abuse often co-exists with mental disorders,^{4,10-16} although it is not always clear which comes first.¹⁷

Based on data from the 2002 Canadian Community Health Survey: Mental Health and Well-being (CCHS) cycle 1.2, this article presents prevalence rates of alcohol and illicit drug dependence for the household population aged 15 or older (see *Data sources*, *Definitions*, *Analytical techniques* and *Limitations*). Comorbidity with depression is also examined.

Longitudinal data from the National Population Health Survey (NPHS) are used to investigate the temporal association between frequent heavy drinking and depression.

Most drink, many use drugs

According to the 2002 CCHS, about 19.3 million people—77% of the population aged 15 or older—had consumed alcohol in the past 12 months (Table 1). About 8.8 million, or 35% of the adult population, had engaged in at least one episode of heavy drinking (five or more drinks on a single occasion) in that time. Close to half (48%) of heavy drinkers reported that such episodes occurred at least once a month (Table 2).

In 2002, an estimated 3.1 million people, 13% of the population, reported that they had used illicit drugs in the past year. Cannabis alone was most commonly reported (10%); drugs such as cocaine, ecstasy and

Table 1
Alcohol and illicit drug use in past 12 months, by sex, household population aged 15 or older, Canada excluding territories, 2002

	Both sexes		Men		Women	
	Estimated number	%	Estimated number	%	Estimated number	%
	'000	%	'000	%	'000	%
Any alcohol use	19,273	77.1	10,066	82.0	9,207	72.5*
Heavy drinking	8,775	35.3	5,692	46.6	3,083	24.3*
Any illicit drug	3,135	12.6	1,947	15.9	1,188	9.4*
Cannabis only	2,538	10.2	1,551	12.7	988	7.8*
At least one other drug [†]	593	2.4	393	3.2	199	1.6*

Data source: 2002 Canadian Community Health Survey: Mental Health and Well-being

Note: Because of missing values for some illicit drugs, detail may not add to totals.

[†] Cocaine, speed, ecstasy, hallucinogens, heroin, sniffing solvents.

* Significantly lower than estimate for men ($p < 0.05$)

Data sources

Canadian Community Health Survey

Data on substance use and dependence and associations with depression are from the 2002 Canadian Community Health Survey (CCHS) cycle 1.2: Mental Health and Well-being, which began in May 2002 and was conducted over eight months. The survey covered people aged 15 or older living in private dwellings in the 10 provinces. Residents of the three territories, Indian reserves, institutions, and certain remote areas, and full-time members of the Canadian Armed Forces were excluded.

The sample was selected using the area frame designed for the Canadian Labour Force Survey. A multi-stage stratified cluster design was used to sample dwellings within this area frame. One person aged 15 or older was randomly selected from the sampled households. Individual respondents were selected to over-represent young people (15 to 24) and seniors (65 or older), thus ensuring adequate sample sizes for these age groups. More detailed descriptions of the design, sample and interview procedures can be found in other reports and on the Statistics Canada Web site.^{18,19}

All interviews were conducted using a computer-assisted application. Most (86%) were conducted in person; the remainder, by telephone. Selected respondents were required to provide their own information, as proxy responses were not accepted. The responding sample consisted of 36,984 people aged 15 or older; the response rate was 77%.

National Population Health Survey

The analysis of associations between heavy drinking more than once a week and depression is based on longitudinal data, representing five cycles (1994/95 to 2002/03) of the National Population Health Survey (NPHS). The NPHS, which began in 1994/95, collects information about the health of Canadians every two years. It covers household and institutional residents in all provinces and territories, except persons living on Indian reserves, on Canadian Forces bases, and in some remote areas. The NPHS data in this article pertain to household residents aged 15 or older in the 10 provinces.

In 1994/95, 20,095 respondents were selected for the longitudinal panel. The response rate for this panel in 1994/95 was 86.0%. These 17,276 respondents were re-interviewed every two years. The response rates for subsequent cycles, based on these 17,276 individuals, are: 92.8% for cycle 2 (1996/97); 88.2% for cycle 3 (1998/99); 84.8% for cycle 4 (2000/01); and 80.6% for cycle 5 (2002/03). More detailed descriptions of the NPHS design, sample and interview procedures can be found in published reports.^{20,21}

This analysis uses the cycle 5 (2002/03) longitudinal “square” file, which contains records for all responding members of the original panel (17,276), regardless of whether information about them was obtained in all subsequent cycles.

Table 2
Frequency of heavy drinking among heavy drinkers and frequency of illicit drug use among drug users, by sex, household population aged 15 or older, Canada excluding territories, 2002

	Both sexes		Men		Women	
	Estimated number	%	Estimated number	%	Estimated number	%
	'000	%	'000	%	'000	%
Heavy drinking	8,775	100.0	5,692	100.0	3,083	100.0
Less than once a month	4,553	51.9	2,549	44.8	2,004	65.0*
1 to 3 times a month	2,591	29.5	1,831	32.2	759	24.6*
Once a week	1,034	11.8	802	14.1	232	7.5*
More than once a week	597	6.8	509	8.9	88	2.8*
Illicit drug use	3,135	100.0	1,947	100.0	1,188	100.0
Less than once a month	1,614	51.5	881	45.2	734	61.8*
1 to 3 times a month	528	16.8	340	17.5	188	15.8
Once a week	276	8.8	202	10.4	75	6.3*
More than once a week	436	13.9	326	16.7	110	9.2*
Daily	281	9.0	199	10.2	82	6.9*

Data source: 2002 Canadian Community Health Survey: Mental Health and Well-being

Note: Because of missing values for frequency of use, subtotals may not add to totals.

* Significantly different from estimate for men ($p < 0.05$)

hallucinogens were used by slightly over 2% of the population, an estimated 590,000 individuals. Almost half of those who used drugs (49%) had done so at least monthly, and 9% acknowledged daily use.

More common among men

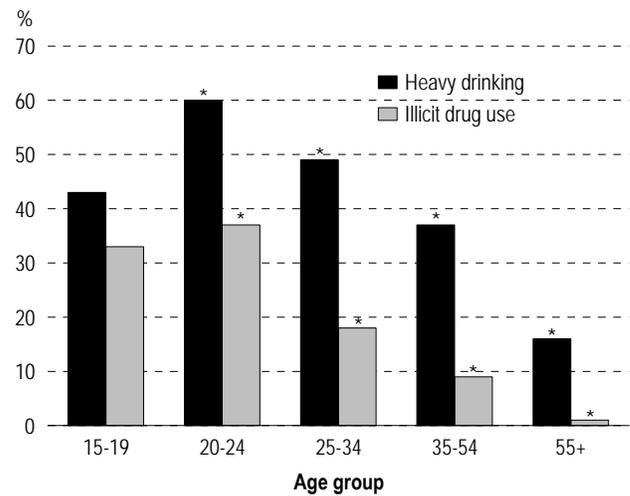
Men are more likely than women to drink heavily and to use illicit drugs.^{1,22-24} According to the results of the CCHS, 47% of men had engaged in heavy drinking in the past year, compared with 24% of women (Table 1). Well over half (55%) of men who reported heavy drinking said that such episodes had occurred at least monthly; the comparable figure for women was 35% (Table 2).

The pattern was the same for illicit drugs: 16% of men and 9% of women had used them in the past year. For more than half of these men (55%), use had been at least monthly, compared with 38% of the women. Daily users represented 10% and 7% of the two groups, respectively.

Twentysomething

Both heavy drinking and illicit drug use peaked in the early twenties, and dropped with advancing age (Chart 1). Fully 60% of 20- to 24-year-olds reported at least one episode of heavy drinking in the past year; by age 55 or older, the percentage was 16%. Among those who had an episode of heavy drinking, doing

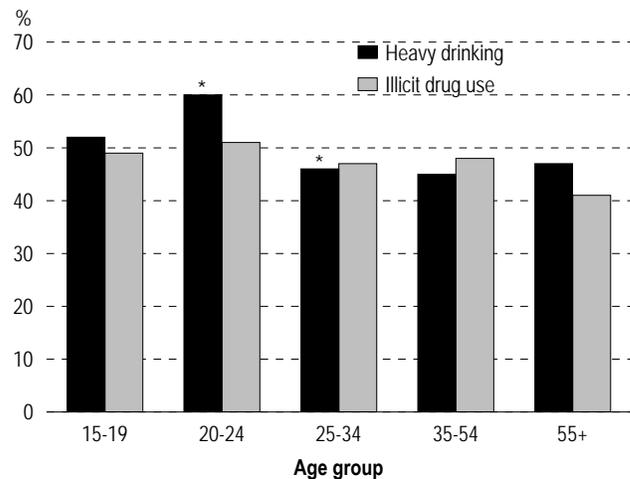
Chart 1
Percentage of people reporting heavy drinking or illicit drug use in past 12 months, by age group, household population aged 15 or older, Canada excluding territories, 2002



Data source: 2002 Canadian Community Health Survey: Mental Health and Well-being

* Significantly different from estimate for next younger age group ($p < 0.05$)

Chart 2
Percentage of heavy drinkers and illicit drug users reporting at least monthly episodes/use in past year, household population aged 15 or older, Canada excluding territories, 2002



Data source: 2002 Canadian Community Health Survey: Mental Health and Well-being

* Significantly different from estimate for next younger age group ($p < 0.05$)

so at least monthly was most common at ages 20 to 24 (60%). At age 55 or older, the figure was 47% (Chart 2).

Definitions

See the *Annex* for Canadian Community Health Survey (CCHS) technical definitions of *alcohol dependence* and *illicit drug dependence*.

Alcohol use in the past year was determined by asking respondents to the CCHS and the National Population Health Survey (NPHS) if they had had a drink of beer, wine, liquor or any other alcoholic beverage in the past year. Respondents were told that a “drink” meant one bottle or can of beer or glass of draft; one glass of wine or wine cooler; or one drink or cocktail with 1 1/2 ounces of liquor.

Heavy drinking was determined by asking respondents how often in the past 12 months they had had 5 or more drinks on one occasion. *Alcohol dependence* was determined for respondents who reported that they drank heavily at least once a month.

To determine *illicit drug use*, CCHS respondents were asked if they had ever in their life used an illicit drug. Those who said “yes” were asked how often they had done so in the past 12 months: less than once a month, 1 to 3 times a month, once a week, more than once a week, or every day. This was asked separately for the following drugs: marijuana, cannabis or hashish; cocaine or crack; speed (amphetamines); ecstasy (MDMA) or similar drugs; hallucinogens, PCP or LSD (acid); glue, gasoline or other solvents (sniffing); or heroin. Respondents were assigned a frequency for the drug they used most often. For example, someone who used cannabis once a week and cocaine 1 to 3 times a month was assigned a frequency of illicit drug use of once a week. *Drug dependence* was determined for respondents who reported that they used illicit drugs at least once a month.

The NPHS and CCHS differ in how they measure a *major depressive episode* (see *Annex* for CCHS definition). The NPHS uses a subset of questions from the *Composite International Diagnostic Interview*, according to the method of Kessler et al.²⁵ The questions cover a cluster of symptoms listed in the *Diagnostic and Statistical Manual of Mental Disorders*, third revised edition.²⁶ Responses to these questions were scored and transformed into a probability estimate of a diagnosis of a major depressive episode. If the estimate was 0.9 or greater (90% certainty of a positive diagnosis), the respondent was considered to have experienced a major depressive episode in the previous 12 months.

Five *age groups* were established for the analysis of CCHS data: 15 to 19, 20 to 24, 25 to 34, 35 to 54, and 55 or older.

Four categories were established for current *marital status*: married or living common-law; divorced or separated; widowed; and never married.

Respondents were grouped into four *education* categories based on the highest level attained: less than secondary graduation, secondary graduation, some postsecondary, and postsecondary graduation.

Household income was based on the number of people in the household and total household income from all sources in the 12 months before the interview.

Household income group	People in household	Total household income
Lowest	1 to 4	Less than \$10,000
	5 or more	Less than \$15,000
Lower-middle	1 or 2	\$10,000 to \$14,999
	3 or 4	\$10,000 to \$19,999
	5 or more	\$15,000 to \$29,999
Middle	1 or 2	\$15,000 to \$29,999
	3 or 4	\$20,000 to \$39,999
	5 or more	\$30,000 to \$59,999
Upper-middle	1 or 2	\$30,000 to \$59,999
	3 or 4	\$40,000 to \$79,999
	5 or more	\$60,000 to \$79,999
Highest	1 or 2	\$60,000 or more
	3 or more	\$80,000 or more

Place of residence was determined from the following classifications:

- Urban core is a large urban area around which a census metropolitan area (CMA) or a census agglomeration (CA) is delineated. The urban core must have had a 1996 population of at least 100,000 in the case of a CMA, or 10,000 to 99,999 in the case of a CA.
- Urban fringe is all small urban areas (with less than 10,000 population) within a CMA or CA that are not contiguous to the urban core.
- Rural fringe is sparsely populated areas within a CMA or CA.
- Urban areas outside a CMA/CA have a population of at least 1,000 and no fewer than 400 persons per square kilometre.
- All other areas are classified as rural.

Three categories were used for the CCHS data: urban core; urban area outside urban core (urban fringe, rural fringe and urban areas outside a CMA/CA); and rural area. For the NPHS data, two categories were used: urban area (population of at least 1,000 and at least 400 people per square kilometre), and rural area (all other areas).

Immigrant status was determined by asking respondents whether they were born in or outside of Canada.

To measure *chronic conditions*, respondents were asked about long-term physical conditions that had lasted or were expected to last six months or longer and that had been diagnosed by a health care professional. For the CCHS, interviewers read a list of conditions. For this analysis, 18 chronic conditions were considered: asthma, fibromyalgia, arthritis or rheumatism, back problems, high blood pressure, migraine, chronic bronchitis, emphysema, diabetes, epilepsy, heart disease, cancer, ulcers, the effects of a stroke, bowel disorder, thyroid disorder, chronic fatigue syndrome and multiple chemical sensitivities. The NPHS had a different list of conditions: in cycles 1 to 4, chronic fatigue syndrome and multiple chemical sensitivities were not included; cycles 1 to 3 excluded fibromyalgia; cycles 1 and 2, bowel disorders; and cycle 1, thyroid disorders.

Similarly, 20- to 24-year-olds had the highest rate of illicit drug use: 37%. At ages 25 to 34, the rate was 18%, and at 55 or older, just 1%. However, the frequency of consumption among those who used drugs varied little by age. From ages 15 to 54, about half of illicit drug users reported at least monthly use; at age 55 or older, the proportion was 41%.

Dependence

The CCHS measured seven symptoms of dependence among respondents who drank heavily at least once a month, and six symptoms of dependence among respondents who used illicit drugs at least once a month. Those with three or more symptoms were considered to be dependent (see *Annex*).

The most common symptoms of alcohol dependence reported by heavy monthly drinkers were being drunk or hungover at work or school or while taking care of children (27%) and drinking much more or for a longer period than intended (26%) (Table 3). The symptoms of dependence most commonly reported by monthly illicit drug users were taking the drug in larger amounts or over a longer period than originally intended (39%), increased tolerance (18%), and withdrawal (17%).

According to the CCHS, about 641,000 people, representing 2.6% of the household population aged 15 or older, were dependent on alcohol, and an estimated 194,000 (0.8%) were dependent on illicit

Provincial differences

In 2002, the rate of alcohol dependence varied from 1.9% in Québec to 4.1% in Saskatchewan. Compared with the national level (2.6%), rates were significantly low in Québec and Ontario and significantly high in the Prairie Provinces and British Columbia. Rates of illicit drug dependence did not differ greatly among the provinces, but because of small sample sizes, these estimates should be regarded with caution.

Prevalence of alcohol and illicit drug dependence, by province, household population aged 15 or older

	Alcohol	Illicit drugs
Canada†	2.6	0.8
Newfoundland and Labrador	3.2 ^{E1}	0.6 ^{E2}
Prince Edward Island	2.9 ^{E1}	F
Nova Scotia	3.2	0.6 ^{E2}
New Brunswick	2.0 ^{E1}	F
Québec	1.9*	0.9 ^{E1}
Ontario	2.1*	0.6*
Manitoba	3.6*	0.6 ^{E2}
Saskatchewan	4.1*	0.8 ^{E1}
Alberta	3.5*	1.0 ^{E1}
British Columbia	3.6*	1.1 ^{E1}

Data source: 2002 Canadian Community Health Survey: Mental Health and Well-being

† Excludes territories.

* Significantly different from estimate for Canada ($p < 0.05$)

E1 Coefficient of variation between 16.6% and 25.0%

E2 Coefficient of variation between 25.1% and 33.3%

F Coefficient of variation greater than 33.3%

Table 3

Dependence symptoms among people who drank heavily or used illicit drugs at least monthly in previous year, by sex, household population aged 15 or older, Canada excluding territories, 2002

	Both sexes		Men		Women	
	Estimated number		Estimated number		Estimated number	
	'000	%	'000	%	'000	%
Heavy drinking at least monthly						
Drunk/Hungover at work, school or while caring for children	1,132	26.9	816	26.0	317	29.3*
Alcohol taken in larger amounts or over longer period than intended	1,103	26.2	823	26.3	280	26.0
In situation while drunk/hungover that increased chance of injury	707	16.8	597	19.0	110	10.2*
Increased tolerance	686	16.3	506	16.2	180	16.7
Month or more when great deal of time spent getting drunk/hungover	358	8.5	261	8.3	97	9.0
Emotional/Psychological problems because of alcohol use	327	7.8	236	7.5	92	8.5
Strong desire or urge to drink could not be resisted	324	7.7	237	7.6	87	8.1
Illicit drug use at least monthly						
Drug taken in larger amounts than intended	590	38.8	429	40.3	161	35.5
Increased tolerance	278	18.3	190	17.8	88	19.4
Withdrawal	260	17.2	178	16.7	82	18.2
Continued drug use despite ill health effects	143	9.4	96	9.0	47	10.4
Great deal of time spent obtaining drug	127	8.4	88	8.2	40 ^{E1}	8.8 ^{E1}
Important activities given up because of drug use	108	7.1	75	7.0	33 ^{E1}	7.3 ^{E1}

Data source: 2002 Canadian Community Health Survey: Mental Health and Well-being

* Significantly different than estimate for men ($p < 0.05$)

E1 Coefficient of variation between 16.6% and 25.0%

drugs (Table 4). Canadian dependence rates appear similar to those reported in Australia and the United States,^{14,27-29} however, the data are not directly comparable because of differences in survey methodology (see *Provincial differences*).

Earlier studies have shown that the risk of becoming dependent varies with the type of drug, and that cannabis users have the lowest risk.^{11,29} Analysis of the CCHS data also reveals a much lower level of dependence among people who had used only cannabis in the past year (3.4%), compared with those who had used other illicit drugs (18.1%).

At risk

Men were more likely than women to be dependent on alcohol (3.9% versus 1.3%) or illicit drugs (1.1% versus 0.5%) (Table 4).

Being young, single or born in Canada, living in a low-income household, and having relatively little education were also associated with elevated risks of dependence. For example, the rate of alcohol dependence was 8.6% at ages 20 to 24, compared with less than 2% at ages 35 or older. The corresponding figures for illicit drug dependence were 2.6% and 0.3%. About 6% of people who had never

Analytical techniques

Cross-tabulations based on data from the 2002 Canadian Community Health Survey: Mental Health and Well-being (CCHS) were used to estimate the prevalence of heavy drinking, alcohol dependence, illicit drug use and illicit drug dependence, according to selected personal characteristics. Two multiple logistic regressions were used to model the association between these variables and reporting alcohol or illicit drug dependence.

Cross-tabulations of 2002 CCHS data were used to estimate the prevalence of depression by four levels of heavy drinking/alcohol dependence and four levels of illicit drug use/dependence. Multiple logistic regressions were used to model the association between these variables while controlling for sex, age, marital status, education, household income, place of residence, immigrant status, and chronic conditions. Alcohol use/dependence and illicit drug use/dependence were first entered separately into different logistic models to determine baseline odds ratios (model 1). Both heavy drinking and illicit drug use were then included in the same model to determine the impact on the odds ratios. Although this lowered the odds ratios, they remained statistically significant. Therefore, only model 2, which contains both substance use variables, is presented in this article.

Two multivariate logistic regression models were used to examine the temporal association between heavy drinking more than once a week and a major depressive episode using longitudinal data from the National Population Health Survey. The first model examined the two-year incidence of heavy drinking more than once a week (new cases in a two-year period) among people who reported a major depressive episode in the baseline year. The second model examined the two-year incidence of a major depressive episode (new cases) among people who had engaged in heavy drinking more than once a week in the baseline year. Each model controlled for sex, age, marital status, education, household income, place of residence, immigrant status, and chronic conditions. All regressions were run on the 1994/95 to 2002/03 NPHS longitudinal square file. An incident case was defined as either a major depressive episode or heavy drinking more than once a week in cycle 2, 3, 4 or 5 from a respondent who had not reported the problem in the previous cycle. For every two-year interval (1994/95-to-1996/97, 1996/97-to-1998/99, 1998/99-to-2000/01, 2000/01-to-2002/03), a new record was created for each respondent who had not reported the condition in the previous cycle. Consequently, one respondent could contribute up to four records to the analyses for each condition: one for every two-year interval. Some 42,189 records were used in the model that measured the two-year incidence of depression, and 44,372 records were used in the model that measured the two-year incidence of heavy drinking more than once a week.

To account for the effects of survey design, the variance on prevalence, on differences between prevalence rates, and on odds ratios was calculated using the bootstrap technique.³⁰⁻³²

	Odds ratios for depression	
	Model 1	Model 2
Heavy drinking in past year		
None	1.0	1.0
Less than once a month	1.2	1.1
Monthly, but not dependent	1.1	1.0
Dependent	3.1*	2.1*
Illicit drug use in past year		
None	1.0	1.0
Less than once a month	1.8*	1.7*
Monthly, but not dependent	1.6*	1.4*
Dependent	6.0*	4.5*

* Significantly different from estimate for "none" ($p < 0.05$)

been married were alcohol-dependent, and 2% were dependent on illicit drugs; the corresponding percentages for married people were 1% or less. As well, rates of alcohol and drug dependence for people who had not graduated from high school or who lived in low-income households were significantly higher than those for people who had postsecondary credentials or lived in high-income households. People born in Canada were three times more likely

than immigrants to be dependent on alcohol or illicit drugs. By contrast, urban or rural residence was not associated with substance dependence—urban dwellers were no more or less likely than rural residents to be alcohol- or drug-dependent.

However, these factors are not isolated from each other; for instance, young people are more likely than older people to be single and to have comparatively low incomes. Nonetheless, when the variables were

Table 4
Prevalence of and adjusted odds ratios for alcohol dependence and illicit drug dependence, by selected characteristics, household population aged 15 or older, Canada excluding territories, 2002

	Alcohol dependence				Illicit drug dependence			
	Estimated number	Prevalence	Odds ratio	95% confidence interval	Estimated number	Prevalence	Odds ratio	95% confidence interval
	'000	%			'000	%		
Total	641	2.6	...	...	194	0.8	...	...
Sex								
Men	472	3.9*	2.9*	2.4, 3.4	135	1.1*	2.3*	1.7, 3.2
Women†	168	1.3	1.0	...	59	0.5	1.0	...
Age group								
15-19†	125	5.6	1.0	...	61 ^{E1}	2.7 ^{E1}	1.0	...
20-24	164	8.6*	1.9*	1.4, 2.6	50	2.6	1.3	0.7, 2.3
25-34	146	3.6*	1.2	0.9, 1.6	41	1.0*	0.9	0.5, 1.5
35-54	172	1.7*	0.6*	0.4, 0.9	42 ^{E1†}	0.3*†	0.3*†	0.1, 0.5
55+	34 ^{E2}	0.5* ^{E2}	0.2*	0.1, 0.4	...	...	...	...
Marital status								
Married/Common-law†	197	1.3	1.0	...	42 ^{E1}	0.3 ^{E1}	1.0	...
Separated/Divorced	52	2.8*	2.6*	1.9, 3.6	13 ^{E2}	0.7* ^{E2}	2.5*	1.2, 5.3
Never married	387	6.1*	2.3*	1.8, 3.0	139	2.2*	2.7*	1.5, 4.8
Education								
Less than secondary graduation	164	2.6*	1.4*	1.0, 1.8	76	1.2*	2.2*	1.3, 3.6
Secondary graduation	152	3.3*	1.6*	1.3, 2.1	32 ^{E1}	0.7* ^{E1}	1.5	0.9, 2.3
Some postsecondary	100	4.8*	1.6*	1.2, 2.1	41 ^{E1}	2.0* ^{E1}	2.5*	1.4, 4.7
Postsecondary graduation†	215	1.8	1.0	...	44	0.4	1.0	...
Household income								
Low	36	5.1*	1.7*	1.2, 2.5	20 ^{E1}	2.8* ^{E1}	3.6*	1.8, 7.5
Lower-middle	42	2.7	1.1	0.8, 1.7	24 ^{E2}	1.5* ^{E2}	2.5*	1.1, 5.3
Middle	92	2.0*	0.8	0.6, 1.2	28 ^{E1}	0.6 ^{E1}	0.9	0.5, 1.8
Upper-middle	206	2.5	1.0	0.8, 1.2	51	0.6	1.0	0.6, 1.7
High†	198	2.7	1.0	...	47 ^{E1}	0.6 ^{E1}	1.0	...
Place of residence								
Urban core	458	2.6	1.2	1.0, 1.6	146	0.8	1.1	0.6, 2.2
Urban area outside core	122	2.6	1.2	0.9, 1.6	27 ^{E1}	0.6 ^{E1}	0.7	0.3, 1.6
Rural area†	61	2.2	1.0	...	21 ^{E2}	0.8 ^{E2}	1.0	...
Immigrant status								
Born in Canada	597	3.1*	3.6*	2.3, 5.7	178	0.9	3.1*	1.2, 8.4
Born outside Canada†	42 ^{E1}	0.8 ^{E1}	1.0	...	F	F	1.0	...

Data source: 2002 Canadian Community Health Survey: Mental Health and Well-being

Note: Because missing values are not shown, detail may not add to totals. Odds ratios for "not stated" household income and "missing/widowed" marital status were included in the models, but are not shown.

† Reference category

‡ Aged 35 or older

* Significantly different from estimate for reference category (p < 0.05)

E1 Coefficient of variation between 16.6% and 25.0%

E2 Coefficient of variation between 25.1% and 33.3%

F Coefficient of variation greater than 33.3%

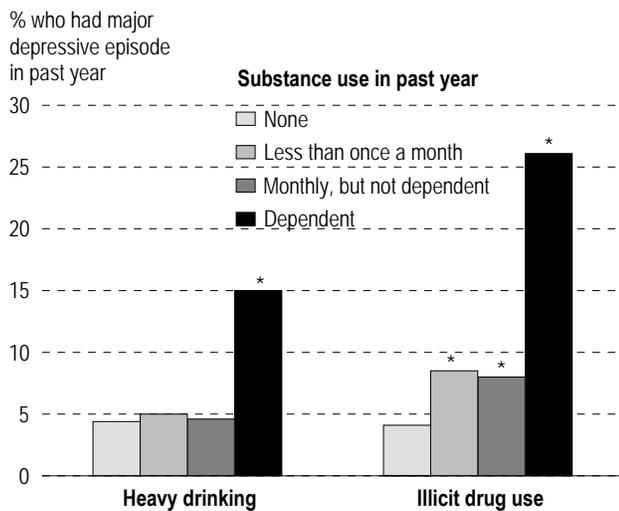
... Not applicable

considered together in a multivariate model, the associations between substance dependence and age, marital status, household income, education and country of birth remained significant.

High rate of depression

Mental health problems often occur in conjunction with substance abuse.^{10-16,33,34} According to the 2002 CCHS, 15.0% of people who were alcohol-dependent had had a major depressive episode in the previous year, compared with 4.4% of people who had not engaged in heavy drinking in that period (Chart 3).

Chart 3
Prevalence of depression, by frequency of heavy drinking and illicit drug use in past year, household population aged 15 or older, Canada excluding territories, 2002



Data source: 2002 Canadian Community Health Survey: Mental Health and Well-being
* Significantly different from estimates for "none" ($p < 0.05$)

When the effects of socio-demographic characteristics and the presence of physical chronic conditions were taken into account, alcohol dependence remained associated with depression (Appendix Table A).

The link between illicit drug dependence and depression seemed even stronger: 26.1% of people who were dependent on an illicit drug had had a major depressive episode in the previous year, well above the rate of 4.1% among people who had not used such drugs. Even people who had used illicit drugs less than once a month had elevated rates of depression. And when the effects of other potentially confounding variables were taken into account, these associations generally persisted. The relationship between depression and all levels of drug use suggests greater

comorbidity for drugs than for alcohol, a finding that agrees with previous research.¹³

A complex relationship

Debate has centered on whether substance dependence precedes or follows a mental disorder.¹⁷ This is evident in the three main theories that have been advanced to account for comorbidity between substance use/dependence and mental disorders: common or correlated causes; causal effects of substance use; and self-medication.^{11,35}

While analysis of CCHS data reveals associations between alcohol/illicit drug dependence and depression, the direction of this relationship cannot be determined because the data are cross-sectional and so pertain to only one point in time. However, longitudinal data from the National Population Health Survey (NPHS) can reveal temporal relationships. The NPHS did not contain questions about illicit drug use, and alcohol dependence was collected in only two

Limitations

Dependence captures only a small and very specific aspect of alcohol- and drug-related problems. This analysis does not cover the vast array of other difficulties that can result from alcohol and illicit drug consumption.

The version of the Composite International Diagnostic Interview (CIDI) used in the Canadian Community Health Survey: Mental Health and Well-being (CCHS) has yet to be validated. Therefore, the extent to which clinical assessments made by health care professionals would agree with assessments based on CCHS data is not known.

For several reasons, this analysis likely underestimates substance dependence rates. Survey respondents may provide answers that are socially acceptable. Some who had used alcohol or drugs may not have reported doing so, or may have underreported the frequency. As well, homeless and institutionalized populations, both of whom are known to have higher rates of substance dependence than the household population,¹⁴ were not covered by the CCHS.

Illicit drug dependence was determined based on several drugs combined, not for specific drugs. This grouping may mask important differences, as different drugs may result in different levels of dependence.²⁹

Associations between substance use and depression may reflect sources of confounding that could not be taken into account.³⁶ For instance, the analysis of NPHS longitudinal data does not completely control for temporal causality, because information was not available about episodes of depression and heavy drinking in the respondents' past.

Table 5
Adjusted odds ratios relating selected characteristics to two-year incidence of depression and to two-year incidence of heavy drinking more than once a week, household population aged 15 or older, Canada excluding territories, 1994/95 to 2002/03

	Incidence of major depressive episode		Incidence of heavy drinking more than once a week	
	Odds ratio	95% confidence interval	Odds ratio	95% confidence interval
Heavy drinking more than once a week				
No [†]	1.0	...	...	...
Yes	2.0*	1.0, 3.9	...	...
Major depressive episode				
No [†]	1.0	...
Yes	...	...	1.8*	1.1, 3.1
Sex				
Men	0.6*	0.5, 0.7	4.3*	3.1, 5.8
Women [†]	1.0	...	1.0	...
Age[‡]				
	1.0*	1.0, 1.0	1.0*	1.0, 1.0
Marital status				
Married/Common-law [†]	1.0	...	1.0	...
Widowed	0.6*	0.4, 0.9	0.5	0.2, 1.3
Separated/Divorced	1.4*	1.2, 1.7	1.3	0.9, 2.0
Never married	0.9	0.7, 1.1	1.2	0.9, 1.7
Education				
Less than secondary graduation [†]	1.0	...	1.0	...
Secondary graduation	0.8	0.6, 1.0	1.1	0.7, 1.6
Some postsecondary	0.9	0.7, 1.1	0.7*	0.6, 1.0
Postsecondary graduation	0.9	0.7, 1.1	0.6*	0.5, 0.8
Household income				
Low	1.6*	1.1, 2.4	0.8	0.5, 1.5
Lower-middle	1.2	0.9, 1.6	0.7	0.4, 1.2
Middle	1.2	0.9, 1.5	0.7	0.5, 1.1
Upper-middle	1.1	0.9, 1.4	0.8	0.6, 1.2
High [†]	1.0	...	1.0	...
Place of residence				
Urban	1.1	1.0, 1.4	0.9	0.7, 1.3
Rural [†]	1.0	...	1.0	...
Immigrant status				
Born in Canada	1.1	0.9, 1.4	2.1*	1.4, 3.3
Born outside Canada [†]	1.0	...	1.0	...
Chronic conditions				
None [†]	1.0	...	1.0	...
At least one	1.7*	1.5, 2.0	1.3	1.0, 1.7

Data source: 1994/95 to 2002/03 National Population Health Survey, longitudinal "square" file

Note: An incident case of depression/heavy drinking was defined as not having the condition in one cycle but reporting it in the subsequent cycle. The following NPHS cycles were examined: 1 and 2 (1994/95 to 1996/97), 2 and 3 (1996/97 to 1998/99), 3 and 4 (1998/99 to 2000/01), 4 and 5 (2000/01 to 2002/03). Not stated household income was included in the models, but the odds ratios are not shown.

[†] Reference category

[‡] Treated as continuous variable

* Significantly different from estimate for reference category ($p < 0.05$)

... Not applicable

cycles. Nonetheless, information about depression and about heavy episodic drinking has been collected in every cycle since 1994/95. For this analysis, heavy drinking more than once a week was used as a proxy for alcohol dependence. (According to the 2002 CCHS, 35% of people who drank heavily more than once a week—33% of men and 48% of women—were classified as alcohol-dependent; data not shown.)

Heavy drinking and depression

Even when other potentially confounding variables were taken into account, people who drank heavily more than once a week had significantly high odds of reporting a new case of depression when they were re-interviewed two years later (Table 5). That is, they had not reported symptoms of depression in the baseline interview, but did so in the follow-up interview. Although this supports the theory that substance use/dependence is associated with a future mental disorder,³⁷ it is possible that risk factors not measured in the NPHS, but common to both heavy drinking and depression, could be driving this association. Furthermore, someone with a new case of depression might have had a history of the disorder, so the temporal association with alcohol use was not fully controlled (see *Limitations*).

The self-medication theory suggests that people with a mental disorder may use a substance to deal with their symptoms.¹¹ With NPHS data it was possible to show that people who had a major depressive episode were more likely than those who had not to have become frequent heavy drinkers by the time they were re-interviewed two years later, even when other potentially confounding variables were taken into account (again, the above-noted limitations apply).

Thus, depression is both a precursor and an outcome of drinking heavily more than once a week. However, the relationship between alcohol and depression is complex. The link between substance use and mental health involves neurological and biological factors that influence an individual's susceptibility or resistance,¹⁰ and which are beyond the scope of this analysis.

Concluding remarks

According to the results of the 2002 Canadian Community Health Survey, 641,000 Canadians reported symptoms that indicated they were dependent on alcohol, and 194,000 had symptoms that suggested dependence on illicit drugs. These numbers represented 2.6% and 0.8%, respectively, of the population aged 15 or older. Alcohol and drug

dependence were more common among men than women, and tended to disproportionately affect young adults.

Mental health problems often co-exist with substance dependence. The CCHS showed that 15% of people who were alcohol-dependent had also been depressed in the previous year. For those who were dependent on illicit drugs, the prevalence of depression was even higher: 26%.

However, it is difficult to disentangle the relationship between substance dependence and psychological

problems. The mental disorder may promote or sustain substance dependence, and substance use may exacerbate the mental disorder. In fact, the results of the analysis of longitudinal data from the National Population Health Survey suggest a reciprocal influence, at least with regard to frequent heavy drinking and depression. However, it is possible that factors that were not available from the survey might be driving this relationship. ■

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Appendix

Table A

Prevalence of and adjusted odds ratios for depression in past year, by frequency of heavy drinking and illicit drug use, household population aged 15 or older, Canada excluding territories, 2002

	Both sexes				Men				Women			
	Estimated population	Prevalence	Odds ratio [†]	95% confidence interval	Estimated population	Prevalence	Odds ratio [†]	95% confidence interval	Estimated population	Prevalence	Odds ratio [†]	95% confidence interval
	'000	%			'000	%			'000	%		
Total	1,196	4.8	...	...	452	3.7		...	744	5.9	...	...
Heavy drinking in past year												
None [‡]	701	4.4	1.0	...	211	3.2	1.0	...	491	5.1	1.0	...
Less than once a month	227	5.0	1.1	0.9, 1.3	80	3.1	0.9	0.7, 1.2	147	7.4*	1.2	0.9, 1.5
Monthly, but not dependent	164	4.6	1.0	0.8, 1.3	97	3.7	0.9	0.6, 1.4	67	7.4*	1.0	0.7, 1.3
Dependent	96	15.0*	2.1*	1.6, 2.9	60	12.7*	2.0*	1.3, 3.2	36	21.4*	2.1*	1.4, 3.3
Illicit drug use in past year												
None [‡]	898	4.1	1.0	...	310	3.0	1.0	...	588	5.1	1.0	...
Less than once a month	137	8.5*	1.7*	1.3, 2.3	53	6.1*	1.8*	1.2, 2.6	84	11.5*	1.6*	1.1, 2.5
Monthly, but not dependent	105	8.0*	1.4*	1.1, 1.9	53	5.7*	1.3	0.9, 1.9	52	13.3*	1.7*	1.1, 2.5
Dependent	50	26.1*	4.5*	3.0, 6.8	32 ^{E1}	23.5 ^{E1}	5.4*	3.1, 9.5	19 ^{E1}	32.0 ^{E1}	3.7*	2.0, 6.7

Data source: 2002 Canadian Community Health Survey: Mental Health and Well-being

[†] Reference category

[‡] Adjusted for sex, age group, marital status, education, household income, place of residence, immigrant status and number of physical chronic conditions

* Significantly different from estimate for reference category ($p < 0.05$)

^{E1} Coefficient of variation between 16.6% and 25.0%

... Not applicable

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Bipolar I disorder, social support and work

- More than 400,000 people of working age (25 to 64) have experienced at least one manic episode that suggests bipolar I disorder.
- Despite the disruptive effects of the condition, about two-thirds of these people are employed.
- The perceived availability of someone to assist with the practical necessities of life increases the odds that people with bipolar I disorder will have a job.

Abstract

Objectives

This article reports the estimated lifetime prevalence of bipolar I disorder in the household population and describes characteristics of people of working age (25 to 64) affected by this disorder. The relationship between social support and employment status is examined in people with the disorder.

Data source

Data are from the 2002 Canadian Community Health Survey: Mental Health and Well-being.

Analytical techniques

Weighted frequencies and cross-tabulations were used to estimate the prevalence of bipolar I disorder. Multiple logistic regression modeling was used to examine four dimensions of social support in relation to having a job, in people with bipolar I disorder.

Main results

An estimated 444,000 (2.6%) people aged 25 to 64 had lifetime bipolar I disorder. Alcohol dependence, asthma, migraine, obesity and panic disorder were far more prevalent among these people, compared with the general population. People with bipolar I disorder who reported readily accessible tangible support had higher odds of being employed, compared with those with less available tangible support.

Key words

mood disorder, social support, mental health, comorbidity, health surveys

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Bipolar I disorder is a chronic mood disorder characterized by at least one manic or mixed episode, with or without major depressive episodes (see *Annex*). The first episode may be manic or depressive, and high rates of recurrence are common.¹

People with bipolar I disorder have characteristic symptoms.² The most common feature of a manic episode is elevated mood, causing euphoria or unusual cheerfulness. Close acquaintances of someone exhibiting such behaviour will recognize it as excessive, even though to others it may just seem especially friendly. The mood is also characterized by unceasing and indiscriminate enthusiasm for interpersonal, sexual, or occupational interactions. For example, the person may spontaneously start extensive conversations with strangers in public places, or make telephone calls at inappropriate times of the night. While elevation of mood is more typical, irritability—especially when the person's wishes

are not met—may also characterize a manic episode. Volatility of mood, alternating between euphoria and irritability, is common.

Bipolar I disorder interferes with normal daily activities and social roles. In 1990, the World Health Organization ranked it as the sixth most important cause of disability worldwide.³ People who are affected may experience frequent relapses, and may not return to full function between episodes, resulting in lowered quality of family and social life.⁴⁻¹⁰ The risk of suicide is also substantial.¹¹⁻¹³ Research in the United States indicates that over half of people with bipolar disorder have attempted or seriously thought about ending their own life.¹²

Aside from the adverse effects on physical and social functioning, bipolar disorder has indirect costs that include foregone earnings attributable to decreased employment and lower productivity. Research based on data from the National Comorbidity Study in the United States estimated the average cost per case in 1998 at \$112,000 (US), amounting to total lifetime indirect costs of \$10.7 billion (US).¹⁶

Nonetheless, the majority of people with bipolar I disorder are employed. Although the work role is of major importance in contemporary society, little research has focused on characteristics that differentiate people with bipolar I disorder who succeed

Methods

Data sources

Data for this article are from the 2002 Canadian Community Health Survey (CCHS), cycle 1.2: Mental Health and Well-being. Data collection began in May 2002 and continued over eight months. The CCHS 1.2 covers people aged 15 or older living in private dwellings in the 10 provinces. Residents of the territories, Indian reserves, institutions, certain remote areas, and full-time members of the Canadian Armed Forces were not included.

The sample was selected using the area frame designed for the Canadian Labour Force Survey. A multi-stage stratified cluster design was used to sample dwellings within this area frame. One person aged 15 or older was randomly selected from the sampled households. Individual respondents were selected to over-represent young people (15 to 24) and seniors (65 or older), thus ensuring adequate sample sizes for these age groups. More detailed descriptions of the design, sample and interview procedures can be found in other published reports and on the Statistics Canada Web site.^{14,15}

All interviews were conducted using a computer-assisted application. Most (86%) interviews were conducted in person; the rest, by telephone. People selected for the survey provided their own responses, and no proxy interviews were permitted. The responding sample totalled 36,984 people aged 15 or older, with a response rate of 77%.

Analytical techniques

Frequencies and cross-tabulations weighted to be representative of the population aged 15 or older who resided in the provinces in 2002 were produced to estimate the prevalence of bipolar I disorder in the household population, and to examine the characteristics of people with this disorder. Based on the definition of manic episode used for the CCHS (see *Annex*), a total of 938 respondents aged 15 or older were categorized as having experienced such an episode

(and thus as having bipolar I disorder) sometime in their lives, and 35,848 had no history of the disorder. Another 198 (0.5%) were excluded from the analysis because their responses did not provide sufficient information to determine if they had bipolar I disorder.

Multiple logistic regression analysis was used to examine associations between selected variables related to social support and employment among people with bipolar I disorder. The model controlled for factors available in the CCHS data that have been shown to be related to bipolar disorder and that might affect the likelihood of employment: demographic and socio-economic characteristics, co-morbid conditions, treatment received, and age of onset of bipolar I disorder. Variables measuring four dimensions of social support availability were of particular interest: affection, emotional/informational support, social interaction, and tangible support. Preliminary analysis indicated high correlation among these four variables.

Pearson correlation coefficients among social support variables

	Affection	Emotional/ Informational support	Social interaction	Tangible support
Affection	1.00			
Emotional/Informational support	0.75	1.00		
Social interaction	0.79	0.83	1.00	
Tangible support	0.65	0.69	0.69	1.00

Because of the potential for multicollinearity, each social support variable was entered singly into the fully controlled model, the results were noted, and then all four were entered simultaneously.

All estimates and analyses were based on weighted data that reflect the age and sex distribution of the household population aged 15 or older in the 10 provinces in 2002. To account for survey design effects, standard errors and coefficients of variation were estimated using the bootstrap technique.¹⁷⁻¹⁹

in holding a job from those who do not. Furthermore, some previous studies have used small clinical samples, so the degree to which the findings can be generalized to the total population is unknown.^{20,21}

The recent availability of data from the 2002 Canadian Community Health Survey (CCHS) cycle 1.2: Mental Health and Well-being provides the first opportunity to study bipolar I disorder in Canada with population-based data. This article focuses on factors associated with employment among those who have the disorder (see *Methods* and *Definitions*). In this analysis, the term “bipolar I disorder” refers to people who experienced at least one manic episode at some time in their life. Although the criteria in the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV®-TR)*² exclude manic episodes due to the effects of drug abuse, medication, other treatment for depression, toxin exposure or the direct physiological effects of a medical condition, people whose episodes stemmed from these causes were included in this analysis (see *Limitations*).

Symptoms

To be classified as having bipolar I disorder, respondents to the CCHS had to have had a period of at least a week at sometime in their life during which their mood was abnormally and persistently elevated and expansive, or an equally long period when their mood was so irritable that they started arguments, shouted at, or actually hit, people. This behaviour had to be sufficiently pronounced to impair their normal daily activities, occupational functioning, social activities or relations with others, or to require hospitalization. They also had to exhibit at least three of the following symptoms (four if their mood was irritable only): inflated self-esteem or sense of grandiosity; decreased need for sleep; unusually talkative or pressure to keep talking; racing thoughts; distractibility; increased restlessness or gregariousness; and excessive involvement in pleasurable activities with a high potential for painful consequences such as spending sprees, casual or unsafe sex, and reckless driving (see *Annex*). People who met these criteria were considered to have had a “manic episode.”

More than half a million

In 2002, an estimated 589,000 Canadians aged 15 or older (2.4%) reported that sometime in their life they had experienced symptoms consistent with a manic episode. In the United States, estimates of bipolar I disorder are lower, ranging from 1.0% to 1.6%, and in other countries, from 0.2% to 1.9%.^{1,22,23} However, the Canadian estimate is slightly below that for

Hungary (3%).²⁴ The inclusion of people whose manic episodes may have been due to substance use or to conditions other than bipolar I disorder (see *Annex* and *Limitations*) may partially explain the higher CCHS estimate. Excluding such cases yielded an estimate of 1.96% (data not shown), but even this figure exceeds most observations elsewhere. As suggested in a recent American report, the true prevalence of bipolar I disorder may be higher than previously estimated.²⁵

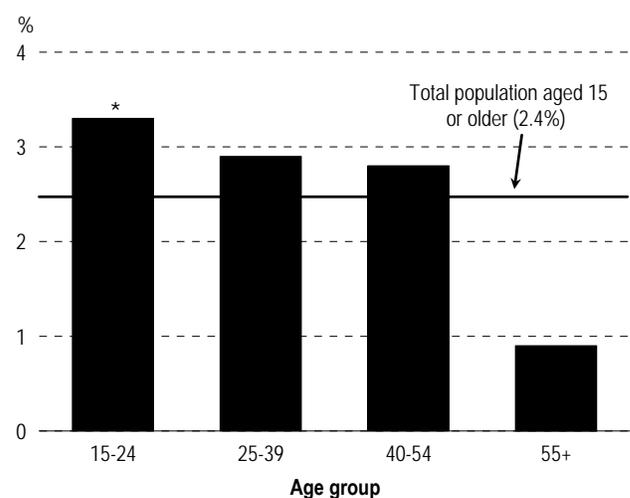
The proportion of people affected did not differ significantly between men and women, a finding consistently observed in other populations.^{1,26-29}

More common in early adulthood

Lifetime prevalence might be expected to accumulate with advancing age, and thus be highest in the oldest age group. However, younger people were far more likely than older people to report lifetime bipolar I disorder. About 3% of 15- to 24-year-olds had experienced symptoms consistent with the disorder, three times the percentage for people aged 55 or older (Chart 1). A similar pattern has been reported in other studies.³⁰ Those investigators speculated that the increased mortality risk associated with bipolar disorder might contribute to the phenomenon. Other possible explanations include an age-related reporting bias (younger people today may be less reticent to disclose behaviours consistent with a manic episode)

Chart 1

Prevalence of lifetime bipolar I disorder, by age group, household population aged 15 or older, Canada excluding territories, 2002



Data source: 2002 Canadian Community Health Survey: Mental Health and Well-being

* Significantly different from estimate for 55+ ($p < 0.05$)

Definitions

See *Annex* for definitions of bipolar I disorder, major depressive disorder, panic disorder, alcohol dependence and illicit drug dependence.

Four *age groups* were defined for prevalence estimates, based on the respondent's age at the time of the interview: 15 to 24, 25 to 39, 40 to 54, and 55 or older. For cross-tabulations and multiple regression modeling using variables related to marital status, education, household income and employment, the analysis was restricted to respondents aged 25 to 64. In these cases, the age groups used were 25 to 39, 40 to 54, and 55 to 64.

Age of onset of symptoms was established by asking respondents how old they were when their first manic episode occurred. For people who had also experienced at least one major depressive episode, the age of onset of symptoms was defined as the age when the first depressive episode occurred, if that age was lower than the age of the first manic episode.

Marital status was categorized to distinguish people living in relationships from those who were not: married or living with a partner versus never married, separated, divorced or widowed.

Education was classified into four groups, based on the highest level attained: less than secondary graduation, secondary graduation, some postsecondary, and postsecondary graduation.

Respondents were categorized as *employed* if they worked at a job or business, or had a job from which they were absent in the week before the interview.

Cycle 1.2 of the Canadian Community Health Survey assesses four dimensions of the availability of *social support*, using an abridged version of measures used in the Medical Outcomes Study (MOS):³¹

- *Affection*: expressions of love and affection.
- *Emotional and informational support*: expression of positive affect, empathetic understanding, and encouragement of expressions of feelings; and offering of advice, information, guidance or feedback.
- *Positive social interaction*: availability of other people to do fun things with.
- *Tangible support*: provision of material aid or behavioural assistance.

All questionnaire items measuring social support used a standard preamble: "How often is each of the following kinds of support available to you if you need it?" Each item was scored according to the frequency with which support was available: "None of the time (score 0)," "A little of the time (1)," "Some of the time (2)," "Most of the time (3)," and "All of the time (4)."

Items used to measure *affection* were:

- someone who shows you love and affection
- someone who hugs you
- someone to love you and make you feel wanted

The maximum summed score for these items was 12.

Items used to measure *emotional and informational support* were:

- someone you can count on to listen to you when you need to talk
- someone to give you advice about a crisis
- someone to give you information in order to help you understand a situation
- someone to confide in or talk to about yourself or your problems
- someone whose advice you really want
- someone to share your most private worries and fears with
- someone to turn to for suggestions about how to deal with a personal problem
- someone who understands your problems

The maximum score for these items was 32.

Items used to measure *positive social interaction* were:

- someone to have a good time with
- someone to get together with for relaxation
- someone to do things with to help you get your mind off things
- someone to do something enjoyable with

The maximum score for these items was 16.

Items used to measure *tangible support* were:

- someone to help you if you were confined to bed
- someone to take you to the doctor if you needed it
- someone to prepare your meals if you were unable to do it yourself
- someone to help with daily chores if you were sick

The maximum score for these items was 16.

For each of the four dimensions of social support, a variable was derived based on the summed scores of responses to the individual items within each dimension. For ease of interpretation in univariate and bivariate analyses, each variable was dichotomized as follows: respondents who answered "none of the time" or "a little of the time" to an item were categorized as having a "low" level of social support in the dimension to which the item belonged. Respondents who answered "some of the time," "most of the time," or "all of the time" were categorized as having "high" social support. The social support variables were used in their continuous form (based on their summed scores) in multiple regression models.

To measure *asthma* and *migraine*, respondents were asked about "long-term conditions that had lasted or were expected to last six months or longer that had been diagnosed by a health care professional." Interviewers read a list of conditions that included asthma and migraine.

Obesity was assessed using the body mass index (BMI), based on self-reported data for height and weight. BMI is calculated by dividing weight in kilograms by the square of height in metres. Based on standards of the World Health Organization, respondents whose BMI was 30.0 or higher were categorized as obese.³²

Activities of daily living (personal or instrumental) dependence was ascertained by asking respondents the following questions: "Because of any physical condition or mental condition or health problem, do you . . . need the help of another person with: Preparing meals? Getting to appointments and running errands such as shopping for groceries? Doing everyday housework? Doing heavy household chores such as spring cleaning or yard work? Personal care such as washing, dressing, eating or taking medication? Moving about inside the house? Looking after your personal finances such as making bank transactions or paying bills?" Respondents who answered "yes" to any of these items were categorized as dependent on others for help with activities of daily living.

Lifetime mental health consultations were assessed by the following question: "During your lifetime, have you ever seen or talked on the telephone to any of the following professionals about your emotions, mental health or use of alcohol or drugs?" A list was read to the respondent by the interviewer; "psychiatrist," "family doctor or general practitioner" and "psychologist" were used for this analysis.

Use of a mood stabilizer medication in the past year was ascertained by asking, "In the past 12 months, did you take mood stabilizers (such as lithium or Tegretol®)?"

Hospitalization within past year for mental health problems was established by asking, "Have you ever been hospitalized overnight or longer in any type of health care facility to receive help for problems with your emotions, mental health or use of alcohol or drugs?" Respondents who answered "yes" were asked, "How recently was that?"

and a cohort effect (for some reason, perhaps substance-induced, younger people are now at higher risk of manic episodes than were previous generations). Poor recall may also contribute to reporting differences.

The first episode signalling the disorder typically happens early in life. Forty-one percent of people with lifetime bipolar I disorder reported that their first manic episode (or first major depressive episode in those who had experienced both) occurred before they were 17; the median age of onset was 19 (data not shown). A similarly early age of onset has been reported in other research.^{26,27,33,34}

Other mental disorders

At ages 25 to 64, the typical ages of labour force participation, the overall prevalence of lifetime bipolar I disorder in 2002 was 2.6%: an estimated 444,000 individuals. Bipolar I disorder was not the only mental/emotional problem with which many of these people had to cope. Similar to findings of earlier studies,^{1,8,13,28,35-40} they were far more likely than their contemporaries without the disorder to have other psychiatric conditions.

Depression is a frequent feature of bipolar I disorder, so it was somewhat surprising that only 56% of those affected had had at least one major depressive episode in their life. However, this was far greater than the proportion (13%) for the rest of the population (Table 1). The corresponding figures for panic disorder were 22% and 4%. As well, significantly higher proportions of people with bipolar I disorder were dependent on alcohol or illicit drugs.

A relatively large share of people with bipolar I disorder sought professional help for their emotional or mental health, or for an alcohol or drug use problem. Over two-thirds (69%) had consulted a family doctor, a psychiatrist or psychologist, compared with just over one-fifth of people without the disorder (data not shown). Many had seen more than one type of professional: 59% had consulted a family doctor, 46% a psychiatrist, and 33% a psychologist.

However, nearly a third of people with symptoms consistent with a manic episode had not sought professional help. It is possible that those who had not sought treatment had symptoms that did not meet the full criteria for a manic episode. Yet even when people whose manic episodes had stemmed from another cause (alcohol or drug abuse, medication, other treatment for depression, toxin exposure or the direct physiological effects of a medical condition) were excluded from the analysis, the estimate of the proportion who had consulted a medical professional was almost unchanged (data not shown).

Table 1
Selected characteristics of household population aged 25 to 64, by presence of lifetime bipolar I disorder, Canada excluding territories, 2002

	Total population aged 25 to 64	Lifetime bipolar I disorder	
		Yes	No
	%	%	%
Lifetime major depressive episode	13.8	56.3*	12.6
Lifetime panic disorder	4.4	22.2*	3.9
Alcohol-dependent	2.0	11.8*	1.8
Illicit drug-dependent	0.5	5.3* ^{E1}	0.4
Lifetime mental health consultations			
Family doctor	17.2	58.6*	16.1
Psychiatrist	9.1	46.0*	8.1
Psychologist	9.5	33.4*	8.9
Took mood stabilizer in past year	1.3	13.6*	0.9
Hospitalized for mental health problems in past year	0.5	4.4* ^{E1}	0.4
Asthma	7.8	15.4* ^{E1}	7.6
Migraine	12.1	25.1*	11.8
Obese	17.5	23.7*	17.4
ADL-/IADL-dependent	10.0	22.7*	9.7
Social support			
Low affection	7.5	20.3*	7.2
Low emotional and informational	13.9	29.6*	13.5
Low positive social interaction	7.5	18.2*	7.3
Low tangible	12.9	25.9*	12.5
Married/Living with partner	74.5	50.1*	75.2
Never married/Separated/Divorced	23.9	47.3*	23.3
Some postsecondary education	6.6	10.4*	6.5
Postsecondary graduation	56.4	49.0*	56.6
Employed in previous week	77.6	68.8*	77.8

Data source: 2002 Canadian Community Health Survey: Mental Health and Well-being

* Significantly different from estimate for those without bipolar I disorder ($p < 0.05$)

^{E1} Coefficient of variation between 16.6% and 25.0%

Of course, people with bipolar I disorder were also more likely than those who did not have the disorder to have taken mood stabilizers. Hospitalization was rare; about 1 in 25 were hospitalized for mental health problems in the past year.

Chronic conditions

Not only were mental/emotional problems more common, but the prevalence of physical conditions was strikingly high among people with bipolar I disorder. For instance, 15% had asthma, almost double the figure for those without the disorder (8%). They were twice as likely to suffer from migraine (25% versus 12%) and were significantly more likely to be

obese (24% versus 17%). These findings are consistent with the results of earlier studies.^{8,30,41-47}

Relying on others for assistance with personal care (bathing or dressing) or instrumental activities of daily living (preparing meals, shopping for groceries or other necessities, housework, paying bills) was more common in people with bipolar I disorder. Close to a quarter (23%) depended on others for such help, compared with 10% of people without the disorder.

Social support less available

Despite their greater need for assistance, people with bipolar I disorder had comparatively little social support. For each of the four dimensions that were measured—affection, emotional and informational support, positive social interaction, and tangible support—the proportion who reported that support was “never” available or available “only a little of the time” was over twice the corresponding figure for people without the disorder (Table 1).

Table 2

Percentage of people aged 25 to 64 with bipolar I disorder employed in previous week, by availability of social support and other selected characteristics, household population, Canada excluding territories, 2002

	%		%
Total	68.8	Consulted family doctor about emotional/mental problems[‡]	
Men [†]	76.1	Yes	64.4*
Women	60.9*	No [†]	74.8
Availability of social support		Consulted psychiatrist about emotional/mental problems[‡]	
<i>Affection</i>		Yes	63.6
Low	51.3*	No [†]	73.0
High [†]	73.0	Consulted psychologist about emotional/mental problems[‡]	
<i>Emotional and informational</i>		Yes	70.7
Low	55.4*	No [†]	67.7
High [†]	73.9	Took mood-stabilizing medication in past year	
<i>Positive social interaction</i>		Yes	54.3*
Low	50.2*	No [†]	71.0
High [†]	72.8	Hospitalized for emotional/mental problems in past year	
<i>Tangible</i>		Yes	F
Low	51.3*	No [†]	70.8
High [†]	74.7	Asthma	
Age group		Yes	56.3*
25-39 [†]	71.4	No [†]	71.0
40-54	71.4	Migraine	
55-64	48.9*	Yes	57.7*
Onset of symptoms before age 17		No [†]	72.9
Yes	65.8	Obese	
No [†]	69.9	Yes	69.2
Lifetime major depressive episode		No [†]	68.6
Yes	60.5*	ADL-/IADL-dependent	
No [†]	78.8	Yes	45.0*
Lifetime panic disorder		No [†]	75.6
Yes	65.3	Marital status	
No [†]	70.8	Never married/Divorced/Separated	64.4
Alcohol-dependent		Married/Living with partner [†]	73.1
Yes	65.5	Education	
No [†]	69.3	Less than secondary graduation	47.5*
Illicit drug-dependent		Secondary graduation	75.9
Yes	49.1* ^{E1}	Some postsecondary	69.9
No [†]	70.0	Postsecondary graduation [†]	74.9

Data source: 2002 Canadian Community Health Survey: Mental Health and Well-being

[†] Reference category

[‡] Lifetime

* Significantly different from estimate for reference category ($p < 0.05$)

E1 Coefficient of variation between 16.6% and 25.0%

F Coefficient of variation greater than 33.3%

Low availability of social support may partially relate to marital status. The likelihood of never marrying, separation or divorce was substantially higher for people with bipolar I disorder than for those who were not affected. This probably reflects the adverse effects the disorder has on intimate relationships.

While about half (49%) of people aged 25 to 64 with bipolar I disorder had completed a postsecondary degree or diploma, this was below the proportion for their contemporaries who did not have the disorder (57%). As well, 10% of people with bipolar I disorder had begun but had not completed postsecondary studies, compared with 7% of those who were not affected. Again, these findings may indicate the disorder's disruptive effects.

Majority employed

Difficulty with employment is another negative consequence of bipolar I disorder.⁸ According to the results of the CCHS, people aged 25 to 64 with the disorder were less likely to be employed than those without it: 69% versus 78%. But perhaps the more important finding, considering the impact on behaviour and normal activities, as well as the adverse effects of the co-morbid conditions that are so much more prevalent, is that a substantial majority of people with bipolar I disorder were employed. What distinguishes those who work from those who do not? When social, psychological, physical, and health care variables were considered together, relatively few factors emerged as having an independent association with employment—notable among them was social support.

Support and work

Among people with lifetime bipolar I disorder, the likelihood of employment was significantly greater for those with higher levels of each of the four dimensions of social support (Table 2). These findings are similar to those of the few studies that have focused on the relationship between work and social support in bipolar patients.^{20,21}

When each social support variable was included singly in a multiple regression model controlling for socio-demographic characteristics, co-morbid conditions, age of onset and treatment, the association with employment persisted (data not shown). However, when all four variables were considered simultaneously, only the relationship with tangible support—the perceived availability of someone to help if one was confined to bed or needed transportation to the doctor, help preparing meals or doing daily chores—was significant (Table 3). This suggests that

Table 3

Adjusted odds ratios relating social support and other selected characteristics to employment in previous week, household population aged 25 to 64 with bipolar I disorder, Canada excluding territories, 2002

	Odds ratio	95% confidence interval
Sex		
Men	2.0*	1.0, 3.8
Women†	1.0	...
Social support		
Affection†	1.0	0.9, 1.2
Emotional and informational†	1.0	0.9, 1.1
Positive social interaction†	1.0	0.9, 1.2
Tangible†	1.2*	1.0, 1.3
Age group		
25-39†	1.0	...
40-54	1.0	0.5, 2.1
55-64	0.3*	0.1, 0.7
Psychiatric features		
Onset of symptoms before age 17	0.8	0.4, 1.7
Lifetime major depressive episode	0.5*	0.2, 1.0
Lifetime panic disorder	1.5	0.7, 3.2
Alcohol-dependent	1.1	0.3, 3.9
Illicit drug-dependent	0.4	0.1, 1.4
Lifetime mental health consultations		
Family doctor	0.8	0.3, 1.8
Psychiatrist	1.2	0.5, 3.0
Psychologist	1.9	0.9, 3.8
Took mood stabilizer in past year	0.5	0.2, 1.3
Hospitalized for mental health in past year	0.2*	0.0, 0.8
Chronic conditions		
Asthma	0.6	0.3, 1.4
Migraine	0.4*	0.2, 0.9
Obesity	1.6	0.8, 3.5
ADL-/IADL-dependent	0.5	0.2, 1.1
Marital status		
Never married/Separated/Divorced†	1.0	...
Married/Living with a partner	1.3	0.6, 2.7
Education		
Less than secondary graduation	0.2*	0.1, 0.5
Secondary graduation	1.0	0.4, 2.3
Some postsecondary	0.5	0.2, 1.5
Postsecondary graduation†	1.0	...

Data source: 2002 Canadian Community Health Survey: Mental Health and Well-being

Notes: Model based on records for 620 respondents meeting criteria for bipolar I disorder (defined as lifetime major depressive episode and lifetime manic episode) and for whom data on variables included in model were available. Because of rounding, some odds ratios for which the upper or lower confidence limit is 1.0 are statistically significant.

† Reference category. When not noted, reference category is absence of characteristic; for example, reference category for "alcohol-dependent" is not alcohol-dependent.

‡ Used as continuous variable in model

*Significantly different from estimate for reference category ($p < 0.05$)

... Not applicable

Limitations

Although previous versions of the Composite International Diagnostic Interview (CIDI) have been validated for use in community-based surveys, a new version of this instrument was used by the Canadian Community Health Survey (CCHS), and its validation has not been completed. Therefore, the extent to which assessments made by trained clinicians would correspond with CCHS findings is unknown.

The *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV®-TR)*² specifies that people whose manic episodes are due to alcohol or drug abuse, medication, other treatment for depression, toxin exposure or the direct physiological effects of a general medical condition should not be counted among those with bipolar I disorder.² Those exclusions were not applied in this analysis, based on advice received by Statistics Canada from clinical experts, who suggested that external causes of affective episodes can be assessed only by trained diagnosticians in face-to-face interviews, not by lay interviewers. The inclusion of people who would have been excluded by the DSM-IV criteria inflated the prevalence estimate of bipolar I disorder to an unknown degree, and limits its international comparability.

Because of a skip pattern applied during the CCHS interview, the derived variable used for manic episode excludes some people whose episode was characterized by “irritable mood,” as specified in criterion A of the DSM-IV (see *Annex*).² The algorithm for the CCHS excludes respondents who were screened into the questions on manic episode based on having experienced a distinct period of feeling “excited and full of energy” *and* a period of feeling irritable, grumpy or in a bad mood, but who then denied having felt specific symptoms of mania (“being more talkative, needing very little sleep, being very restless, going on buying sprees, and behaving in ways that they would normally think are inappropriate. . .”), even though they might have had symptoms consistent with extreme irritability. The effect of this exclusion is to limit the external validity of the findings of the analysis.

From the data collected in the CCHS interview, it was not possible to differentiate a manic from a “mixed” episode (characterized by a period—usually a week—in which the criteria are met for both a manic and a major depressive episode).² However, because the

criteria for bipolar I disorder include either a manic or a mixed episode, this limitation of the survey instrument probably did not affect the prevalence estimate.

Previous research indicates that bipolar disorder may be misdiagnosed as depression because of the long interval (up to 15 years) until the onset of a manic episode.^{25,48} Therefore, some respondents who met only the criteria for major depressive episode may have been misclassified. Such misclassification would weaken associations between the dependent and independent variables.

Several previous studies have noted that people with bipolar I disorder experience impairment or deterioration over time in their ability to function at work, even if they are able to remain employed.^{5,8-10,21,25} However, job performance measures were not available from the CCHS. As well, data were not collected on other factors that influence the probability of being employed. For instance, cognitive ability, which may deteriorate as a result of bipolar I disorder,^{49,50} and the number of previous manic or depressive episodes could not be considered. The effects of such omissions are unknown.

The impact of excluding 198 respondents (0.5% of the total) who did not provide information about manic episodes is unknown. Bias would result if the prevalence of bipolar I disorder was higher in this group than among respondents from whom complete information was obtained, but the effect would be minimal because of the small numbers involved.

The reference periods differed for some of the variables that were considered together. For example, current social support and employment were examined in relation to a lifetime history of bipolar disorder. Although strong negative associations with bipolar disorder emerged, many other factors may account for the relationships observed.

The analysis is based on cross-sectional data, which permit the observation of associations between variables at one point in time. Neither causality nor the temporal ordering of events can be inferred from the data. For example, it is not possible to establish if tangible social support precedes or follows employment among people who have experienced a manic episode.

some aspects of emotional, social and interpersonal support are implicit in tangible support (evident in the strong correlations among the four variables—see *Methods*), but that tangible support offers an additional independent benefit. Tangible support was measured on a scale scored from 0 to 16. On average, an increase of one in the tangible support score is associated with a rise of 15% in the odds of having a job.

Obstacles

A number of other variables were related to employment among people with bipolar I disorder. Those who had migraine, asthma, illicit drug dependence, or who needed help with activities of daily living were less likely to be employed (Table 2). However, when controlling for other influences in multiple regression analysis, only the negative association with migraine persisted (Table 3).

People whose bipolar I disorder involved major depressive episodes were less likely to be employed. Such a history may indicate a greater severity of symptoms, as well as longer time to recover between episodes.⁵¹

Hospitalization within the previous 12 months for treatment of mental or emotional problems also reduced the odds of employment. This is consistent with previous research.⁴⁹ Admission to hospital may have been necessitated by a severe manic or depressive episode, so the negative association with current employment was not surprising.

As well, people with bipolar I disorder who had not graduated from high school had significantly low odds of employment.

While the early appearance of bipolar I disorder—during childhood or adolescence—has been linked to social problems,⁵² results from the CCHS showed no relationship between an early age of onset and employment. And when all the factors were taken into account, people with bipolar I disorder who had consulted medical professionals or who had taken mood stabilizers were no more or less likely to be employed than those who had not.

Concluding remarks

According to data from the first survey to measure mental health in the Canadian household population, an estimated 24 in every 1,000 people reported that

they have experienced at least one manic episode, and more than half of these people also suffered a major depressive episode. In some cases, the episodes may have resulted from drug or alcohol abuse, or the effects of medical conditions. For a substantial proportion, however, it is likely that their symptoms arose from bipolar I disorder.

Previous research suggests that bipolar I disorder exerts a negative impact on social roles and interpersonal relationships,^{5,8} although the causal directions have not been well established and may be reciprocal.⁵³ The symptoms appear early in life and disrupt social and vocational functioning. People with bipolar I disorder are less likely to have completed postsecondary education. They are more likely to depend on others for help with activities of daily living, and are at dramatically higher risk of other mental and physical problems.

Despite these obstacles, most people of working age with bipolar I disorder are employed. In this regard, those who perceive that someone is available to help with the practical necessities of life may have an advantage. However, about one in four people with the disorder reported that such assistance was available infrequently or not at all. Thus, the provision of mental health support services that include access to tangible assistance might help to reduce the serious negative impact that bipolar symptoms can have on finding and keeping a job. ■

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Panic disorder and coping

- *Panic disorder—recurrent, unexpected panic attacks—is more common among women than men.*
- *The disorder typically strikes younger people, with an average age of onset of 25.*
- *Several negative behaviours are associated with panic disorder, including withdrawing from people, smoking more than usual, drinking to cope with stress, or using illicit drugs.*

Abstract

Objectives

This article presents prevalence estimates of panic disorder in the household population aged 15 or older. Associations between panic disorder and measures of physical and mental health, work status and coping behaviour are examined.

Data source

Data are from the 2002 Canadian Community Health Survey: Mental Health and Well-being.

Analytical techniques

2002 prevalence rates are presented for people with a history of panic disorder. Characteristics associated with current and past panic disorder are examined. Multiple logistic regression models are used to examine work status and coping behaviour, and chronic physical and other mental health problems.

Main results

In 2002, an estimated 1.5% of the population had current panic disorder, and 2.1%, a past history. Average age of onset was 25. People with current panic disorder were less likely to work and more likely to be permanently unable to work, compared with those who had never had the condition. Negative coping behaviours, including alcohol or drug use and smoking, were more common among those with panic disorder.

Key words

age of onset, agoraphobia, comorbidity, coping behaviour, health status indicators, mental health, prevalence, panic attacks

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All people experience various levels of anxiety as they go through life. Usually an individual's anxiety level shifts almost imperceptibly as he or she copes with a potentially difficult, fearful, or even dangerous situation.¹ Anxiety is a typical and normal reaction to stress, and a certain amount of it may often be appropriate. Anxiety may be considered normal, but panic attacks—discrete periods of intense fear that occur in the absence of any real danger—are not. Panic attacks are accompanied by symptoms such as chest pain, sweating, trembling, shortness of breath and palpitations. During attacks people may feel that they are choking, losing control or “going crazy.” They may express a fear of dying and feel the urge to escape. The attacks occur suddenly, usually peak within 10 minutes and may occur at night, waking the individual from sleep.²

Methods

Data source

The data used for this analysis are from the 2002 Canadian Community Health Survey (CCHS) cycle 1.2: Mental Health and Well-being, which began in May 2002 and was conducted over eight months. Residents of institutions, Indian reserves and certain remote areas, the three territories, as well as full-time members of the Canadian Armed Forces, were excluded.

The CCHS 1.2 sample was selected using the area frame designed for the Canadian Labour Force Survey. A multi-stage stratified cluster design was used to sample dwellings within this area frame. One person aged 15 or older was randomly selected from the sampled households. Individual respondents were selected to over-represent young people (15 to 24) and seniors (65 or older), thus ensuring adequate sample sizes for these age groups. More detailed descriptions of the design, sample and interview procedures can be found in other reports and on Statistics Canada's Web site.^{3,4}

All interviews were conducted using a computer-assisted application. Most (86%) were conducted in person; the remainder, by telephone. Selected respondents were required to provide their own information as proxy responses were not accepted. The responding sample comprised 36,894 persons aged 15 or older, and the response rate was 77%.

For the CCHS, panic disorder was measured using the World Mental Health version of the Composite International Diagnostic Interview (WMH-CIDI), an instrument created to assess mental disorders based on the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV®-TR)*.² The CIDI was designed to measure prevalence of mental disorders at the community level, and it can be administered by lay interviewers. The questions and algorithms used to measure panic attacks and panic disorder in the CCHS are presented in the *Annex*. The CCHS 1.2 questionnaire is available on Statistics Canada's Web site @ www.statcan.ca.⁴

Analytical techniques

Prevalence rates of panic disorder according to selected socio-demographic variables were calculated. Comparisons were made between these characteristics, within the current and past panic disorder groups. Age of onset and the means were estimated by examining cumulative incidence by age.

Prevalence rates and logistic regression models were used to compare people with panic disorder with the rest of the population in relation to physical and mental health, work status, and coping behaviour. Four mutually exclusive and exhaustive groups were created: those with current panic disorder (met the criteria for panic disorder in the 12 months before the CCHS interview); those with a past history (panic disorder in the past, but not in the last 12 months); those who did not meet the criteria for panic disorder (reference group); and those whose panic disorder status was "unknown." The final group was retained for analysis because of its appreciable size (see *Limitations*), but the results are not shown. When examining gender differences for lifetime agoraphobia, as well as certain coping behaviours (use of alcohol and withdrawing), only respondents with panic disorder (current and past) were selected for analysis.

Odds ratios were estimated using multiple logistic regression analysis. Two sets of models were used. In model 1, the following control variables were introduced: sex, age, marital status, and education or household income. These variables were retained for model 2, in addition to chronic physical conditions and other mental disorders: agoraphobia, social anxiety disorder, major depressive episode, and post-traumatic stress disorder (in past 12 months only). A comparison of results between models—differences in the odds ratios—permits an assessment of the contribution of panic disorder on two selected outcomes: work status and coping.

The analysis was based on a weighted sample representing the total population aged 15 or older in the 10 provinces in 2002. Variance for prevalence rate estimates, differences between rates, and odds ratios was calculated using the bootstrap technique in order to account for the survey design effect.^{3,9-11}

Panic disorder, which is characterized by recurrent, unexpected panic attacks, can be chronic and disabling.^{2,5,6} It most commonly begins in adolescence or early adulthood,⁷ prime years for completing education, entering the job market and forming relationships. The stress and disruption that may result from panic disorder can have long-lasting personal, social and economic consequences.⁶⁻⁸

This article focuses on panic disorder and is based on recent data from the Canadian Community Health Survey: Mental Health and Well-being (CCHS) cycle

1.2, conducted among the household population in 2002 (see *Methods, Definitions and Limitations*). Prevalence rates are presented for respondents who had panic disorder in the year before the survey interview (current), who did not currently have the disorder, but had a history (past), and those who had both (lifetime) (see *Annex*). The analysis presents selected characteristics of individuals with current or past panic disorder, comparing them with people who had never had the disorder. The article then examines the occurrence of other mental and physical health

problems in people with panic disorder, and assesses the independent contribution of panic disorder to work status and coping behaviours.

People with panic disorder may have other conditions such as agoraphobia, depression, social anxiety disorder, and obsessive compulsive disorder.^{8,12-16} In this study, agoraphobia is included as a comorbid condition because the relatively small number of cases identified in the CCHS prevented the more usual comparison of panic disorder with agoraphobia, panic disorder without agoraphobia, and agoraphobia without a history of panic disorder.

Panic attacks

Panic attacks are discrete periods of intense fear that occur in the absence of any real danger (see *Definitions* and *Annex*). According to the 2002 CCHS, over 5 million people in Canada, or 21% of the population aged 15 or older, had had a panic attack at some point during their lives (data not shown). Almost 2 million, or 8%, reported having had an attack in the year before their survey interview (Table 1). Women were more likely than men to be affected (10% versus 6%). Panic attacks were more common at younger ages; for example, 12% of 15- to 24-year-olds had had a panic attack in the past 12 months, compared with 4% of people aged 55 or older.

Table 1
Prevalence of panic attack in past 12 months, by age group and sex, household population aged 15 or older, Canada excluding territories, 2002

	Both sexes	Men	Women
	%	%	%
Total	8.0	6.0	9.9[†]
Age group			
15-24	11.8*	7.4*	16.4*
25-34	10.3*	7.2*	13.3*
35-44	8.6*	6.8*	10.4*
45-54	7.6*	5.8*	9.2*
55 or older [†]	4.2	3.9	4.4

Data source: 2002 Canadian Community Health Survey: Mental Health and Well-being

† Reference category

* Significantly different from estimate for reference category ($p < 0.05$)

‡ Significantly different from estimate for men ($p < 0.05$)

Panic disorder more common among women

According to the CCHS, 3.7% of the Canadian population aged 15 or older have suffered from panic disorder—recurrent, unexpected panic attacks—at some point during their lives. This rate is higher than expected based on other international community surveys.^{7,17} Because the CCHS did not apply the exclusion criteria outlined in the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV®-TR)*² (see *Limitations*), the rates may be inflated. In 2002, the lifetime prevalence of panic disorder was higher for women (4.6%) than men (2.8%) (Table 2), a finding consistent with other studies.^{6,7,18,19} In the CCHS, the female-to-male ratio was 1.7. An estimated 1.5% of Canadians had panic disorder in 2002 (current); another 2.1% had a past history of the disorder.

Table 2
Prevalence of panic disorder, by selected socio-demographic characteristics, household population aged 15 or older, Canada excluding territories, 2002

	Lifetime	Current (past 12 months)	Past (excluding current)
	%	%	%
Total	3.7	1.5	2.1
Men [†]	2.8	1.0	1.7
Women	4.6*	2.0*	2.5*
Age group			
15-24	2.9	1.8*	1.1* ^{E1}
25-34	3.9*	1.8*	2.1
35-44	4.5*	2.0*	2.4*
45-54	5.1*	1.5*	3.5*
55 or older [†]	2.5	0.8	1.6
Marital status[‡]			
Married/Common-law [†]	3.9	1.4	2.5
Widowed	6.4 ^{E2}	F	F
Divorced/Separated	7.2*	3.2*	3.6*
Never married	4.8	2.3*	2.4
Education[‡]			
Less than secondary education	5.1	1.9	3.0
Secondary graduation	4.9	2.3*	2.5
Some postsecondary/Postsecondary graduation [†]	4.0	1.5	2.5
Household income			
Low/Lower-middle	5.7*	3.1*	2.3
Middle	3.5	1.8	1.7*
Upper-middle/High [†]	3.7	1.3	2.3

Data source: 2002 Canadian Community Health Survey: Mental Health and Well-being

Note: A "missing" category for household income was included, but prevalence is not shown.

† Reference category

‡ For people aged 25 to 64

* Significantly different from estimate for reference category ($p < 0.05$)

E1 Coefficient of variation between 16.6% and 25.0%

E2 Coefficient of variation between 25.1% and 33.3%

F Coefficient of variation greater than 33.3%

Definitions

To be classified as having *panic disorder*, Canadian Community Health Survey (CCHS) cycle 1.2: Mental Health and Well-being respondents must have first met the diagnostic criteria for *panic attacks*. See the *Annex* for the full definitions, questions and algorithms used in the CCHS.

There are three types of *panic attacks*. *Unexpected attacks*—characteristic of *panic disorder*—seem to occur “out of the blue”; that is, they do not appear to be related to a particular event or set of circumstances. *Situationally bound attacks* are predictable, in that they happen when the person is in a certain situation (public speaking, for example) or is anticipating that situation. *Situationally predisposed panic attacks* are similar, except they do not always occur in the given set of circumstances, or if they do, it is not immediately after the exposure.²

Age of onset for panic disorder was defined as the age of the respondent when the first panic attack occurred.

Respondents were placed into the following age groups for this analysis: 15 to 24, 25 to 34, 35 to 44, 45 to 54, 55 or older. Some analyses were restricted to certain groups (25 to 64 for marital status and education, for example). Age was entered into logistic regression models as a continuous variable.

Marital status at the time of the interview was used: married/common-law; widowed; divorced or separated; and never married.

Education was grouped as follows: less than secondary graduation, secondary graduation, some postsecondary, and postsecondary graduation.

Household income was based on the number of people in the household and total household income from all sources in the 12 months before the 2002 interview.

Household income group	People in household	Total household income
Low	1 to 4	Less than \$10,000
	5 or more	Less than \$15,000
Lower-middle	1 or 2	\$10,000 to \$14,999
	3 or 4	\$10,000 to \$19,999
	5 or more	\$15,000 to \$29,999
Middle	1 or 2	\$15,000 to \$29,999
	3 or 4	\$20,000 to \$39,999
	5 or more	\$30,000 to \$59,999
Upper-middle	1 or 2	\$30,000 to \$59,999
	3 or 4	\$40,000 to \$79,999
	5 or more	\$60,000 to \$79,999
High	1 or 2	\$60,000 or more
	3 or more	\$80,000 or more

The presence of *at least one chronic condition* was determined by asking respondents if they had “any long-term health conditions that are expected to last or have already lasted six months or more and that have been diagnosed by a health professional.” The interviewer then read a checklist of conditions. The 18 self-reported conditions considered in this analysis were: asthma, fibromyalgia, arthritis/rheumatism, back problems excluding fibromyalgia and arthritis, high blood pressure, migraine, diabetes, epilepsy, heart disease, cancer, stomach or intestinal ulcers, effects of a stroke, bowel disorder/Crohn’s disease or colitis, thyroid condition, chronic fatigue syndrome, multiple chemical sensitivities, chronic bronchitis, and emphysema or chronic obstructive pulmonary disease.

Respondents who met the 12-month criteria for agoraphobia, social anxiety disorder or major depressive episode or who said they suffered from post-traumatic stress disorder were considered to have a *concurrent mental health disorder*. (See the *Annex* for detailed descriptions of social anxiety disorder and major depressive disorder.)

Respondents who met the lifetime criteria for agoraphobia, social anxiety disorder or major depressive episode, but who had not had these conditions in the year before the survey were coded as having *other past mental disorders*. Post-traumatic stress disorder was not included in this definition because it was evaluated only as a current chronic condition.

To establish *work status*, respondents were asked if they had worked at a job or business in the past 12 months. Those who indicated “no” were coded “1” for this dichotomous variable. Responses of “yes” were coded “0.”

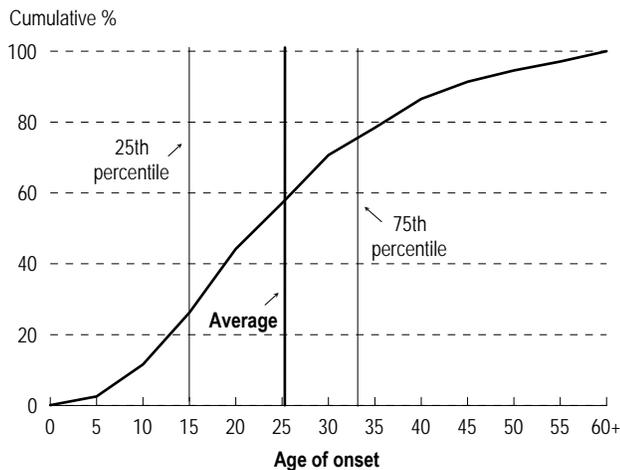
The CCHS also asked about working in the last week: “Last week, did you work at a job or a business?”. A dichotomous variable was created; those who reported they were permanently unable to work were coded “1.” Those who responded “yes” or “no” to this question were coded “0.”

Based on residential postal code and 1996 Census geography, respondents were categorized as living in an *urban* or *rural* area.

Mid-twenties onset

As seen in other studies,^{2,7,14} panic disorder first appears most often in the younger age groups. The CCHS results show that people younger than 55 were more likely to have current panic disorder than those aged 55 or older (Table 2). The average age of onset for lifetime panic disorder was 25; for 75% of those with the disorder, it had begun by age 33 (Chart 1).

Chart 1
Cumulative incidence of panic disorder, by age of onset, household population aged 15 or older with lifetime history of panic disorder, Canada excluding territories, 2002



Data source: 2002 Canadian Community Health Survey: Mental Health and Well-being

Marital status, education and income

In 2002, panic disorder (current and past) was more common among individuals who were separated or divorced than among those who were married (Table 2), a finding consistent with other research.⁷ The higher prevalence among this group may reflect an association between stressful life events and the development of panic disorder.²⁰ For example, a review that focussed specifically on panic disorder with agoraphobia concluded that major life events—including marital and interpersonal problems—tend to occur in the period preceding the disorder.²¹

Lower education and income levels were also associated with the presence of panic disorder. The prevalence of current panic disorder was higher among individuals whose education had ended with secondary graduation, compared with those who had postsecondary education. People with less than secondary graduation were no more likely to have current or past panic disorder than those with postsecondary graduation, in contrast to previous research.⁷

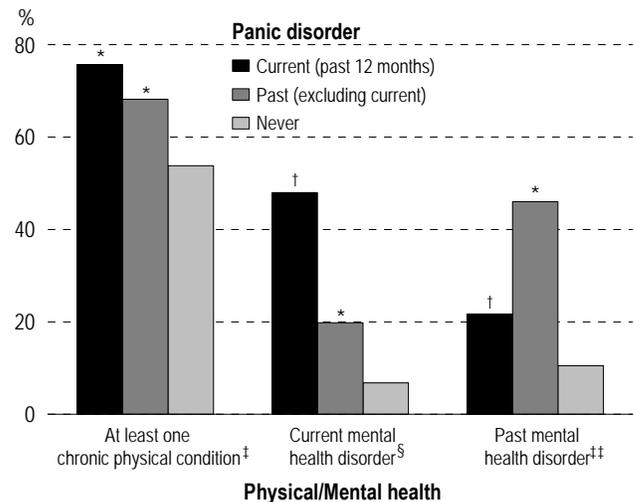
People in lower household income groups were more likely to have current panic disorder than were those at higher income levels. It is possible that lower income is indicative of other stressful circumstances that contribute to the illness, or that the disorder itself leads to reduced income when people with panic disorder are unable to work. Although it has been suggested that panic disorder is most prevalent in urban areas,⁷ this was not the case in the CCHS.

Other physical and mental illnesses

Among those with current panic disorder, three-quarters (76%) reported at least one diagnosed chronic condition (Chart 2). Among people with past panic disorder, the proportion with at least one such illness was slightly lower (68%), yet it exceeded the figure for those who had never had panic disorder (54%).

The presence of other mental disorders is fairly common among people who have experienced panic disorder.^{13,22-24} Almost half of those with current panic disorder (48%) had also had agoraphobia, social anxiety disorder, post-traumatic stress disorder, or a

Chart 2
Percentage of people with chronic condition(s) and other mental health disorders, by history of panic disorder, household population aged 15 or older, Canada excluding territories, 2002



Data source: 2002 Canadian Community Health Survey: Mental Health and Well-being

[†] Significantly different from estimate for "never" and "past" ($p < 0.05$)
[‡] See Definitions for list of 18 self-reported diagnosed chronic conditions
[§] Agoraphobia, social anxiety disorder, post-traumatic stress disorder, major depressive episode
^{‡‡} Agoraphobia, social anxiety disorder, major depressive episode
 * Significantly higher than estimate for "never" ($p < 0.05$)

major depressive episode in the preceding 12 months. This is significantly more than the 20% of people with past panic disorder. Both groups were more likely to have had one of these mental illnesses in the past year than the rest of the population (7%).

Although many people with current panic disorder did not have another mental disorder in the year before the survey interview, they may have had one or more in the past: 22% had a history of agoraphobia, social anxiety disorder, or a major depressive episode (see *Limitations*). Among people with a history of panic disorder, 46% had an accompanying history of at least one of these other mental disorders.

Less likely to work

People aged 25 to 64 who had panic disorder in the 12 months before the CCHS interview were less likely to have worked at a job or business during that time (72%) than those who had panic disorder in the past (82%) or who had never had the condition (84%) (data not shown). Individuals with current panic disorder were also more likely to be permanently unable to work: 11% compared with 2% for those with past panic disorder or who never had the condition. When socio-demographic factors were taken into account, individuals with current panic disorder had higher odds of being permanently unable to work than those who had never had the disorder (Table 3, Appendix Tables A and B). And even when other physical and mental

health problems were also considered, these relationships held.

By contrast, there was no difference in work status—not working in the past year or being permanently unable to work—between those with a history of panic disorder and those who had never had the disorder. In other words, the work status of people who experience remission for a year or more and those with no history of panic disorder appears to be similar.

Negative ways of coping

The frequent use of negative coping behaviour has been documented for people suffering from panic disorder: avoidance, self-blame and wishful thinking (as opposed to a problem-solving approach), for example.²⁵⁻²⁷ Analysis of results from the 2002 CCHS also indicated that people with current or past panic disorder had odds that were around two to three times higher than those with no history of the disorder to withdraw from people, to blame themselves, and to wish problems away (Table 4). They were also less likely to look on the “bright side” of things (see *Coping behaviours*).

The odds of drinking to cope with stress, and of smoking more than usual, were approximately twice as high for those with current and past panic disorder in comparison with people who had never had the condition. According to the CCHS (data not shown), 18% of people with panic disorder said they coped

Table 3
Adjusted odds ratios relating panic disorder to work status, without and with controlling for physical and other mental health problems, household population aged 25 to 64, Canada excluding territories, 2002

Work status	Panic disorder	Model 1		Model 2	
		Controlling for socio-demographic factors [†]		Controlling for socio-demographic factors and physical and other mental health problems [‡]	
		Odds ratio	95% confidence interval	Odds ratio	95% confidence interval
Did not work at job or business in past 12 months	Current (past 12 months)	2.0*	1.5, 2.7	1.6*	1.1, 2.2
	Past (excluding current)	0.9	0.7, 1.2	0.9	0.7, 1.1
	Never [§]	1.0	...	1.0	...
Permanently unable to work	Current (past 12 months)	6.4*	3.9, 10.5	3.2*	1.8, 5.8
	Past (excluding current)	1.1	0.7, 1.7	0.9	0.5, 1.4
	Never [§]	1.0	...	1.0	...

Date source: 2002 Canadian Community Health Survey: Mental Health and Well-being

Note: Summarizes results of 4 separate regression models; complete results can be found in Appendix Tables A and B.

[†] Sex, age, marital status and education

[‡] At least one of 18 self-reported diagnosed chronic conditions (see Definitions); agoraphobia, social anxiety disorder, major depressive episode, and post-traumatic stress disorder (past year only)

[§] Reference category

* Significantly different from estimate for reference category ($p < 0.05$)

... Not applicable

Table 4

Adjusted odds ratios relating panic disorder to selected behaviours, without and with controlling for physical and other mental health problems, household population aged 15 or older, Canada excluding territories, 2002

Behaviour	Panic disorder	Model 1		Model 2	
		Controlling for socio-demographic factors [†]		Controlling for socio-demographic factors and physical and other mental health problems [‡]	
		Odds ratio	95% confidence interval	Odds ratio	95% confidence interval
Withdrawing from people	Current (past 12 months)	3.0*	2.2, 3.9	1.8*	1.4, 2.5
	Past (excluding current)	2.1*	1.7, 2.7	1.6*	1.2, 2.0
	Never [§]	1.0	...	1.0	...
Drinking alcohol to cope	Current (past 12 months)	1.8*	1.4, 2.4	1.2	0.9, 1.6
	Past (excluding current)	1.9*	1.4, 2.6	1.4*	1.0, 2.0
	Never [§]	1.0	...	1.0	...
Smoking more than usual	Current (past 12 months)	2.6*	1.8, 3.7	1.7*	1.2, 2.5
	Past (excluding current)	2.2*	1.6, 3.1	1.7*	1.2, 2.5
	Never [§]	1.0	...	1.0	...
Blaming oneself	Current (past 12 months)	2.6*	2.0, 3.4	1.7*	1.3, 2.2
	Past (excluding current)	2.3*	1.8, 3.1	1.7*	1.3, 2.3
	Never [§]	1.0	...	1.0	...
Wishing problem would go away	Current (past 12 months)	2.8*	1.9, 4.0	1.9*	1.3, 2.8
	Past (excluding current)	2.0*	1.2, 3.2	1.6	1.0, 2.6
	Never [§]	1.0	...	1.0	...
Praying/Seeking spiritual help	Current (past 12 months)	1.3*	1.1, 1.7	1.2	0.9, 1.5
	Past (excluding current)	1.5*	1.2, 1.9	1.3*	1.0, 1.7
	Never [§]	1.0	...	1.0	...
Looking on the bright side	Current (past 12 months)	0.4*	0.3, 0.5	0.7*	0.5, 0.9
	Past (excluding current)	0.8	0.5, 1.1	1.0	0.7, 1.5
	Never [§]	1.0	...	1.0	...
Lifetime illicit drug use excluding one-time cannabis use	Current (past 12 months)	2.1*	1.7, 2.8	1.5*	1.1, 2.0
	Past (excluding current)	2.5*	1.9, 3.2	1.9*	1.4, 2.4
	Never [§]	1.0	...	1.0	...

Date source: 2002 Canadian Community Health Survey: Mental Health and Well-being

Note: Summarizes results for 16 separate regression models; complete results available on request.

[†] Sex, age, marital status and household income

[‡] At least one of 18 self-reported diagnosed chronic conditions (see Definitions); agoraphobia, social anxiety disorder, major depressive episode, and post-traumatic stress disorder (past year only)

[§] Reference category

* Significantly different from estimate for reference category ($p < 0.05$)

... Not applicable

with stress by consuming alcohol, significantly more than among people who had never had the condition (11%). Of those with either current or past panic disorder, men were more likely to handle their stress by drinking (24%) than were women (14%). Even when socio-economic factors, as well as other mental and physical conditions were taken into account, men had higher odds of drinking as a way of coping. Similar differences in alcohol use rates have been noted in other studies.^{5,28,29}

Some studies have reported gender differences among people with panic disorder in relation to agoraphobia and agoraphobic avoidance.^{5,28,29} But other research has found no such differences,³⁰ consistent with analysis of CCHS data for these behaviours by sex. Among men and women with panic disorder, there were no significant differences for coping with stress by withdrawing or in the presence of lifetime agoraphobia (data not shown).

Coping behaviours

In the 2002 Canadian Community Health Survey (CCHS), all respondents were asked about *coping with stress*. *Withdrawing* indicates respondents who “often” or “sometimes” coped by avoiding being with people, sleeping more than usual, or by “rarely” or “never” talking to others. Respondents were also asked how often they used/did each of the following when dealing with stress:

- try to feel better by drinking alcohol
- try to feel better by smoking more cigarettes than usual
- blame yourself
- wish the situation would go away or somehow be finished
- pray or seek spiritual help
- try to look on the bright side of things

Responses were grouped as often/sometimes versus rarely/never.

Lifetime illicit drug use, excluding one-time cannabis use, was derived from a series of questions asking respondents if they had ever used or tried:

- marijuana, cannabis or hashish
- cocaine or crack
- speed (amphetamines)
- ecstasy (MDMA) or other similar drugs
- hallucinogens, PCP or LSD (acid)
- heroin
- steroids, such as testosterone, dianabol or growth hormones, to increase your performance in a sport or activity or to change your physical appearance
- [sniffing] glue, gasoline or other solvents

Illicit drug use

Other research has concluded that substance use, including cannabis, is associated with panic disorder,^{13,31} a finding consistent with results from the CCHS: 62% of people with current panic disorder and 60% of those with a history had used illicit drugs at some point (data not shown). By contrast, 41% of people with no history of the disorder had tried illicit drugs (see *Definitions*). When those who reported trying cannabis only once were excluded, the rates of lifetime illicit drug use fell to 52% for those with current panic disorder, 51% for those with past panic disorder, and 33% for everyone else. Regardless of the direction of the relationship, which cannot be established with the CCHS cross-sectional data, it is clear that people with panic disorder were more likely to have used illicit drugs than were those who had never had the disorder.

Seeking help

It has been reported that a high proportion of people with panic disorder use medical services,^{18,20,32-34} a finding supported by results from the CCHS. All CCHS respondents were asked if they had ever seen or talked on the telephone to a professional about their emotions, mental health or use of alcohol or drugs. About 70% of those with panic disorder (current or past) had consulted a medical professional (psychiatrist, family doctor, other medical doctor, or psychologist) about these concerns, compared with 18% of people who had never had panic disorder (Table 5). Almost half (48%) of the people who currently had panic disorder had had a consultation in the past year. Even after demographic and other mental and physical health characteristics were taken into account, people with panic disorder had almost six times the odds of having consulted a medical professional about their mental health compared with people without the disorder (Appendix Table C).

CCHS respondents who had experienced recurrent unexpected panic attacks were specifically asked if they had consulted a medical doctor or other professional about their attacks (data not shown). The term “professional” was used more broadly in this question to include social workers, counsellors, spiritual advisors, homeopaths, acupuncturists and self-help groups. About 73% of people with panic disorder (past or current) reported such a consultation. Women were significantly more likely than men to have sought help: 77% compared with 65%.

Table 5

Percentage of people who consulted a medical professional about emotions, mental health, or use of alcohol or drugs, by panic disorder status, household population aged 15 or older, Canada excluding territories, 2002

	Panic disorder	%
Ever seen or talked to medical professional	Current (past 12 months)	71.8*
	Past (excluding current)	69.7*
	Never [†]	18.1
Seen or talked to medical professional in past 12 months	Current (past 12 months)	48.4 [‡]
	Past (excluding current)	20.9*
	Never [†]	6.1

Date source: 2002 Canadian Community Health Survey: Mental Health and Well-being

Note: Medical professional includes psychiatrist, family doctor or general practitioner, other medical doctor such as cardiologist, gynaecologist or urologist, and psychologist.

[†] Reference category

* Significantly different from estimate for reference category ($p < 0.05$)

[‡] Significantly different from estimate for reference category and past panic disorder ($p < 0.05$)

... Not applicable

Those who had sought help for their attacks were asked if they had ever received helpful or effective treatment. Seven out of ten answered positively. However, this means that, overall, just half of the people with current or past panic disorder received effective help. Some lack of satisfaction may result if the panic attacks remain undiagnosed or are misdiagnosed. Other studies have concluded that many people with panic disorder seek help at emergency departments where their disorder remains unrecognized or misdiagnosed.³³⁻³⁷

The high proportion of people with panic disorder who seek medical help is not surprising given the physical symptoms that may accompany attacks (shortness of breath, chest pain or palpitations, for example).³⁸ Previous research has determined that those with panic disorder are likely to seek treatment in the year of onset.³⁹ The CCHS asked respondents how old they were at the time of their first panic attack and their age when they first consulted a professional about the attacks. For most of them (68%), the difference was one year or less, although some waited

Limitations

Studies of panic disorder often compare three mutually exclusive groups: people with panic disorder, those with agoraphobia, and people who have both. This was not possible using data from the Canadian Community Health Survey (CCHS), given the small sample size for each category. The high proportion of "unknown" cases in the panic disorder module contributed to the small sample. A total of 1,397 people met the criteria for lifetime panic disorder, 34,711 did not, and a further 876 respondents could not be classified. Most of the unknown cases (497) were "lost" in the 16-question/14-symptom checklist for panic attacks due to non-response (see *Annex*). A further 282 cases became "unknown" after a non-response to the question about the number of unexpected attacks a person had experienced during his or her lifetime. Of the remaining unknown cases, 64 were lost due to a non-response to the screening questions; 33 others were lost due to non-response to other questions.

For this study, two separate analyses were undertaken to evaluate the impact of omitting cases with unknown panic disorder status. In these analyses, the unknown cases were retained and were grouped separately in an "unknown" category. Then, in a "worst case scenario," all unknown cases were coded as having current panic disorder. Results were compared and for the most part the direction and significance of relationships remained unaltered. Thus while the number of unknown cases for panic disorder may lower the prevalence estimates, it should not affect associations between variables.

To meet the criteria for panic attacks and panic disorder, respondents must have reported at least 4 symptoms out of a possible 14. In the CCHS, 16 questions were used to assess the 14 symptoms. The questions, "Did you feel dizzy or faint?" and "Were you afraid that you may pass out?", both contributed to the

symptom "Feeling dizzy, faint, unsteady or light-headed." To reduce respondent burden, respondents were "skipped out" of the module once they met the criteria with 4 positive responses. However, due to a programming error in the computer-assisted interviewing application, respondents were skipped out even if their 4 responses included the 2 questions that contributed to a single symptom. These respondents then failed to meet the criteria requiring 4 symptoms. These people were coded as not having panic attacks or panic disorder (and were therefore included in the denominator). For the most part, their status as non-cases was confirmed when they failed to meet other criteria for the disorder further on in the questionnaire. However, it is possible that a small number of cases were misclassified, resulting in a possible underestimation of the prevalence of panic disorder.

In the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision*,² people are excluded from a diagnosis of panic disorder if their panic attacks are due to a general medical condition (e.g., hyperthyroidism) or are the physiological consequence of a substance (e.g., caffeine). Based on advice to Statistics Canada from clinicians, these exclusion criteria were not applied, which may have resulted in an overestimation of prevalence; therefore, the estimates may be higher than expected.

It is not uncommon for obsessive-compulsive disorder to occur with panic disorder. Because of a translation error between English and French, data for this variable were suppressed; therefore, obsessive-compulsive disorder could not be assessed or controlled for in the multivariate models.

CCHS respondents were identified as "having panic disorder" based solely on their responses to the questionnaire, and the presence or absence of the disorder was not clinically confirmed. This may have contributed to higher rates.

longer. For 17%, the gap between onset of attacks and professional help was at least 10 years.

Concluding remarks

According to the 2002 Canadian Community Health Survey on mental health and well-being, almost 1 million Canadians either had panic disorder in the year before the survey interview, or they had had the condition at some point in their lives. Symptoms usually began appearing in early adulthood—at age 25, on average.

Health care utilization was fairly common among people with panic disorder. The physical sensations of panic attacks often lead people to seek medical treatment, as they may fear a heart attack or other catastrophic illness.³¹ About 7 in 10 Canadians with panic disorder had consulted a psychiatrist, family or other doctor, or a psychologist, about their emotions or mental health. And when asked specifically about

medical consultations for their panic attacks, nearly the same proportion reported seeking such help.

The findings presented in this article highlight the complex of problems that people with panic disorder typically have. For example, they are more likely to have a chronic physical condition or another mental health disorder. They may also have problems with working, and may even be permanently unable to work. After a year or more of remission from panic disorder, however, their work status resembled that of people who had never had the condition.

Those with current or past panic disorder tended to cope with stress by withdrawing, blaming themselves, or wishing their problems would simply disappear. Negative health behaviours—drinking to cope with stress, smoking more than usual, and illicit drug use—were also fairly common among people with panic disorder. ■

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Appendix

Table A

Adjusted odds ratios relating panic disorder to not working at job or business in past 12 months, without and with controlling for physical and other mental health problems, household population aged 25 to 64, Canada excluding territories, 2002

	<i>Model 1</i>		<i>Model 2</i>	
	Controlling for socio-demographic factors [†]		Controlling for socio-demographic factors [†] and physical and other mental health problems [‡]	
	Odds ratio	95% confidence interval	Odds ratio	95% confidence interval
Panic disorder				
Current (past 12 months)	2.0*	1.5, 2.7	1.6*	1.1, 2.2
Past (excluding current)	0.9	0.7, 1.2	0.9	0.7, 1.1
Never [§]	1.0	...	1.0	...
Sex				
Men	0.3*	0.3, 0.4	0.4*	0.3, 0.4
Women [§]	1.0	...	1.0	...
Age				
	1.1*	1.1, 1.1	1.1*	1.1, 1.1
Marital status				
Married [§]	1.0	...	1.0	...
Widowed	1.6*	1.1, 2.2	1.5*	1.1, 2.1
Separated/Divorced	1.0	0.8, 1.1	0.9	0.8, 1.1
Never married	1.3*	1.2, 1.6	1.3*	1.1, 1.5
Education				
Less than secondary graduation	2.8*	2.5, 3.2	2.8*	2.4, 3.2
Secondary graduation	1.4*	1.2, 1.6	1.4*	1.2, 1.6
Some postsecondary	1.4*	1.2, 1.7	1.3*	1.1, 1.6
Postsecondary graduation [§]	1.0	...	1.0	...
Other mental health disorder(s)				
Current (past 12 months)			1.5*	1.3, 1.8
Past (excluding current)			0.9	0.8, 1.1
Never [§]			1.0	...
Chronic conditions				
Yes			1.4*	1.2, 1.5
No [§]			1.0	...

Data source: 2002 Canadian Community Health Survey: Mental Health and Well-being

Notes: The multivariate analysis is based on 23,573 persons aged 25 to 64 for Model 1 and 23,140 persons for Model 2 who provided information on all variables in the model. A "missing" category for panic disorder was included in the models to maximize sample size, but the odds ratios are not shown.

[†] Sex, age, marital status and education

[‡] At least one of 18 self-reported diagnosed chronic conditions (see Definitions); agoraphobia, social anxiety disorder, major depressive episode, and post-traumatic stress disorder (past year only)

[§] Reference category

* Significantly different from estimate for reference category ($p < 0.05$)

... Not applicable

Table B

Adjusted odds ratios relating panic disorder to being permanently unable to work, without and with controlling for physical and other mental health problems, household population aged 25 to 64, Canada excluding territories, 2002

	<i>Model 1</i>		<i>Model 2</i>	
	Controlling for socio-demographic factors [†]		Controlling for socio-demographic factors [†] and physical and other mental health problems [‡]	
	Odds ratio	95% confidence interval	Odds ratio	95% confidence interval
Panic disorder				
Current (past 12 months)	6.4*	3.9, 10.5	3.2*	1.8, 5.8
Past (excluding current)	1.1	0.7, 1.7	0.9	0.5, 1.4
Never [§]	1.0	...	1.0	...
Sex				
Men	1.1	0.9, 1.3	1.2	1.0, 1.5
Women [§]	1.0	...	1.0	...
Age				
	1.1*	1.1, 1.1	1.1*	1.1, 1.1
Marital status				
Married [§]	1.0	...	1.0	...
Widowed	1.6	1.0, 2.5	1.5	0.9, 2.4
Separated/Divorced	2.8*	2.2, 3.6	2.5*	1.9, 3.2
Never married	3.5*	2.7, 4.5	3.4*	2.6, 4.5
Education				
Less than secondary graduation	3.7*	2.9, 4.7	3.5*	2.7, 4.4
Secondary graduation	1.8*	1.3, 2.4	1.6*	1.2, 2.3
Some postsecondary	2.0*	1.3, 3.1	1.7*	1.1, 2.6
Postsecondary graduation [§]	1.0	...	1.0	...
Other mental health disorder(s)				
Current (past 12 months)			2.2*	1.6, 2.9
Past (excluding current)			1.1	0.8, 1.5
Never [§]			1.0	...
Chronic conditions				
Yes			5.3*	3.7, 7.5
No [§]			1.0	...

Data source: 2002 Canadian Community Health Survey: Mental Health and Well-being

Notes: The multivariate analysis is based on 23,440 persons aged 25 to 64 for Model 1 and 23,019 persons for Model 2 who provided information on all variables in the model. A "missing" category for panic disorder was included in the models to maximize sample size, but the odds ratios are not shown.

[†] Sex, age, marital status and education

[‡] At least one of 18 self-reported diagnosed chronic conditions (see Definitions); agoraphobia, social anxiety disorder, major depressive episode, and post-traumatic stress disorder (past year only)

[§] Reference category

* Significantly different from estimate for reference category ($p < 0.05$)

... Not applicable

Table C

Adjusted odds ratios relating panic disorder to having ever seen or talked on telephone to medical professional about emotions, mental health, or use of alcohol or drugs, without and with controlling for physical and other mental health problems, household population aged 15 or older, Canada excluding territories, 2002

	<i>Model 1</i>		<i>Model 2</i>	
	Controlling for socio-demographic factors [†]		Controlling for socio-demographic factors [†] and physical and other mental health problems [‡]	
	Odds ratio	95% confidence interval	Odds ratio	95% confidence interval
Panic disorder				
Current (past 12 months)	10.3*	7.9, 13.6	5.7*	4.2, 7.7
Past (excluding current)	10.1*	7.9, 13.0	5.9*	4.4, 7.9
Never [§]	1.0	...	1.0	...
Sex				
Men	0.5*	0.5, 0.6	0.6*	0.5, 0.7
Women [§]	1.0	...	1.0	...
Age				
	1.0	1.0, 1.0	1.0	1.0, 1.0
Marital status				
Married [§]	1.0	...	1.0	...
Widowed	0.6*	0.5, 0.8	0.7*	0.5, 0.8
Separated/Divorced	2.4*	2.1, 2.6	1.9*	1.7, 2.2
Never married	1.1	1.0, 1.3	1.1	0.9, 1.2
Household income				
Low	1.3*	1.1, 1.6	1.0	0.8, 1.3
Lower-middle	0.9	0.8, 1.1	0.8*	0.6, 1.0
Middle	0.8*	0.7, 0.9	0.7*	0.6, 0.8
Upper-middle	0.9	0.8, 1.0	0.9*	0.8, 1.0
High [§]	1.0	...	1.0	...
Other mental health disorder(s)				
Current (past 12 months)			7.4*	6.4, 8.5
Past (excluding current)			6.4*	5.7, 7.3
Never [§]			1.0	...
Chronic conditions				
Yes			1.8*	1.6, 1.9
No [§]			1.0	...

Data source: 2002 Canadian Community Health Survey: Mental Health and Well-being

Notes: Medical professional includes psychiatrist, family doctor or general practitioner, other medical doctor such as cardiologist, gynaecologist or urologist, and psychologist. The multivariate analysis is based on 36,846 persons aged 15 or older for Model 1 and 36,159 persons for Model 2 who provided information on all variables in the model. "Missing" categories for panic disorder and household income were included in the models to maximize sample size, but the odds ratios are not shown.

[†] Sex, age, marital status and household income

[‡] At least one of 18 self-reported diagnosed chronic conditions (see Definitions): agoraphobia, social anxiety disorder, major depressive episode, and post-traumatic stress disorder (past year only)

[§] Reference category

* Significantly different from estimate for reference category ($p < 0.05$)

... Not applicable

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Social anxiety disorder— beyond shyness

- *Social anxiety disorder, or social phobia, usually begins in childhood or early adolescence, and symptoms often persist for decades.*
- *The disorder is associated with lower educational attainment and reduced likelihood of employment, social isolation, functional disability, and dissatisfaction with life and health.*
- *Many people with social anxiety disorder and other mental health problems—major depressive disorder, panic disorder or substance dependency—reported that their symptoms of social anxiety appeared first.*
- *Few people with social anxiety disorder seek professional help to deal with their social/performance fears.*

Abstract

Objectives

This article presents prevalence estimates of social anxiety disorder (social phobia) among the Canadian household population aged 15 or older. The relationship between this mental disorder and others is examined. Selected aspects of functional impairment are compared for people with current, past, and no history of the condition.

Data source

Data are from the 2002 Canadian Community Health Survey: Mental Health and Well-being.

Analytical techniques

Cross-tabulations were used to estimate the prevalence of social anxiety disorder, to determine socio-economic factors associated with prevalence, and to examine relationships with other mental disorders. Associations between social anxiety disorder and selected impairment variables were examined using multivariate analysis that controlled for socio-economic factors and other aspects of mental and physical health.

Main results

In 2002, 750,000 Canadians aged 15 or older (3%) had social anxiety disorder. These people had a higher risk of having major depressive disorder, panic disorder and substance dependency than the general population. Social anxiety disorder was associated with higher rates of disability, negative perceptions of physical and mental health, and dissatisfaction with life.

Key words

age of onset, comorbidity, health status indicators, mental health, prevalence, social phobia, social support

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Most people have felt awkward or embarrassed in a social or performance situation at some point in their lives. However, people with social anxiety disorder (also known as social phobia) go through life feeling extremely uncomfortable or paralyzed in such situations because they intensely fear being scrutinized or embarrassed. So they either totally avoid social encounters, or face them with dread and endure them with intense distress.¹ Although social anxiety disorder is often dismissed as mere shyness, several studies have shown it to have a chronic and unremitting course that is characterized by considerable anxiety and impairment.²⁻⁵ The disorder has been aptly described as “crippling shyness.”⁶

It is difficult to estimate how many individuals actually have social anxiety, as most people with the condition do not seek professional treatment for their fears.^{3,6-12} Social anxiety disorder was thought to be a rare and usually mild condition

until the 1980s,¹³ when it was recognized as a separate disorder in the *Diagnostic and Statistical Manual of Mental Disorders*.¹⁴ Then in the 1990s, several epidemiological studies suggested that social anxiety disorder was associated with significant impairment and was far more prevalent than initially thought.^{3,10,13,15,16} In fact, by this time, it was considered one of the most common mental disorders.^{3,10,13,15,16} Because few people are formally treated, however, epidemiological population-based studies are really the only way to estimate the prevalence of social anxiety disorder and the burden it can impose.

This article is based on data from the 2002 Canadian Community Health Survey (CCHS) cycle 1.2: Mental Health and Well-being. The CCHS 1.2 is the first survey designed and conducted to provide comprehensive information on mental health issues at the national level. This analysis of the results of that survey presents current and lifetime prevalence rates of social anxiety disorder for the Canadian household population aged 15 or older (see *Methods, Definitions and Limitations*). The age of onset, duration of symptoms and relationships with other mental disorders are discussed. To assess the burden of social anxiety disorder, associations with social support, functional disability and quality of life are examined in multivariate models that control for other variables that may affect outcomes—socio-economic characteristics and aspects of physical and mental health. The number of people with the disorder who sought professional treatment is also explored.

Measuring social anxiety disorder

For the CCHS, social anxiety disorder was measured using the World Mental Health version of the Composite International Diagnostic Interview (WMH-CIDI), an instrument created to assess mental disorders based on definitions in the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision* (DSM-IV®-TR).¹ The CIDI was designed to measure prevalence of mental disorders at the community level, and it can be administered by lay interviewers. (The questions and algorithm used to measure social anxiety disorder in the CCHS are presented in the *Annex*. The CCHS 1.2 questionnaire is available on Statistics Canada's Web site @ www.statcan.ca.¹⁷)

Feared situations

According to the 2002 CCHS, just over 2 million Canadians aged 15 or older had a "lifetime history" of social anxiety disorder; that is, they had symptoms at some point in their lives (see *Definitions and Annex*).

This represents about 8% of the total population (Table 1). Approximately 750,000 people (3%) currently had the disorder, meaning they had symptoms in the 12 months before the survey interview.

The most commonly feared situation for people with social anxiety disorder was performing or giving a talk, but many reported facing several other situations with anxiety; for example, meeting new people, talking to authority figures, or entering a roomful of people (Chart 1). The majority with social anxiety disorder reported fearing 10 or more of the 14 social situations covered by the CCHS, and close to 95% feared 5 or more. For half of the situations, women were slightly more likely than men to report a fear.

Table 1
Lifetime and current prevalence of social anxiety disorder, by selected characteristics, household population aged 15 or older, Canada excluding territories, 2002

	Lifetime	Current (past 12 months)
	%	
Total	8.1	3.0
Sex		
Men	7.5*	2.6*
Women†	8.7	3.4
Age group		
15-24	9.4	4.7*
25-34	9.6	3.8
35-54†	9.1	3.1
55 or older	4.9*	1.3*
Marital status†		
Married/Common-law†	8.0	2.5
Widowed	7.0 ^{E1}	2.4 ^{E2}
Divorced/Separated	12.7*	5.0*
Never married	12.0*	5.0*
Education†		
Less than secondary graduation	9.1	3.9*
Secondary graduation	8.8	3.3
Some postsecondary	10.3	3.9*
Postsecondary graduation†	8.9	2.7
Household income		
Low/Lower-middle	9.8*	4.6*
Middle	7.8	3.0
Upper-middle/High†	8.2	2.8

Data source: 2002 Canadian Community Health Survey: Mental Health and Well-being

† Reference category

‡ For people aged 25 to 64

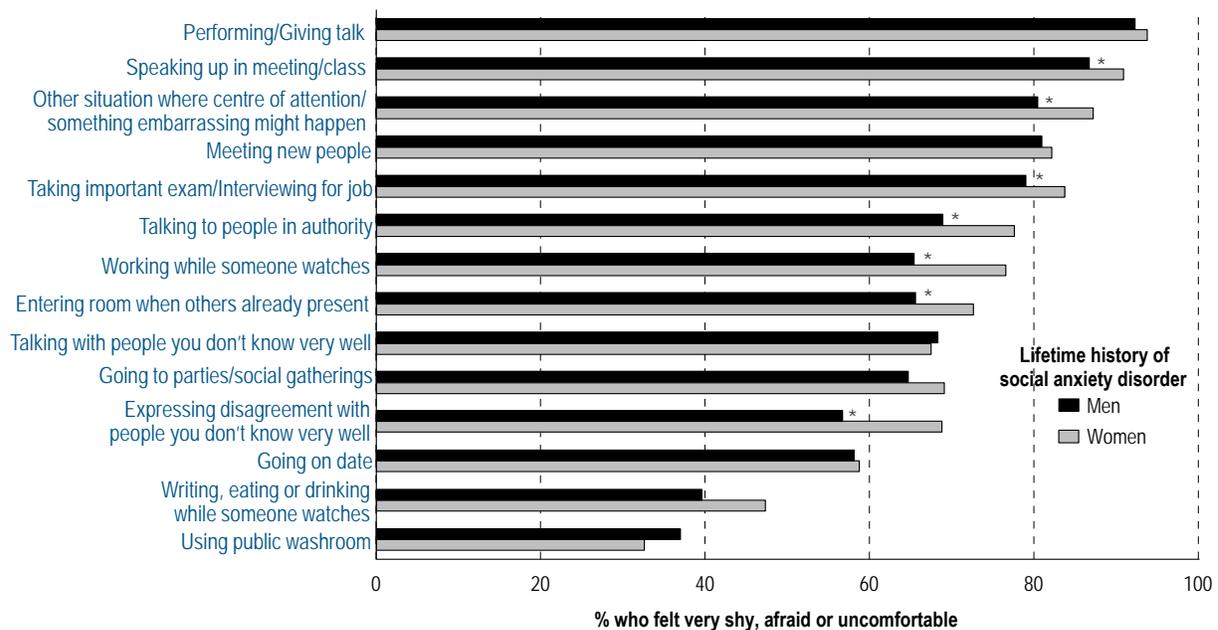
* Significantly different from estimate for reference category ($p < 0.05$)

^{E1} Coefficient of variation between 16.6% and 25.0%

^{E2} Coefficient of variation between 25.1% and 33.3%

Chart 1

Percentage of people with lifetime history of social anxiety disorder who felt very shy, afraid or uncomfortable in selected situations, by sex, household population aged 15 or older, Canada excluding territories, 2002



Data source: 2002 Canadian Community Health Survey: Mental Health and Well-being

Note: Estimate for each situation excludes cases for respondents who indicated situation did not apply.

* Significantly lower than estimate for women ($p < 0.05$)

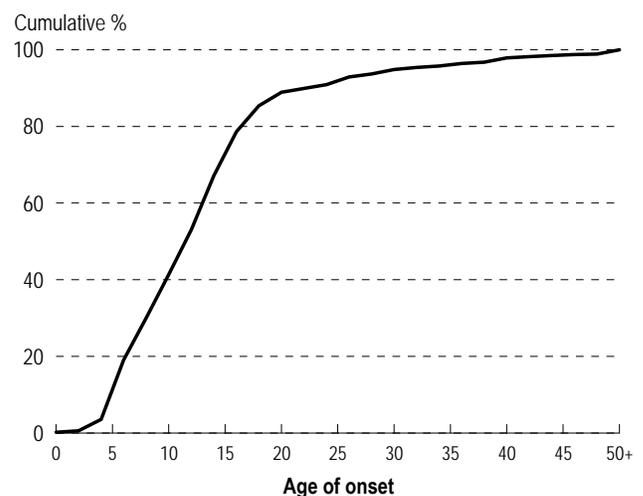
Early onset, persistent problems

A striking feature of social anxiety disorder is its early age of onset: symptoms typically begin appearing in childhood or early adolescence.^{3,6,7,10-13,18-20} CCHS respondents were asked to report the age at which they first strongly feared or avoided social or performance situations. Among those with a lifetime history of social anxiety disorder, the average age of onset was 13; only 15% reported that symptoms began after age 18 (Chart 2). By contrast, the first symptoms of two other common disorders—panic disorder and depression—were evident much later, at ages 25 and 28, respectively (data not shown).

Along with its early onset, social anxiety disorder can be a long-lasting problem. Many studies have found that symptoms persist for years, often for two decades or longer.^{3,5,12,13,21} Among CCHS respondents with a lifetime history of the disorder, the average duration of symptoms was 20 years. This underestimates the true duration of the disorder, though, because many were still suffering from it at the time of the survey.

Chart 2

Cumulative incidence of social anxiety disorder, by age of onset, household population aged 15 or older with lifetime history of social anxiety disorder, Canada excluding territories, 2002



Data source: 2002 Canadian Community Health Survey: Mental Health and Well-being

Methods

Data source

This analysis is based on data from the 2002 Canadian Community Health Survey (CCHS) cycle 1.2: Mental Health and Well-being, which began in May 2002 and was conducted over eight months. The CCHS 1.2 covers people aged 15 or older living in private dwellings in the 10 provinces. Residents of institutions, Indian reserves and certain remote areas, the three territories, as well as full-time members of the Canadian Armed Forces, were excluded.

The CCHS 1.2 sample was selected using the area frame designed for the Canadian Labour Force Survey. A multi-stage stratified cluster design was used to sample dwellings within this area frame. One person aged 15 or older was randomly selected from the sampled households. Individual respondents were selected to over-represent young people (15 to 24) and seniors (65 or older), thus ensuring adequate sample sizes for these age groups. More detailed descriptions of the design, sample and interview procedures can be found in other reports and on Statistics Canada's Web site.^{17,22}

All interviews were conducted using a computer-assisted application. Most (86%) were conducted in person; the remainder, by telephone. Selected respondents were required to provide their own information as proxy responses were not accepted. The responding sample comprised 36,984 persons aged 15 or older, with a response rate of 77%.

Analytical techniques

Cross-tabulations were used to estimate the prevalence of and the characteristics associated with social anxiety disorder in the household population aged 15 or older. All estimates were based

on the CCHS 1.2. From the overall sample of 36,984 respondents, 1,189 were classified as having current social anxiety disorder (symptoms in the past 12 months), 1,723 as previously having had the disorder (lifetime but not past 12 months), and 33,691, no history. (See *Annex* for complete definition of social anxiety disorder.) Some respondents (381) could not be classified because they did not answer enough questions to allow an assessment. These respondents were excluded when estimating prevalence rates.

Cross-tabulations were also used to examine the extent to which social anxiety disorder is associated with also having major depressive disorder, panic disorder, and substance dependency.

Multivariate logistic regression models were used to assess associations between social anxiety disorder and selected impairment variables: low levels of social support, activity limitations, disability days, negative perceptions of physical and mental health, and dissatisfaction with life. Two sets of models were used. Socio-economic variables were introduced as control variables in the first set. These variables were retained for the second set, and several health problems were added to examine comorbidity—major depressive disorder, panic disorder, substance dependency and number of physical chronic conditions—to see if the associations weakened, remained the same, or disappeared (Table 4, Appendix Tables B through D).

All estimates and analyses were based on weighted data that reflect the age and sex distribution of the household population aged 15 or older in the 10 provinces in 2002. To account for survey design effects, standard errors and coefficients of variation were estimated with the bootstrap technique.²⁶⁻²⁸

More common among women

In 2002, women were more likely than men to have social anxiety disorder—both lifetime and current (Table 1). The ratio of the rates of women to men was 1.2 for lifetime social anxiety disorder and 1.3 for current (past 12 months). This is consistent with other community and clinical studies, which have generally found rates for women to be higher.^{7,10,13,16,19,20,23,24}

Young people aged 15 to 24 were more likely to have current social anxiety disorder (4.7%) than the middle-aged (3.1%), while individuals aged 55 or older were less likely (1.3%), a pattern evident in other countries.^{7,10,23,25} The CCHS lifetime rates were similar among those aged 15 to 54, after which they dropped off noticeably. It has been suggested that this may

result from a cohort effect; that is, people born in the more distant past were less likely to develop social anxiety disorder than recent cohorts.^{6,10} It is difficult to substantiate this theory, though, because prevalence information for previous decades is lacking. It is also possible that people with social anxiety disorder die at younger ages, or that the elderly may not recall symptoms of the disorder.¹⁰

Marital status a factor

The 2002 prevalence of social anxiety disorder was higher among people who had never married or who were divorced or separated (both 5.0%), compared with individuals who were married (2.5%) (Table 1). Such relationships with marital status have been found

in other studies,^{3,6,7,10,12,13,20,23} and it is believed that the early onset of social anxiety disorder hinders the development of social skills, making marriage, or a successful marriage, less likely.

It is also thought that failure to acquire social skills early in life hampers educational success,^{3,6,7,10,12,13,20,25} a finding supported by the CCHS. Individuals who had not completed their secondary or postsecondary education were more likely to have social anxiety disorder than were postsecondary graduates. Among postsecondary students, this may relate to fears surrounding a move away from home and/or to another school, then dropping out of school after having to face a new social environment.^{6,7}

Lower income, higher prevalence

According to the 2002 CCHS, social anxiety disorder was more prevalent among individuals living in lower, versus higher, income households (Table 1). Furthermore, people who reported symptoms of social anxiety disorder in the past 12 months were less likely to have jobs, and those who did have jobs had lower personal incomes (Table 2). This may partly result from the lower educational levels for people with social anxiety disorder, as well as difficulties remaining in a job that demands a fair amount of social interaction.^{7,29} People with social anxiety disorder were also more likely to be financially dependent. In 2002, 10% of those who had current symptoms lived in households reporting income from social assistance or welfare in the past 12 months, compared with 4% for people with no history of the disorder (data not shown). These CCHS findings regarding financial dependence are consistent with those of other studies.^{4,7,13,30}

Table 2
Job status and workers' average personal income, by history of social anxiety disorder, household population aged 25 to 54, Canada excluding territories, 2002

	History of social anxiety disorder		
	Current (past 12 months)	Lifetime excluding current	Never
Currently working at job/business (%)	72*	84	84
Average personal income for current workers (\$)	36,000*	40,000	43,000

Data source: 2002 Canadian Community Health Survey: Mental Health and Well-being

* Significantly different from estimate for "never" ($p < 0.05$)

Higher likelihood of other disorders

Substantial evidence indicates that social anxiety disorder is associated with increased risk of other anxiety, mood, and substance abuse disorders.^{3,12,15,23,31,32} Moreover, some studies have found that social anxiety disorder is associated with the severity and persistence of these other mental conditions.^{3,12,15,32}

People with current social anxiety disorder were over six times as likely as the general population to have major depressive disorder (Table 3). They were over five times as likely to have panic disorder and three times as likely to suffer from substance dependence. As well, individuals with a lifetime history of social anxiety disorder who no longer had symptoms remained at increased risk of having these other disorders. The relationship between social anxiety disorder and these three conditions persisted when examined in multivariate models that controlled for socio-economic factors (Appendix Table A).

It is thought that social anxiety disorder is more likely to be related to depression for women and to substance abuse for men.^{3,5} When the CCHS multivariate models were rerun testing for an interaction between sex and history of social anxiety disorder, the only significant interaction was for depression (data not shown), which was contrary to expectations. Compared with women, men with current social anxiety disorder had a higher risk of also suffering from depression (Chart 3). However, among those who had never had the disorder or who had had it in the past, depression was more prevalent among women.

Table 3
Other mental health problems, by history of social anxiety disorder, household population aged 15 or older, Canada excluding territories, 2002

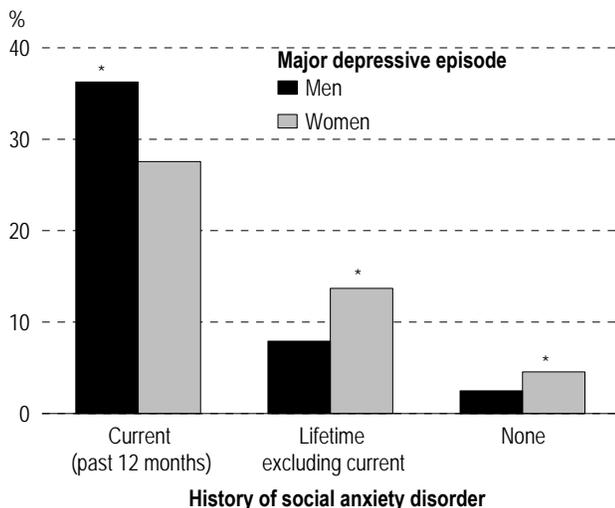
	Major depressive disorder	Panic disorder	Substance dependence
	% with disorder in past 12 months		
Overall	5	2	3
History of social anxiety disorder			
Current (past 12 months)	31 [†]	11 [†]	9 [†]
Lifetime excluding current	11 [†]	4 [†]	6 [†]
Never	4 [‡]	1 [‡]	3 [‡]

Data source: 2002 Canadian Community Health Survey: Mental Health and Well-being

[†] Significantly higher than overall estimate ($p < 0.05$)

[‡] Significantly lower than overall estimate ($p < 0.05$)

Chart 3
Percentage of people reporting major depressive episode in past 12 months, by history of social anxiety disorder and sex, population aged 15 or older, Canada excluding territories, 2002



Data source: 2002 Canadian Community Health Survey: Mental Health and Well-being
 * Significantly higher than estimate for opposite sex ($p < 0.05$)

Often precedes other disorders

An examination of CCHS data reveals that social anxiety disorder often precedes other mental disorders, as found in many other studies.^{7,10,12,15,18,20,21,23,25,31,32} In 2002, among CCHS respondents with a lifetime history of social anxiety disorder and major depressive disorder, the symptoms of social anxiety occurred first in about 7 of 10 cases (69%). Respondents reported the same age of onset for both disorders in 13% of cases.

When individuals had lifetime histories of social anxiety disorder and panic disorder, social anxiety was evident at a younger age for 59%, and the age of onset was the same for both panic and social anxiety approximately one-quarter of the time.

Other studies have found that social anxiety disorder often develops before substance abuse,^{4,7,10,18,30,33,34} but information on the lifetime history of substance abuse is not available in the CCHS.

Although it has not been studied extensively, an association between social anxiety disorder and physical illness has been found.^{13,25} CCHS respondents with current social anxiety disorder reported an average of 1.5 physical chronic conditions, significantly higher than the average number reported for those with a past history (1.2), which in turn was significantly higher than the average for those with no history (1.1).

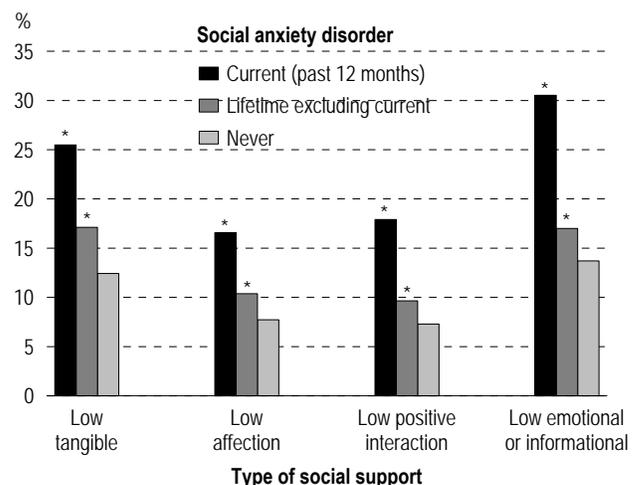
Previous studies have found that social anxiety disorder is associated with social isolation,^{2,7,8,12,16} disability,^{6,8,10-12,24,30,35} and reduced quality of life.^{5,6,12,13,20,24,35} CCHS data provide further evidence of these associations.

Lack of social support

Four types of social support were measured in the CCHS: tangible support, affection, positive social interaction, and emotional or informational support (see *Definitions*). Tangible support is the most concrete type, and involves having someone to provide help when you need it; for example, if you are confined to bed or need someone to take you to the doctor, prepare meals, or help with daily chores. Affection is having someone who shows you love and affection, gives you hugs, or loves you and makes you feel wanted. Having someone to relax or have a good time with, or who helps get your mind off things, provides positive social interaction. Emotional or informational support comes from people who understand you and your problems, who can give you advice, and share your worries and fears.

Based on CCHS data, people with social anxiety disorder lack adequate social support. Compared with individuals with no history of the disorder, those who currently had it were over twice as likely to have low levels of each type of support (Chart 4). Although the situation was somewhat better for people who no

Chart 4
Percentage of people with low social support, by type of support and history of social anxiety disorder, household population aged 15 or older, Canada excluding territories, 2002



Data source: 2002 Canadian Community Health Survey: Mental Health and Well-being
 * Significantly higher than estimate for "never" ($p < 0.05$)

longer had symptoms, they were still more likely to have low social support, compared with those who had no history of the disorder. Clinical studies have found that people with social anxiety disorder actually want social contact, but their fear of interacting prevents this from happening and leads to social isolation.^{2,31,36} The early age of onset makes it particularly difficult to establish and maintain meaningful relationships.

Limitations, disability more likely

Compared with people with no history of the disorder, those with current social anxiety disorder were over twice as likely to report an activity limitation (Chart 5). This means that they were limited in what they could do at home, school or work or in leisure time because of a long-term physical or mental condition or health problem. They were also over two times as likely to report at least one disability day over the past two weeks; that is, they had spent at least one day in bed, or had cut down on their usual activities because of illness or injury.

Differences in disability days due to mental or emotional health problems or use of alcohol or drugs were even more pronounced. People with current social anxiety disorder were over 10 times more likely to report at least one disability day in the past two

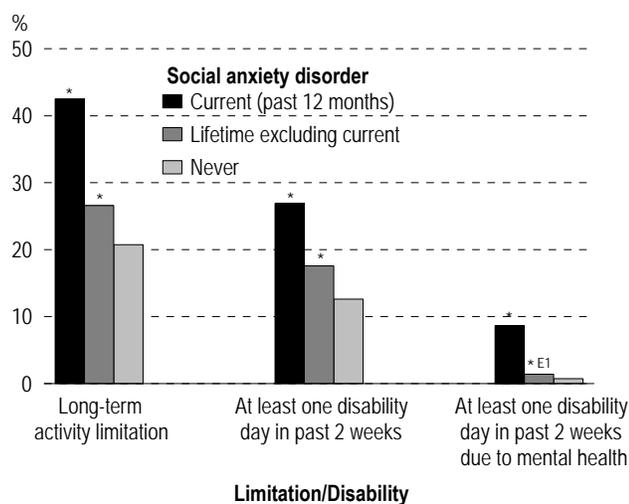
weeks due to mental health, compared with those with no history of the disorder. Individuals who previously had social anxiety disorder were more likely to report long-term activity limitations and disability days in the past two weeks, compared with those with no history of the disorder, although their impairment rates were substantially below those of people who currently had the disorder.

Dissatisfaction with life and health

People with social anxiety disorder tended to have a lower quality of life, as indicated by their rather negative perceptions of their own health and their dissatisfaction with life (Chart 6). Close to 30% of people who currently had social anxiety disorder rated their physical health as fair or poor, compared with 17% of those who previously had the disorder, and 13% of those with no history of it. More than a third of people (37%) with current social anxiety disorder rated their mental health as fair or poor, compared with 16% who previously had the disorder and 5% with no history of the condition.

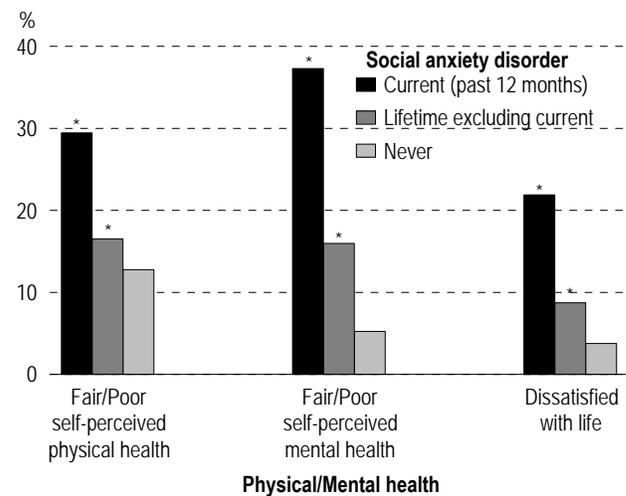
Dissatisfaction with life in general was also related to social anxiety disorder. More than 20% of people with current symptoms indicated that they felt dissatisfied, compared with 9% of people with a past history and 4% of those with no history.

Chart 5
Long-term activity limitation and two-week disability, by history of social anxiety disorder, household population aged 15 or older, Canada excluding territories, 2002



Data source: 2002 Canadian Community Health Survey: Mental Health and Well-being
 * Significantly higher than estimate for "never" ($p < 0.05$)
 E1 Coefficient of variation between 16.6% and 25.0%

Chart 6
Self-reported physical and mental health, by history of social anxiety disorder, household population aged 15 or older, Canada excluding territories, 2002



Data source: 2002 Canadian Community Health Survey: Mental Health and Well-being
 * Significantly higher than estimate for "never" ($p < 0.05$)

Definitions

Canadian Community Health Survey (CCHS) respondents who experienced the following were considered to have a *lifetime history of social anxiety disorder*:

- a marked and persistent fear of one or more social or performance situations that require exposure to unfamiliar people or possible scrutiny, and fear of acting in a way (or showing anxiety symptoms) that will be humiliating or embarrassing
- exposure to the feared social situations provokes anxiety, possibly a panic attack
- recognition that the fear is excessive or unreasonable
- the feared social/performance situations are either avoided or endured with intense anxiety or distress
- the avoidance, anxious anticipation, or distress in the feared social/performance situations interferes noticeably with normal routine or social or occupational functioning
- for people younger than 18, at least six months' duration of symptoms

The CCHS considered respondents who met all of the above criteria for a lifetime history and who also experienced a 12-month episode and marked impairment in occupational or social functioning in the past 12 months to have *current social anxiety disorder*. See the *Annex* for the questions and algorithms used by the CCHS to measure *social anxiety disorder*, as well as *major depressive disorder*, *panic disorder* and *substance dependence (illicit drug or alcohol)*.

Age of onset was assessed by asking respondents how old they were the first time they had a fear of or started avoiding social situations.

Duration of symptoms was calculated by subtracting age of onset from the age that symptoms last occurred (or current age for those who still had the disorder).

Four *age groups* were established for this analysis: 15 to 24, 25 to 34, 35 to 54, and 55 or older. The 35-to-54 group was used as the reference category to highlight the age gradient for social anxiety disorder.

Marital status was categorized as: married or common-law; widowed; divorced or separated; and never married.

Respondents were grouped into four *education* categories based on the highest level attained: less than secondary graduation, secondary graduation, some postsecondary, and postsecondary graduation.

Household income was based on the number of people in the household and total household income from all sources in the 12 months before the 2002 interview.

Household income group	People in household	Total household income
Low	1 to 4	Less than \$10,000
	5 or more	Less than \$15,000
Lower-middle	1 or 2	\$10,000 to \$14,999
	3 or 4	\$10,000 to \$19,999
	5 or more	\$15,000 to \$29,999
Middle	1 or 2	\$15,000 to \$29,999
	3 or 4	\$20,000 to \$39,999
	5 or more	\$30,000 to \$59,999
Upper-middle	1 or 2	\$30,000 to \$59,999
	3 or 4	\$40,000 to \$79,999
	5 or more	\$60,000 to \$79,999
High	1 or 2	\$60,000 or more
	3 or more	\$80,000 or more

Respondents were classified as *currently working at a job or business* if they worked in the week before the interview or had a job or business from which they were absent.

To measure *social support*, respondents were asked: "How often is each of the following kinds of social support available to you if you need it? Someone:

1. to help you if you were confined to bed?"
2. you can count on to listen when you need to talk?"
3. to give you advice about a crisis?"
4. to take you to the doctor if you needed it?"
5. who shows you love and affection?"
6. to have a good time with?"
7. to give you information in order to help you understand a situation?"
8. to confide in or talk to about yourself or your problems?"
9. who hugs you?"
10. to get together with for relaxation?"
11. to prepare your meals if you were unable to do it yourself?"
12. whose advice you really want?"
13. to do things with to help you get your mind off things?"
14. to help with daily chores if you were sick?"
15. to share your most private worries and fears with?"
16. to turn to for suggestions about how to deal with a personal problem?"
17. to do something enjoyable with?"
18. who understands your problems?"
19. to love you and make you feel wanted?"

For each item, respondents were asked to indicate if such support was available "none of the time," "a little of the time," "some or the time," "most of the time" or "all of the time." Based on these questions, four types of social support were measured: *tangible support* (items 1, 4, 11 and 14), *affection* (items 5, 9 and 19), *positive social*

Definitions—concluded

interaction (items 6, 10, 13 and 17) and *emotional or informational support* (items 2, 3, 7, 8, 12, 15, 16 and 18).³⁷ For each type, a respondent was classified as having low social support if the answer was “none of the time” or “a little of the time” for at least one of the items measuring the dimension.

Long-term activity limitation due to a long-term physical or mental condition or health problem was based on a response of “often” or “sometimes” to any of the following: “Does a long-term physical or mental condition or health problem reduce the amount or kind of activity you can do: at home? at school? at work? in other activities?”

Number of disability days was measured in terms of bed-days and “cut-down” days over the past two weeks. Respondents were asked about days they stayed in bed because of illness or injury (including nights in hospital) and about days they had cut down on normal activities because of illness or injury. *Two-week disability due to mental health* was measured by asking this follow-up question: “Was that due to your emotional or mental health or your use of alcohol or drugs?”

Self-perceived physical health was measured by asking, “In general, would you say your physical health is: excellent? very good? good? fair? poor?” A similar same question was used to measure *self-perceived mental health*.

Dissatisfaction with life was based on the question, “How satisfied are you with your life in general: very satisfied? satisfied? neither satisfied nor dissatisfied? dissatisfied? very dissatisfied?” The last two categories were used to classify respondents as being dissatisfied with life.

To measure *physical chronic conditions*, individuals were asked about conditions that had lasted or were expected to last six months or longer that had been diagnosed by a health care professional. Interviewers read a list of conditions. In total, 18 physical chronic conditions were considered in this analysis: asthma, fibromyalgia, arthritis or rheumatism, back problems, high blood pressure, migraine, chronic bronchitis, emphysema, diabetes, epilepsy, heart disease, cancer, ulcers, the effects of a stroke, bowel disorder, thyroid disorder, chronic fatigue syndrome, and multiple chemical sensitivities.

For respondents with social anxiety disorder, *professional treatment* was defined as consulting a medical doctor or other professional about their social fears. Respondents were told that “other professional” includes psychologists, psychiatrists, social workers, counsellors, spiritual advisors, homeopaths, acupuncturists and self-help groups.

Measuring the burden

The relationships between social anxiety disorder and social support, disability, perceptions of physical and mental health, and satisfaction with life persisted when potentially confounding effects of socio-economic characteristics (sex, age, marital status, education and income) were taken into account (Table 4). When measures of major depressive disorder, panic disorder, substance dependency and other physical chronic conditions were introduced, the strength of the relationships did diminish, but in most cases, the associations remained statistically significant (Table 4, Appendix Tables B through D).

The appropriateness of controlling for other conditions and disorders when attempting to measure the burden of social anxiety disorder has been debated. Because the disorder often occurs in conjunction with other mental disorders, failure to control for them may limit assessments of the association between social anxiety disorder and

impairment.⁶ However, if there is a causal relationship between social anxiety disorder and other mental disorders, the impact should be included (not controlled for) when assessing the total burden of the disease.¹³ In most cases, social anxiety disorder develops before other mental disorders, although a cause-and-effect relationship has not been established.^{7,10} Nonetheless, some researchers have hypothesized that causal pathways may exist. For example, many people with social anxiety disorder use alcohol or drugs to help them cope, and this may lead to abuse or dependence.^{7,19,30,33,38} In addition, the isolation associated with social anxiety disorder and failure to achieve education and employment goals may increase the risk of depression.^{7,18,32,39}

The findings based on CCHS data are particularly relevant because, even when other mental and physical health problems are taken into account, the odds for all 10 outcome variables were elevated among people with current social anxiety disorder.

Table 4

Adjusted odds ratios relating social anxiety disorder to selected outcomes, without and with controlling for other aspects of mental and physical health, household population aged 15 or older, Canada excluding territories, 2002

Outcome	Social anxiety disorder	Controlling for sex, age group, marital status, education and household income		Controlling for sex, age group, marital status, education, household income and major depressive disorder, panic disorder, substance dependence and chronic physical conditions	
		Odds ratio	95% confidence interval	Odds ratio	95% confidence interval
Low tangible support	Current (past 12 months)	2.3*	1.9, 2.8	1.8*	1.4, 2.2
	Lifetime excluding current	1.5*	1.2, 1.7	1.3*	1.1, 1.6
	Never [†]	1.0	...	1.0	...
Low affection	Current (past 12 months)	2.2*	1.8, 2.8	1.7*	1.4, 2.2
	Lifetime excluding current	1.4*	1.1, 1.9	1.3	1.0, 1.7
	Never [†]	1.0	...	1.0	...
Low positive social interaction	Current (past 12 months)	2.9*	2.3, 3.5	2.1*	1.7, 2.7
	Lifetime excluding current	1.4*	1.1, 1.8	1.3	1.0, 1.7
	Never [†]	1.0	...	1.0	...
Low emotional or informational support	Current (past 12 months)	2.8*	2.3, 3.4	2.1*	1.7, 2.6
	Lifetime excluding current	1.3*	1.1, 1.6	1.2	0.9, 1.4
	Never [†]	1.0	...	1.0	...
Long-term activity limitation	Current (past 12 months)	3.6*	3.0, 4.3	2.2*	1.7, 2.8
	Lifetime excluding current	1.6*	1.4, 1.9	1.3*	1.1, 1.5
	Never [†]	1.0	...	1.0	...
At least one disability day in past 2 weeks	Current (past 12 months)	2.4*	2.0, 2.8	1.4*	1.1, 1.7
	Lifetime excluding current	1.5*	1.2, 1.7	1.2*	1.0, 1.4
	Never [†]	1.0	...	1.0	...
At least one mental health disability day in past 2 weeks	Current (past 12 months)	9.9*	7.2, 13.5	3.5*	2.5, 5.0
	Lifetime excluding current	1.8*	1.1, 2.9	1.1	0.6, 1.9
	Never [†]	1.0	...	1.0	...
Fair/Poor self-perceived physical health	Current (past 12 months)	3.4*	2.8, 4.3	1.8*	1.4, 2.4
	Lifetime excluding current	1.6*	1.3, 1.9	1.2*	1.0, 1.5
	Never [†]	1.0	...	1.0	...
Fair/Poor self-perceived mental health	Current (past 12 months)	10.7*	8.8, 12.9	5.4*	4.4, 6.7
	Lifetime excluding current	3.5*	2.9, 4.4	2.6*	2.0, 3.3
	Never [†]	1.0	...	1.0	...
Dissatisfied with life	Current (past 12 months)	6.6*	5.3, 8.3	3.3*	2.5, 4.4
	Lifetime excluding current	2.4*	1.9, 3.1	1.8*	1.4, 2.3
	Never [†]	1.0	...	1.0	...

Date source: 2002 Canadian Community Health Survey: Mental Health and Well-being

Note: Presents results of 20 separate regression models; complete results for the second set of models can be found in Appendix Tables B through D.

[†] Reference category

* $p < 0.05$

... Not applicable

Limitations

Although previous versions of the Composite International Diagnostic Interview (CIDI) have been validated, the World Mental Health version used in the Canadian Community Health Survey (CCHS): Mental Health and Well-being has not yet been validated. Therefore, it is not known to what extent clinical assessments made by health care professionals would agree with assessments based on CCHS data.

According to the definitions stipulated in the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision* (DSM®-IV-TR),¹ one of the criteria required for a diagnosis of social anxiety disorder is that the fear or avoidance of social situations “is not due to the direct physiological effects of a substance (e.g., a drug of abuse, a medication) or a general medical condition and is not better accounted for by another mental disorder.” It was felt that this information could not be accurately reported by respondents based on questions posed by lay interviewers, so this criterion was not used in assessing social anxiety disorder in the CCHS, which may have inflated prevalence estimates. This also may have altered associations between social anxiety disorder and other variables.

Age of onset of social anxiety disorder, duration of symptoms and the temporal ordering of social anxiety disorder relative to other mental disorders was assessed using retrospective data provided by survey respondents. The extent to which recall problems may have reduced the accuracy of this information is unknown.

Non-response is of particular concern in a survey designed to measure a condition such as social anxiety disorder. Fear of social situations may cause people with the disorder to refuse to answer the door and spend time speaking to someone they do not know. The overall response rate to the CCHS 1.2 was 77%. Although the

application of survey weights ensures that estimates represent the total population, little is known about the characteristics of non-respondents, and certain segments of the population may be underrepresented. It is possible that people who did not respond may have been more likely to have social anxiety disorder, leading to a downward bias in survey estimates. There were 381 people (approximately 1%) who did respond to the CCHS, but who had a “not stated” value for social anxiety disorder because they did not answer enough questions to permit an assessment. All but 5 of them answered the question on self-perceived mental health and 22% indicated they had fair or poor mental health. This is substantially higher than the rate of 7% for respondents for whom it was possible to assign social anxiety disorder status. This probably resulted in a further downward bias in prevalence estimates, but the bias is not likely to be large because of the small number of records involved (only 1% of responding records).

The associations observed between social anxiety disorder and activity limitations, disability, reduced perceptions of physical and mental health, low social support, and dissatisfaction with life are all based on cross-sectional findings; therefore, the results must be interpreted with caution. A causal link between social anxiety disorder and these outcome variables has not been established, nor was the ordering of events. It is possible that these problems existed before social anxiety symptoms developed.

Two types of formal treatment are available to people with social anxiety disorder: pharmacotherapy (medication) and psychotherapy (psychological counselling). The CCHS did not ask specific questions about treatment for social anxiety disorder.

Majority do not seek treatment

People with a lifetime history of social anxiety disorder were asked if they had ever seen or talked on the telephone to a doctor, psychologist, psychiatrist, social worker or other professional about their fear or avoidance of social situations (see *Definitions and Limitations*). The majority had not. Only 37% reported that they had sought professional treatment (Table 5), far below the rates for major depressive disorder (71%) or panic disorder (72%) (data not shown). Just 27% of individuals with current social anxiety disorder (reported having symptoms in the past 12 months) had received professional help in the past year. Those who did seek treatment often waited years before doing so. Among CCHS respondents with a lifetime

history of social anxiety disorder, help was sought, on average, 14 years after the age of onset. These low treatment rates are consistent with findings from other studies.^{3,6,7,12,35,40}

Failure to seek treatment may be directly related to the nature of the disorder. Because of their extreme social fears, people may be reluctant or embarrassed to discuss their symptoms with a health care professional;^{6,8,31,41} in fact, the effort of contacting and meeting such a professional face-to-face may be extremely difficult for someone with social anxiety disorder. As well, such individuals often attribute their intense fears to shyness. Because they are not aware that they have a recognized mental disorder, they do not consider professional help.^{6,7,19,41}

Table 5

Professional treatment for social anxiety disorder, by presence of other mental health condition, household population aged 15 or older, Canada excluding territories, 2002

	Total	Other mental health condition	
		Yes	No
Lifetime history of social anxiety disorder			
Ever sought professional treatment for fear/avoidance of social situations (%)	37	51 [†]	25 [†]
Received helpful/effective treatment (%) [§]	69	73 [†]	64 [†]
Average number of years before seeking help (from age of onset) [§]	14	13	14
12-month history of social anxiety disorder			
Received professional treatment for fear/avoidance of social situations in past 12 months (%)	27	43 [†]	16 [†]

Data source: 2002 Canadian Community Health Survey: Mental Health and Well-being

Notes: "Professional" includes medical doctors, psychologists, psychiatrists, social workers, counsellors, spiritual advisors, homeopaths, acupuncturists and self-help groups. For lifetime estimates, other conditions include panic disorder and major depressive disorder; for the 12-month rates, panic disorder, major depressive disorder and substance dependency are included.

[†] Significantly higher than estimate for total

[‡] Significantly lower than estimate for total

[§] Based on those who sought help

CCHS results, like those of other studies,^{3,6,7,42} indicate that seeking treatment for social anxiety disorder was far more likely if the person had another mental disorder. Among individuals with a lifetime history of both social anxiety and another mental disorder, 51% had sought professional treatment for their social fears—more than twice the rate for those with social anxiety alone (25%). The gap was even broader among those who reported symptoms in the past 12 months: 43% of people with social anxiety disorder and another disorder reported receiving professional treatment in the past year versus 16% of individuals with social anxiety disorder on its own.

The low treatment rates for social anxiety disorder and the length of time people wait before seeking treatment are troublesome given that, in many cases, the disorder can be treated successfully. In fact, among CCHS respondents who did have professional help, the majority (69%) felt that their treatment was helpful and effective.

Concluding remarks

Social anxiety disorder has been described as an "illness of lost opportunities."¹¹ Results from the 2002 Canadian Community Health Survey: Mental Health and Well-being provide further evidence supporting this description. The disorder often begins in childhood

or early adolescence: the self-reported average age of onset established using the CCHS data is 13. And symptoms persist—an average of two decades among CCHS respondents with a lifetime history of the condition.

This study of national data found that social anxiety disorder is related to lower educational attainment, reduced employment opportunities, low income and dependence on welfare or social assistance, decreased likelihood of marriage or of having a successful marriage, and social isolation. It is also associated with higher rates of disability, rather negative perceptions of physical and mental health, and dissatisfaction with life.

Although effective treatment is available, most people with social anxiety disorder do not seek professional help to deal with their fears. The effort and commitment required to start and maintain a formal treatment program can be extremely challenging for patients with social anxiety disorder,¹⁹ and if that can be overcome, finding a trained professional may be difficult.^{11,19,43} However, other studies suggest that early intervention and treatment may not only allow people with this disorder to realize their full potential, but it may also even prevent subsequent mental disorders.^{3,6,20} ■

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Appendix

Table A

Adjusted odds ratios relating social anxiety disorder and selected characteristics to major depressive disorder, panic disorder and substance dependence in past 12 months, household population aged 15 or older, Canada excluding territories, 2002

	Major depressive disorder		Panic disorder		Substance dependence	
	Odds ratio	95% confidence interval	Odds ratio	95% confidence interval	Odds ratio	95% confidence interval
Social anxiety disorder						
Current (past 12 months)	10.5*	8.4, 13.1	9.4*	6.9, 12.6	3.0*	2.3, 4.1
Lifetime, excluding current	3.2*	2.5, 3.9	3.1*	2.2, 4.5	2.0*	1.5, 2.7
Never†	1.0	...	1.0	...	1.0	...
Sex						
Men	0.7*	0.6, 0.8	0.6*	0.4, 0.7	2.9*	2.4, 3.4
Women†	1.0	...	1.0	...	1.0	...
Age group						
15-24	0.9	0.7, 1.1	0.8	0.6, 1.2	2.6*	2.0, 3.5
25-34	1.0	0.8, 1.2	1.0	0.7, 1.3	1.9*	1.5, 2.4
35-54†	1.0	...	1.0	...	1.0	...
55+	0.6*	0.5, 0.7	0.6*	0.4, 0.8	0.3*	0.2, 0.5
Marital status						
Married/Common-law†	1.0	...	1.0	...	1.0	...
Widowed	1.6*	1.1, 2.3	0.6	0.3, 1.2	0.8	0.3, 1.9
Divorced/Separated	2.7*	2.2, 3.3	1.7*	1.2, 2.4	2.6*	1.9, 3.5
Never married	1.7*	1.4, 2.2	1.3	1.0, 1.8	2.2*	1.7, 2.8
Education						
Less than secondary graduation	0.9	0.7, 1.1	1.1	0.8, 1.5	1.3	1.0, 1.6
Secondary graduation	1.0	0.8, 1.2	1.5*	1.1, 2.1	1.6*	1.3, 2.0
Some postsecondary	1.0	0.8, 1.3	1.4	1.0, 2.0	1.8*	1.3, 2.4
Postsecondary graduation†	1.0	...	1.0	...	1.0	...
Household income						
Low/Lower-middle	1.7*	1.4, 2.1	2.1*	1.5, 2.9	1.5*	1.1, 2.0
Middle	1.2*	1.0, 1.4	1.4*	1.0, 1.9	0.8	0.6, 1.1
Upper middle/High†	1.0	...	1.0	...	1.0	...
Model information						
Sample size	36,212		35,603		36,116	
Sample with other mental disorder/problem	1,869		600		1,191	
Records dropped because of missing values	772		1,381		868	

Date source: 2002 Canadian Community Health Survey: Mental Health and Well-being

Notes: A "missing" category for household income was included in the models to maximize sample size, but the respective odds ratios are not shown. All models are based on weighted data.

† Reference category

* $p < 0.05$

... Not applicable

Table B

Adjusted odds ratios relating social anxiety disorder and selected characteristics to low levels of social support, household population aged 15 or older, Canada excluding territories, 2002

	Low tangible support		Low affection		Low positive social interaction		Low emotional or informational support	
	Odds ratio	95% confidence interval	Odds ratio	95% confidence interval	Odds ratio	95% confidence interval	Odds ratio	95% confidence interval
Social anxiety disorder								
Current (past 12 months)	1.8*	1.4, 2.2	1.7*	1.4, 2.2	2.1*	1.7, 2.7	2.1*	1.7, 2.6
Lifetime excluding current	1.3*	1.1, 1.6	1.3	1.0, 1.7	1.3	1.0, 1.7	1.2	0.9, 1.4
Never†	1.0	...	1.0	...	1.0	...	1.0	...
Sex								
Men	0.9	0.8, 1.0	1.8*	1.5, 2.0	1.3*	1.1, 1.5	1.6*	1.4, 1.7
Women†	1.0	...	1.0	...	1.0	...	1.0	...
Age group								
15-24	0.3*	0.3, 0.4	0.3*	0.2, 0.3	0.3*	0.2, 0.3	0.4*	0.3, 0.5
25-34	0.7*	0.6, 0.8	0.8*	0.6, 0.9	0.7*	0.6, 0.9	0.7*	0.6, 0.8
35-54†	1.0	...	1.0	...	1.0	...	1.0	...
55 or older	1.0	0.9, 1.2	1.3*	1.1, 1.5	1.1	0.9, 1.3	1.2*	1.0, 1.3
Marital status								
Married/Common-law†	1.0	...	1.0	...	1.0	...	1.0	...
Widowed	2.6*	2.2, 3.1	5.0*	4.0, 6.3	2.5*	2.1, 3.1	1.9*	1.6, 2.2
Divorced/Separated	3.2*	2.8, 3.7	5.9*	5.0, 7.1	2.6*	2.2, 3.1	2.4*	2.0, 2.7
Never married	3.3*	2.9, 3.7	8.5*	7.2, 10.1	3.0*	2.5, 3.5	2.5*	2.2, 2.8
Education								
Less than secondary graduation	0.8*	0.7, 0.9	1.3*	1.1, 1.5	1.3*	1.1, 1.5	1.2*	1.1, 1.4
Secondary graduation	1.0	0.9, 1.1	1.2*	1.0, 1.4	1.2	1.0, 1.4	1.2*	1.0, 1.3
Some postsecondary	1.0	0.8, 1.2	1.2	0.9, 1.4	1.0	0.8, 1.3	1.1	1.0, 1.4
Postsecondary graduation†	1.0	...	1.0	...	1.0	...	1.0	...
Household income								
Low/Lower-middle	2.1*	1.8, 2.4	2.2*	1.9, 2.6	2.4*	2.0, 2.8	1.8*	1.6, 2.1
Middle	1.5*	1.3, 1.7	1.6*	1.4, 1.9	1.9*	1.6, 2.2	1.5*	1.3, 1.7
Upper middle/High†	1.0	...	1.0	...	1.0	...	1.0	...
Major depressive disorder/Panic disorder/ Substance dependency								
Past 12 months	1.7*	1.5, 2.0	1.8*	1.5, 2.1	1.9*	1.6, 2.3	1.9*	1.7, 2.2
Lifetime, excluding past 12 months	1.1	1.0, 1.3	1.1	0.9, 1.3	1.1	0.9, 1.4	1.2*	1.0, 1.5
Never†	1.0	...	1.0	...	1.0	...	1.0	...
Number of chronic physical conditions								
	1.1*	1.0, 1.1	1.1*	1.0, 1.1	1.1*	1.1, 1.1	1.1*	1.1, 1.2
Model information								
Sample size	34,509		34,510		34,519		34,435	
Sample with low social support	5,556		3,424		3,130		5,401	
Records dropped because of missing values	2,475		2,474		2,465		2,549	

Date source: 2002 Canadian Community Health Survey

Notes: A "missing" category for household income was included in the models to maximize sample size, but the respective odds ratios are not shown. All models are based on weighted data.

† Reference category

* $p < 0.05$

... Not applicable

Table C

Adjusted odds ratios relating social anxiety disorder and selected characteristics to long-term activity limitation and two-week disability, household population aged 15 or older, Canada excluding territories, 2002

	Long-term activity limitation		At least one disability day in past two weeks		At least one disability day in past two weeks due to mental health	
	Odds ratio	95% confidence interval	Odds ratio	95% confidence interval	Odds ratio	95% confidence interval
Social anxiety disorder						
Current (past 12 months)	2.2*	1.7, 2.8	1.4*	1.1, 1.7	3.5*	2.5, 5.0
Lifetime excluding current	1.3*	1.1, 1.5	1.2*	1.0, 1.4	1.1	0.6, 1.9
Never [†]	1.0	...	1.0	...	1.0	...
Sex						
Men	1.1*	1.0, 1.2	0.8*	0.8, 0.9	0.8	0.6, 1.0
Women [†]	1.0	...	1.0	...	1.0	...
Age group						
15-24	0.7*	0.6, 0.8	1.4*	1.2, 1.7	0.8	0.5, 1.3
25-34	0.7*	0.6, 0.8	1.3*	1.1, 1.5	1.1	0.7, 1.7
35-54 [†]	1.0	...	1.0	...	1.0	...
55 or older	1.4*	1.2, 1.5	0.7*	0.6, 0.8	0.5*	0.3, 0.7
Marital status						
Married/Common-law [†]	1.0	...	1.0	...	1.0	...
Widowed	1.4*	1.2, 1.6	1.1	0.9, 1.3	1.0	0.5, 1.8
Divorced/Separated	1.0	0.9, 1.1	1.1	0.9, 1.3	1.5*	1.0, 2.1
Never married	1.2*	1.1, 1.4	1.1	1.0, 1.3	1.7*	1.2, 2.5
Education						
Less than secondary graduation	1.1	1.0, 1.2	0.9	0.8, 1.1	1.4*	1.0, 2.0
Secondary graduation	0.9	0.8, 1.1	1.0	0.8, 1.1	1.3	0.9, 1.9
Some postsecondary	1.1	1.0, 1.3	1.1	0.9, 1.3	1.2	0.7, 1.9
Postsecondary graduation [†]	1.0	...	1.0	...	1.0	...
Household income						
Low/Lower-middle	1.3*	1.2, 1.5	1.0	0.9, 1.2	1.2	0.9, 1.8
Middle	1.1*	1.0, 1.2	0.9	0.8, 1.0	1.3	0.9, 1.9
Upper middle/High [†]	1.0	...	1.0	...	1.0	...
Major depressive disorder/Panic disorder/ Substance dependency						
Past 12 months	2.1*	1.8, 2.4	2.0*	1.8, 2.3	8.4*	6.1, 11.7
Lifetime excluding past 12 months	1.2*	1.0, 1.4	1.3*	1.1, 1.5	0.9	0.5, 1.7
Never [†]	1.0	...	1.0	...	1.0	...
Number of chronic physical conditions						
	1.9*	1.9, 2.0	1.5*	1.4, 1.5	1.3*	1.2, 1.4
Model information						
Sample size	35,129		35,083		35,077	
Sample with activity limitation/disability	8,677		5,020		438	
Records dropped because of missing values	1,855		1,901		1,907	

Date source: 2002 Canadian Community Health Survey: Mental Health and Well-being

Notes: A "missing" category for household income was included in the models to maximize sample size, but the respective odds ratios are not shown. All models are based on weighted data.

[†] Reference category

* $p < 0.05$

... Not applicable

Table D

Adjusted odds ratios relating social anxiety disorder and selected characteristics to self-perceived physical and mental health, household population aged 15 or older, Canada excluding territories, 2002

	Fair/Poor self-perceived physical health		Fair/poor self-perceived mental health		Dissatisfaction with life	
	Odds ratio	95% confidence interval	Odds ratio	95% confidence interval	Odds ratio	95% confidence interval
Social anxiety disorder						
Current (past 12 months)	1.8*	1.4, 2.4	5.4*	4.4, 6.7	3.3*	2.5, 4.4
Lifetime excluding current	1.2*	1.0, 1.5	2.6*	2.0, 3.3	1.8*	1.4, 2.3
Never†	1.0	...	1.0	...	1.0	...
Sex						
Men	1.2*	1.1, 1.3	1.0	0.9, 1.1	1.2*	1.0, 1.4
Women†	1.0	...	1.0	...	1.0	...
Age group						
15-24	0.9	0.8, 1.1	0.6*	0.5, 0.7	0.4*	0.3, 0.5
25-34	1.0	0.8, 1.2	0.9	0.7, 1.0	0.9	0.7, 1.1
35-54†	1.0	...	1.0	...	1.0	...
55 or older	1.3*	1.2, 1.5	0.7*	0.6, 0.8	0.7*	0.6, 0.9
Marital status						
Married/Common-law†	1.0	...	1.0	...	1.0	...
Widowed	1.0	0.8, 1.1	1.2	0.9, 1.5	1.2	0.9, 1.6
Divorced/Separated	1.3*	1.1, 1.5	1.9*	1.5, 2.3	2.5*	2.1, 3.1
Never married	1.1	0.9, 1.3	1.4*	1.2, 1.7	2.1*	1.7, 2.5
Education						
Less than secondary graduation	1.6*	1.5, 1.9	1.5*	1.2, 1.7	1.1	0.9, 1.3
Secondary graduation	1.3*	1.1, 1.4	1.2	1.0, 1.4	1.0	0.8, 1.3
Some postsecondary	1.2*	1.0, 1.4	1.1	0.9, 1.4	1.2	0.9, 1.6
Postsecondary graduation†	1.0	...	1.0	...	1.0	...
Household income						
Low/Lower-middle	2.1*	1.7, 2.4	1.8*	1.5, 2.2	2.1*	1.7, 2.5
Middle	1.5*	1.3, 1.7	1.4*	1.2, 1.7	1.7*	1.4, 2.0
Upper middle/High†	1.0	...	1.0	...	1.0	...
Major depressive disorder/Panic disorder/ Substance dependency						
Past 12 months	2.4*	2.0, 2.8	6.3*	5.3, 7.4	4.5*	3.7, 5.5
Lifetime excluding past 12 months	1.3*	1.1, 1.5	1.7*	1.4, 2.1	1.3	1.0, 1.6
Never†	1.0	...	1.0	...	1.0	...
Number of chronic physical conditions						
	1.8*	1.8, 1.9	1.4*	1.3, 1.4	1.3*	1.2, 1.4
Model information						
Sample size	35,149		35,137		35,135	
Sample with fair/poor health/dissatisfaction with life	5,494		2,720		1,890	
Records dropped because of missing values	1,835		1,847		1,849	

Date source: 2002 Canadian Community Health Survey: Mental Health and Well-being

Notes: A "missing" category for household income was included in the models to maximize sample size, but the respective odds ratios are not shown. All models are based on weighted data.

† Reference category

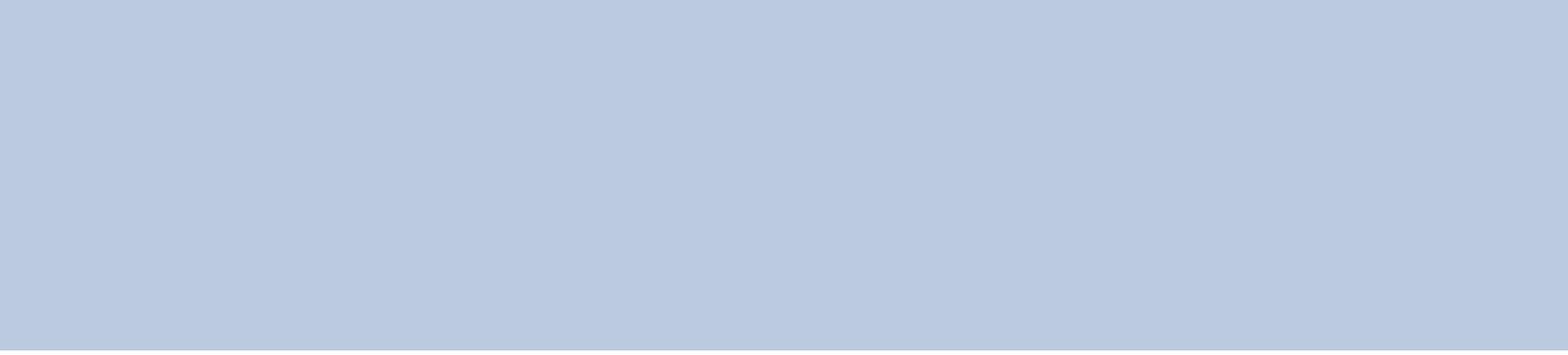
* $p < 0.05$

... Not applicable

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Annex



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Definitions of mental disorders in the Canadian Community Health Survey: Mental Health and Well-being

The Canadian Community Health Survey (CCHS) cycle 1.2: Mental Health and Well-being was conducted in the 10 provinces in 2002. The survey used the World Mental Health version of the Composite International Diagnostic Interview (WMH-CIDI) to estimate the prevalence of various mental disorders in the Canadian household population aged 15 or older. The WMH-CIDI was designed to be administered by lay interviewers and is generally based on diagnostic criteria outlined in the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision* (DSM-IV®-TR).¹ Based on the advice of experts in the field of mental health, the WMH-CIDI and the algorithms used to identify mental disorders were revised over a period of time. The questionnaire used for the CCHS is available at www.statcan.ca/English/concepts/health/cycle1.2/index.htm. This Annex provides the details of the specific algorithms used to define mental disorders for the CCHS.

For some disorders, a set of screening questions was asked to determine if it would be appropriate to ask the respondent the more detailed questions designed to assess a particular disorder. This was done to reduce the number of questions posed to respondents without mental disorders. In some cases, these screening questions were also used in the algorithm to categorize respondents as having a disorder.

Alcohol dependence

Alcohol dependence, past 12 months

Alcohol dependence was determined using a *short-form measure* containing a series of questions measuring seven different symptoms. CCHS respondents who had *five or more drinks during one occasion at least once a month during the past 12 months* were asked the following seven questions to determine how their drinking affected everyday activities:

“During the past 12 months:

- have you ever been drunk or hung-over while at work, school or while taking care of children?”
- were you ever in a situation while drunk or hung-over which increased your chances of getting hurt? (for example, driving a boat, using guns, crossing against traffic, or during sports)?”
- have you had any emotional or psychological problems because of alcohol use, such as feeling uninterested in things, depressed or suspicious of people?”

- have you had such a strong desire or urge to drink alcohol that you could not resist it or could not think of anything else?”
- have you had a period of a month or more when you spent a great deal of time getting drunk or being hung-over?”
- did you ever drink much more or for a longer period of time than you intended?”
- did you ever find that you had to drink more alcohol than usual to get the same effect or that the same amount of alcohol had less effect on you than usual?”

This short-form was developed to reproduce a measure that operationalized both Criteria A and B of the DSM-III-R diagnosis for psychoactive substance use disorder.² Respondents who reported three or more symptoms were considered to have **alcohol dependence**.³

Bipolar I disorder

Screening questions:

Respondents were “screened in” before they were asked detailed questions about **bipolar I disorder**. To be screened in, the following responses were required:

YES to: Question 1

“Some people have periods lasting several days or longer when they feel much more excited and full of energy than usual. Their minds go too fast. They talk a lot. They are very restless or unable to sit still and they sometimes do things that are unusual for them. For example, they may drive too fast or spend too much money. During your life, have you ever had a period like this lasting several days or longer?”

OR

YES to: Question 2

“Have you ever had a period lasting several days or longer when most of the time you were very irritable, grumpy or in a bad mood?”

AND

Question 3

“Have you ever had a period lasting several days or longer when most of the time you were so irritable that you either started arguments, shouted at people or hit people?”

Respondents who answered “yes” to Question 1 or “yes” to Questions 2 and 3 were asked the more detailed questions in the “mania” section of the questionnaire.

Manic episode, lifetime history

Criterion 1, lifetime

To meet the criteria for **lifetime manic episode**, respondents must have had: (1A) a distinct period of abnormally and persistently elevated, expansive or irritable mood lasting at least one week; (1B) three or more of seven symptoms (or four or more if mood is irritable only) present during the mood disturbance; and (1C) marked impairment in normal daily activities, occupational functioning or usual social activities or relationships with others (1Ci), or mood disturbance

including psychotic features (1Cii), or mood disturbance serious enough to require hospitalization (1Ciii).

1A

Respondents who answered “yes” to Screening Question 1 were asked:

“Earlier you mentioned having a period lasting several days or longer when you felt much more excited and full of energy than usual. During this same period, your mind also went too fast. People who have periods like this often have changes in their thinking and behaviour at the same time, like being more talkative, needing very little sleep, being very restless, going on buying sprees, and behaving in ways they would normally think are inappropriate. Tell me, did you ever have any of these changes during the period when you were excited and full of energy?”

Respondents who answered “no” were not asked any more questions in the mania section, regardless of their response to Screening Questions 2 and 3.

Those who said “no” to Screening Question 1, but “yes” to Screening Questions 2 and 3 were asked:

“Earlier you mentioned having a period lasting several days or longer when you became so irritable or grouchy that you either started arguments, shouted at people or hit people. People who have periods of irritability like this often have changes in their thinking and behaviour at the same time, like being more talkative, needing very little sleep, being very restless, going on buying sprees, and behaving in ways they would normally think are inappropriate. Tell me, did you ever have any of these changes during the periods when you were very irritable or grouchy?”

Respondents who answered “no” were not asked any more questions in the mania section.

For both questions in 1A, duration of at least one week was established by asking: “How long did that episode last (in terms of hours, days, weeks, months or years)?”

1B

At least three of the following seven symptoms were required to meet this criterion (or at least four of seven if mood was irritable/grouchy only):

1. *Inflated self-esteem or sense of grandiosity*
 - “Did you have a greatly exaggerated sense of self-confidence or believe that you could do things that you really couldn’t do?”

or

 - “Did you have the idea that you were actually someone else, or that you had a special connection with a famous person that you really didn’t have?”
2. *Decreased need for sleep*
 - “Did you sleep far less than usual and still not get tired or sleepy?”
3. *More talkative than usual or pressure to keep talking*
 - “Did you talk a lot more than usual or feel a need to keep talking all the time?”
4. *Flight of ideas or subjective experience that thoughts are racing*
 - “Did your thoughts seem to jump from one thing to another or race through your head so fast that you couldn’t keep track of them?”
5. *Distractibility*
 - “Did you constantly keep changing your plans or activities?”

or

 - “Were you so easily distracted that any little interruption could get your thinking ‘off track’?”
6. *Increase in goal-oriented activity or psychomotor agitation*
 - “Did you become so restless or fidgety that you paced up and down or couldn’t stand still?”
 - “Did you become overly friendly or outgoing with people?”
 - “Were you a lot more interested in sex than usual, or did you want to have

sexual encounters with people you wouldn’t ordinarily be interested in?”

- “Did you try to do things that were impossible to do, like taking on large amounts of work?”

7. *Excessive involvement in pleasurable activities that have a high potential for painful consequences*

- “Did you get involved in foolish investments or schemes for making money?”

or

- “Did you spend so much more money than usual that it caused you to have financial trouble?”

or

- “Were you interested in seeking pleasure in ways that you would usually consider risky, like having casual or unsafe sex, going on buying sprees or driving recklessly?”

1C

There were three ways to meet this sub-criterion: 1Ci, 1Cii or 1Ciii.

1Ci: *To be considered as having marked impairment in normal activities, occupational functioning or usual social activities or relationships with others, respondents had to meet one of the following:*

- “You just mentioned that you had an episode/ episodes when you were very excited and full of energy/irritable or grouchy . . . How much did that episode/these episodes ever interfere with either your work, your social life or your personal relationships?”

Respondents who answered “not at all,” or “a little” were asked no further questions in the mania section. Those who replied with “a lot” or “extremely” were considered to meet this criterion.

or

- “During that episode/these episodes, how often were you unable to carry out your normal daily activities?”

Response categories were: “often,” “sometimes,” “rarely” and “never”; responses of “often” or “sometimes” met this criterion.

or

- A high level of interference with activities (a score between 7 and 10):
 - “How much did your episode interfere with your home responsibilities, like cleaning, shopping and taking care of the house or apartment?”
 - “How much did your episode interfere with your ability to attend school?”
 - “How much did it interfere with your ability to work at a job?”
 - “Again thinking about that period of time lasting one month or longer when your episode(s) was/were most severe, how much did it/they interfere with your ability to form and maintain close relationships with other people?”
 - “How much did it/they interfere with your social life?”

Scores had to fall in the 7-to-10 range, scored on an 11-point scale, with 0 representing “no interference” and 10, “very severe interference.”

or

Respondents who gave a number between 5 and 365 in response to, “In the past 12 months, about how many days out of 365 were you totally unable to work or carry out your normal activities because of your episode(s) of being very excited and full of energy/irritable or grouchy?” were considered to have marked impairment in occupational functioning.

or

A response of “yes” to: “Did you ever in your life see, or talk on the telephone to, a medical doctor or other professional about your episode(s) of being very excited and full of energy/irritable or grouchy? (By other professional, we mean psychologists, psychiatrists, social workers, counsellors, spiritual advisors, homeopaths, acupuncturists, self-help groups or other health professionals.)

1Cii: *A “yes” response to: “Did you have the idea that you were actually someone else, or that you had a special connection with a famous person that you really didn’t have?” established a psychotic feature.*

1Ciii: *To establish mood disturbance severe enough to require hospitalization, an answer of “yes” to “Were you ever hospitalized overnight for your episode(s) of being very excited and full of energy/irritable or grouchy?”*

Illicit drug dependence

Illicit drug dependence, past 12 months

The CCHS 1.2 asked about use of the following illicit drugs: cannabis, cocaine, speed (amphetamines), ecstasy (MDMA) or other similar drugs, hallucinogens, heroin, and sniffing solvents such as gasoline or glue. Follow-up questions measuring symptoms of dependence were posed to respondents who had used such illicit drugs at least monthly in the past year.

Individuals were considered to have an **illicit drug dependence** if they experienced at least three symptoms related to aspects of tolerance, withdrawal, loss of control and social or physical problems related to their illicit drug use in the past 12 months. Six symptoms were measured:

1. *Tolerance, meaning a need for markedly increased amounts of the drug to achieve intoxication or desired effect or by markedly diminished effect with continued use of the same amount of drug.*
 - “During the past 12 months, did you ever need to use more drugs than usual in order to get high, or did you ever find that you could no longer get high on the amount you usually took?”
2. *Withdrawal manifested by withdrawal syndrome or by taking the same (or a closely related) substance to relieve or avoid withdrawal symptoms.*

Interviewers read the following:

- “People who cut down their substance use or stop using drugs altogether may not feel well if they have been using steadily for some time. These feelings are more intense and can last longer than the usual hangover.”

Then respondents were asked:

- “During the past 12 months, did you ever have times when you stopped, cut down or went without drugs and then experienced symptoms like fatigue, headaches, diarrhea, the shakes or emotional problems?”

or

- “During the past 12 months, did you ever have times when you used drugs to keep from having such symptoms?”

3. *The drug is often taken in larger amounts or over a longer period than was intended, or drugs are used even though respondent promised not to use them.*

- “During the past 12 months, did you ever have times when you used drugs even though you promised yourself you wouldn’t, or times when you used a lot more drugs than you intended?”

and

- “During the past 12 months, were there ever times when you used drugs more frequently, or for more days in a row than you intended?”

4. *A great deal of time is spent obtaining the drug (for example, visiting multiple doctors or driving long distances), using the drug, or recovering from its effects.*

- “During the past 12 months, did you ever have periods of several days or more when you spent so much time using drugs or recovering from the effects of using drugs that you had little time for anything else?”

5. *Important social, occupational, or recreational activities are given up because of drug use.*

- “During the past 12 months, did you ever have periods of a month or longer when you gave up or greatly reduced important activities because of your use of drugs?”

6. *Drug use continues despite recognizing a persistent or recurrent physical or psychological problem likely caused or exacerbated by the drug.*

- “During the past 12 months, did you ever continue to use drugs when you knew you had a serious physical or emotional problem that might have been caused by or made worse by your use?”

Major depressive disorder

Screening questions:

Respondents were “screened in” to (or out of) the module on **major depressive disorder** based on their replies to the following three questions. At least one “yes” response was required:

Yes to: Question 1

“Have you ever in your life had a period lasting several days or longer when most of the day you felt sad, empty or depressed?”

OR

Question 2

“Have you ever had a period lasting several days or longer when most of the day you were very discouraged about how things were going in your life?”

OR

Question 3

“Have you ever had a period lasting several days or longer when you lost interest in most things you usually enjoy, like work, hobbies and personal relationships.”

CCHS respondents were accepted for the module as soon as they answered “yes” to a question in this series.

Major depressive disorder, lifetime history

Criterion 1, lifetime

To meet this criterion, respondents must have had the following symptoms during the same two-week period: depressed mood or loss of interest or pleasure in most things usually enjoyed (1A) and five of nine additional symptoms associated with depression that represented a change from previous functioning (1B).

1A

Note: The questions asked in this section depended on how the screening questions were answered.

At least one “yes” to the following series of questions:

1. “Earlier, you mentioned having periods that lasted several days or longer when you lost interest in most things like work, hobbies or other things you usually enjoy. Did you ever have such a period that lasted for most of the day, nearly every day, for two weeks or longer?”

2. “Did you ever have a period of being sad or discouraged that lasted for most of the day, nearly every day, for two weeks or longer?”
3. “Did you feel sad, empty or depressed most of the day, nearly every day, during that period of two weeks?”
4. “Nearly every day, did you feel so sad that nothing could cheer you up?”
5. “During that period of two weeks, did you feel discouraged most of the day, nearly every day, about how things were going in your life?”
6. “Did you feel hopeless about the future nearly every day?”
7. “During that period of two weeks, did you lose interest in almost all things like work, hobbies and things you like to do for fun?”
8. “Did you feel like nothing was fun even when good things were happening?”

1B

Five of nine symptoms were required to meet this criterion:

1. Depressed mood

- “Did you feel sad, empty or depressed most of the day, nearly every day, during that period of two weeks?”
- “Nearly every day, did you feel so sad that nothing could cheer you up?”
- “During that period of two weeks, did you feel discouraged most of the day, nearly every day, about how things were going in your life?”
- “Did you feel hopeless about the future nearly every day?”

2. Diminished interest/pleasure in most activities

- “During that period of two weeks, did you lose interest in almost all things like work, hobbies and things you like to do for fun?”
- “Did you feel like nothing was fun even when good things were happening?”

3. *Significant weight loss/gain or change in appetite*

- “During that period of two weeks, did you, nearly every day, have a *much smaller* appetite than usual?”
- “Did you have a *much larger* appetite than usual nearly every day?”
- “During that period of two weeks, did you gain weight without trying to?”
- “Was this weight gain due to a physical growth or a pregnancy?”
- “Did you *lose* weight without trying to?”
- “Was this weight loss a result of a diet or a physical illness?”
- “How much did you lose?”

4. *Insomnia/Hypersomnia*

- “During that period of two weeks, did you have a lot more trouble than usual either falling asleep, staying asleep or waking up too early *nearly every night*?”
- “During that period of two weeks, did you sleep a lot more than usual *nearly every night*?”

5. *Psychomotor agitation/retardation*

- “Did you talk or move more slowly than is normal for you nearly every day?”
- “Did anyone else notice that you were talking or moving slowly?”
- “Were you so restless or jittery nearly every day that you paced up and down or couldn’t sit still?”
- “Did anyone else notice that you were restless?”

6. *Fatigue/Loss of energy*

- “During that period of two weeks, did you feel tired or low in energy nearly every day, even when you had not been working very hard?”

7. *Feelings of worthlessness*

- “Did you feel totally worthless nearly every day?”

8. *Diminished ability to think/concentrate*

- “During that period of two weeks, did your thoughts come much more slowly than usual or seem mixed up nearly every day?”

- “Nearly every day, did you have a lot more trouble concentrating than is normal for you?”
- “Were you unable to make up your mind about things you ordinarily have no trouble deciding about?”

9. *Recurrent thoughts of death*

- “During that period, did you ever think that it would be better if you were dead?”
- “Three experiences are listed, EXPERIENCE A, B and C. Think of the period of *two weeks or longer* [when your feelings of being sad or discouraged or when you lost interest in most things you usually enjoy] and other problems were most severe and frequent. During that time, did Experience A happen to you? (You seriously thought about committing suicide or taking your own life.) Now, look at the second experience on the list, Experience B. Did Experience B happen to you? (You made a plan for committing suicide.) Now, look at the third experience on the list, Experience C. During that period of *two weeks or longer*, did Experience C happen to you? (You attempted suicide or tried to take your own life.)”

Criterion 2, lifetime

Respondents were asked four questions to establish that their lifetime depressive symptoms caused clinically significant distress. This criterion was fulfilled by meeting one of these four items (2A or 2B or 2C or 2D).

2A

A response of “moderate,” “severe” or “very severe” to: “During those periods, how severe was your emotional distress?”

2B

A response of “often” or “sometimes” to: “During those periods, how often was your emotional distress so severe that nothing could cheer you up?”

2C

A response of “often” or “sometimes” to: “During those periods, how often was your emotional distress so severe that you could not carry out your daily activities?”

2D

A “yes” to: “Nearly every day, did you feel so sad that nothing could cheer you up?”

Criterion 3, lifetime

To meet this final criterion, the lifetime depressive episodes were *not* always accounted for by bereavement (i.e., preceded by the death of someone close), as established by a “no” response to 3A or 3B.

3A

A “no” to: “Did your episodes of feeling sad or discouraged ever occur just after someone close to you died?”

3B

A “no” to: “Did your episodes of feeling a loss of interest in most things you usually enjoy always occur just after someone close to you died?”

Major depressive disorder, Current (past 12 months)

The following three criteria were used to assess **current major depressive episode**; that is, whether the respondent had had symptoms in the 12 months before the CCHS interview. All three had to be met for a respondent to be categorized as having a major depressive episode in the past year.

Criterion 1, current

The respondent had to meet the criteria for a lifetime history of major depressive disorder.

Criterion 2, current

A report of a major depressive episode within the past 12 months was required.

Criterion 3, current

This criterion assessed clinically significant distress or impairment in social, occupational or other important areas of functioning. Respondents were asked to think about a period *during the past 12 months* when their feelings of being sad or discouraged or losing interest in things usually enjoyed were *most severe and frequent*. They were then asked a series of questions:

“During this period [two weeks or longer], how often:

- did you feel cheerful?”
- did you feel as if you were slowed down?”
- could you enjoy a good book or radio or TV program?”

Response options: often, sometimes, occasionally, never; at least one response of “occasionally” or “never” required.

“During this period [two weeks or longer], how often:

- did you still enjoy the things you used to enjoy?”
- could you laugh and see the bright side of things?”
- did you take interest in your physical appearance?”
- did you look forward to enjoying things?”

Response options: as much as usual, not quite as much as usual, only a little, not at all; at least one response of “only a little” or “not at all” required.

“Please tell me what number best describes how much these feelings interfered with each of the following activities [period of one month or longer]:

- your home responsibilities, like cleaning, shopping and taking care of the house or apartment?”
- your ability to attend school?”
- your ability to work at a job?”
- your ability to form and maintain *close* relationships with other people?”
- your social life?”

Responses: 0 = no interference; 10 = very severe interference. A score in the 4-to-10 range was required.

“How many days out of 365 were you totally unable to work or carry out your normal activities because of your feelings?”

Response: Any number between 0 and 365; a reply between 5 and 365 required.

“During the past 12 months, did you receive professional treatment for your feelings?”

Response: A “yes” response was required.

Panic disorder

Screening questions:

CCHS respondents were either “screened in” to (or out of) the **panic disorder** module of the questionnaire based on their replies to the following two questions:

YES to: “During your life, have you ever had an attack of fear or panic when all of a sudden you felt very frightened, anxious or uneasy?”

OR

“Have you ever had an attack when all of a sudden, you became very uncomfortable, you either became short of breath, dizzy, nauseous or your heart pounded, or you thought that you might lose control, die or go crazy?”

These questions established the presence of **panic attacks**; that is, whether respondents had ever experienced a discrete period of intense fear or discomfort. Those who answered “yes” to one of them were then asked the more detailed questions in the panic disorder module about the symptoms they experienced during their attacks of fear or panic.

1. Heart pounding/racing

- “Did your heart pound or race?”

2. Shortness of breath

- “Were you short of breath?”

3. Nauseous/Abdominal distress

- “Did you feel nauseous or sick to your stomach?”

4. Dizzy, unsteady, light-headed or faint

- “Did you feel dizzy or faint?”
- “Were you afraid that you might pass out?”

5. Sweating

- “Did you sweat?”

6. Trembling/Shaking

- “Did you tremble or shake?”

7. Dry mouth

- “Did you have a dry mouth?”

8. Feeling of choking

- “Did you feel like you were choking?”

9. Chest pain/discomfort

- “Did you have pain or discomfort in your chest?”

10. Fear of losing control/going crazy

- “Were you afraid that you might lose control of yourself or go crazy?”

11. Derealization/Depersonalization

- “Did you feel that you were ‘not really there’, like you were watching a movie of yourself?”
- “Did you feel that things around you were not real or like a dream?”

12. Fear of dying

- “Were you afraid that you might die?”

13. Hot flushes/Chills

- “Did you have hot flushes or chills?”

14. Numbness/Tingling sensations

- “Did you feel numbness or have tingling sensations?”

Respondents who had at least four “yes” responses and four symptoms were then asked if the symptoms they identified began suddenly and reached their peak within 10 minutes after the attack(s) began. If they said “yes,” they were considered to meet the criteria for **lifetime panic attacks**.

Panic disorder, lifetime history

Respondents who were screened in and met the more detailed criteria for lifetime panic attacks were further assessed to determine if they met the following two criteria, establishing a **lifetime history of panic disorder**.

Criterion 1

To meet this criterion, a respondent must have had at least four recurrent and unexpected panic attacks. Respondents who had stated that their attacks began suddenly and peaked within 10 minutes (criterion 3

for panic attacks) were asked how many of these sudden attacks they had had in their “entire lifetime.” Those who had had at least four were then asked if they ever had “an attack that occurred unexpectedly, ‘out of the blue’.” If they said “yes,” they were asked about the number of such attacks.

Criterion 2

Respondents were asked a series of questions about worrying, behaviour changes, and physical associations related to attacks. Either 1A or 1B was required to meet this criterion for lifetime panic disorder.

1A

At least one “yes” response when asked if, after one of these attacks, “you ever had any of the following experiences”:

- “A *month or more* when you often worried that you might have another attack?”
- “A *month or more* when you worried that something terrible might happen because of the attacks, like having a car accident, having a heart attack, or losing control?”
- “A *month or more* when you changed your everyday activities because of the attacks?”
- “A *month or more* when you avoided certain situations because of fear about having another attack?”

1B

A “yes” response to: “In the *past 12 months*, did you get upset by any physical sensations that reminded you of your attacks?”

and

A response of “all of the time” or “most of the time” to: “In the *past 12 months*, how often did you avoid situations or activities that might cause these physical sensations?”

Panic disorder, current (past 12 months)

The following three criteria were used to assess ***current panic disorder***; that is, whether the respondent had had symptoms in the 12 months before the CCHS interview. All three had to be met for a respondent to be categorized as having panic disorder in the past year.

Criterion 1

The respondent had to meet the criteria for a lifetime history of panic disorder.

Criterion 2

Respondents who said they had had a sudden and unexpected panic attack that peaked within 10 minutes “at any time in the *past 12 months*”

or

who said their age at the time of their first or most recent panic attack was the same as their age at the time of the interview met this criterion.

Criterion 3

For this criterion, respondents were asked to think about an attack during the past 12 months and define the level of emotional distress they experienced. Responses of “moderate,” “severe” or “so severe that you were unable to concentrate and had to stop what you were doing” met this third criterion.

Social anxiety disorder

Screening questions:

Respondents were “screened in” to (or out of) the **social anxiety disorder** module of the CCHS based on their replies to the following five “yes”/“no” questions:

YES to: Question 1

“Was there ever a time in your life when you felt very afraid or *really, really* shy with people; for example, meeting new people, going to parties, going on a date or using a public bathroom?”

OR

Question 2

“Was there *ever* a time in your life when you felt very afraid or uncomfortable when you had to do something in front of a group of people, like giving a speech or speaking in class?”

AND

YES to: Question 3

“Was there *ever* a time in your life when you became *very upset or nervous* whenever you were in social situations or when you had to do something in front of a group?”

AND

YES to: Question 4

“Because of your fear, did you *ever* stay away from social situations or situations where you had to do something in front of a group whenever you could?”

OR

Question 5

“Do you think your fear was *ever* much stronger than it should have been?”

Respondents who answered “yes” to Questions 1 or 2 and then “yes” to 3 and “yes” to 4 or 5 were asked the questions in the **social anxiety disorder** section of the questionnaire. Otherwise, they were defined as having no history of social anxiety disorder.

Social anxiety disorder, lifetime history

Respondents who met the screening criteria and met all six of the following criteria were considered to have a **lifetime history of social anxiety disorder**.

Criterion 1, lifetime

Criteria 1A and 1B indicate a marked and persistent fear of one or more social or performance situations in which the person is exposed to unfamiliar people or to possible scrutiny by others. The respondent fears that he or she will act in a way (or show anxiety symptoms) that will be humiliating or embarrassing. In the CCHS, both 1A and 1B were required.

1A

At least one “yes” when respondents were asked if there was ever a time in their life when they felt “very shy, afraid or uncomfortable” with the following situations:

1. Meeting new people.
2. Talking to people in authority.
3. Speaking up in a meeting or class.
4. Going to parties or other social gatherings.
5. Performing or giving a talk in front of an audience.
6. Taking an important exam or interviewing for a job, even though you were well prepared.
7. Working while someone watches you.
8. Entering a room when others are already present.
9. Talking with people you don’t know very well.
10. Expressing disagreement to people you don’t know very well.
11. Writing, eating or drinking while someone watches.
12. Using a public bathroom or a bathroom away from home.
13. When going on a date.
14. In any *other* social or performance situation where you could be the centre of attention or where something *embarrassing* might happen.

1B

At least one “yes” response to the following:

1. “When you were in this/these situation(s), were you afraid you might do something *embarrassing or humiliating*?”
2. “Were you afraid that you might embarrass other people?”
3. “Were you afraid that people might *look* at you, *talk* about you or think negative things about you?”
4. “Were you afraid that you might be the focus of attention?”

Criterion 2, lifetime

A “yes” response to: “Was there ever a time in your life when you became *very upset or nervous* whenever you were in social situations or when you had to do something in front of a group?” (Screening Question 3.)

Criterion 3, lifetime

A “yes” response to: “Do you think your fear was ever much stronger than it should have been?” (Screening Question 5.)

Criterion 4, lifetime

At least one of the following requirements—4A, 4B, 4C, 4D or 4E must have been met:

4A

A “yes” response to: “Because of your fear, did you ever stay away from social situations or situations where you had to do something in front of a group whenever you could?” (Screening Question 4.)

4B

A response of “all of the time,” “most of the time” or “sometimes” to: “During the *past 12 months*, how often did you avoid any of these situations?”

4C

A “yes” response to at least two of the following reactions when faced with feared situations:

1. “Did your heart ever pound or race?”
2. “Did you sweat?”
3. “Did you tremble?”
4. “Did you feel sick to your stomach?”
5. “Did you have a dry mouth?”
6. “Did you have hot flushes or chills?”
7. “Did you feel numbness or have tingling sensations?”
8. “Did you have trouble breathing normally?”
9. “Did you feel like you were choking?”
10. “Did you have pain or discomfort in your chest?”
11. “Did you feel dizzy or faint?”
12. “Were you afraid that you might die?”
13. “Did you ever fear that you might lose control, go crazy or pass out?”
14. “Did you feel like you were “not really there,” like you were watching a movie of yourself or did you feel that things around you were not real or like a dream?”

4D

A response of “severe” or “very severe” to: “What if you were faced with *this/one of these situation(s) today*—how strong would your fear be?”

4E

A “yes” response to: “When you were in this/these situation(s), were you ever afraid that you might have a panic attack?”

Criterion 5, lifetime

This criterion stipulates that the fear or avoidance of social or performance situations must interfere significantly with the individual’s normal routine, occupational or academic functioning, or social activities or relationships. At least one of four conditions—5A, 5B, 5C or 5D—had to be true.

5A

Respondents who had experienced symptoms in the past 12 months were asked to indicate how much their fear or avoidance of situations had interfered with various activities. They were asked to think about the period of time over the last year that had lasted one *month or longer* when their fear or avoidance of social or performance situations was most severe. Responses were coded on an 11-point scale, with 0 meaning “no interference” and 10, “very severe interference.” A score of 5 or higher for at least one of these situations was required:

1. “How much did your fear or avoidance of social or performance situations interfere with your home responsibilities, like cleaning, shopping and taking care of the house or apartment?”
2. “How much did it interfere with your ability to attend school?”
3. “How much did it interfere with your ability to work at a job?”
4. “How much did this fear or avoidance interfere with your ability to form and maintain *close* relationships with other people?”
5. “How much did it interfere with your social life?”

5B

A response of “some,” “a lot” or “extremely” when respondents were asked how much their fear or avoidance of social or performance situations ever interfered with their work, social life or personal relationships.

5C

A response of five or more days when asked: “In the past 12 months, about how many days out of 365 were

you totally unable to work or carry out normal activities because of your fear or avoidance of situations?”

5D

A “yes” response to: “Did you ever in your life see, or talk on the telephone to, a medical doctor or other professional about your fear or avoidance of social or performance situations?”

Note: Respondents were told that “other professional” meant psychologist, psychiatrist, social worker, counsellor, spiritual advisor, homeopath, acupuncturist, self-help group or other health professionals.

Criterion 6

For people younger than 18 or for people whose symptoms all occurred before they were 18, symptoms must have persisted for at least six months. There is no minimum duration for respondents who experienced symptoms after age 18. Duration of symptoms was calculated by subtracting the age at which the respondent reported strongly fearing or avoiding social or performance situations for the first time from the age this last occurred (or current age for those who still had the disorder).

Social anxiety disorder, current (past 12 months)

Three criteria were used to assess **current social anxiety disorder**; that is, whether the respondent had had symptoms in the 12 months before the survey interview. All three had to be met for a respondent to be categorized as having social anxiety disorder in the past year.

Criterion 1, current

The respondent had to meet the criteria for a lifetime history of social anxiety disorder.

Criterion 2, current

Respondents who said that the last time they had strongly feared or avoided social or performance situations occurred in the 12 months before the survey interview. Respondents were also asked the ages at which they first and last had fear of or avoided a social or performance situation. If they reported their age at the time of the interview, this was also accepted as evidence of the disorder in the past year.

Criterion 3, current

The fear or avoidance of social or performance situations must have interfered significantly with the individual’s normal routine, occupational or academic

functioning, or social activities or relationships in the 12 months before the interview. (This criterion is quite similar to criterion 5 for lifetime and, in some cases, exactly the same conditions were used; i.e., the conditions involving items with a 12-month reference period.) At least one of the four conditions considered (3A, 3B, 3C or 3D) had to be true.

3A

(Identical to criterion 5A, lifetime.)

Respondents who had experienced symptoms in the past 12 months were asked to indicate how much their fear or avoidance of situations interfered with five separate activities. They were asked to think about the period of time over the last year that lasted *one month or longer* when their fear or avoidance of social and performance situations was most severe. Responses were coded on an 11-point scale, with 0 meaning “no interference,” and 10, “very severe interference.”

1. “How much did your fear or avoidance of social or performance situations interfere with your home responsibilities, like cleaning, shopping and taking care of the house or apartment?”
2. “How much did it interfere with your ability to attend school?”
3. “How much did it interfere with your ability to work at a job?”
4. “How much did this fear or avoidance interfere with your ability to form and maintain close relationships with other people?”
5. “How much did it interfere with your social life?”

A score of 5 or higher for at least one of these situations was required, indicating that symptoms of social anxiety disorder interfered with activities over the past 12 months.

3B

A response of “all of the time,” “most of the time” or “sometimes” when respondents were asked how often they avoided social or performance situations *in the past 12 months*.

3C

(Identical to criterion 5C, lifetime.)

A response of “five or more days” when asked: “In the past 12 months, about how many days out of 365 were you totally unable to work or carry out normal activities because of your fear or avoidance of situations?”

3D

A “yes” response to: “At any time in the *past 12 months*, did you receive professional treatment for your fear?”

References

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- 3 Walters EE, Kessler RC, Nelson CB, et al. Scoring the World Health Organization's Composite International Diagnostic Interview Short Form (CIDI-SF). www.who.int/msa/cidi/CIDISFScoringMemo12-03-02.pdf.