



MONTANA Fact[or]s

Depression and Anxiety among Montana Adults BRFSS 2006 Findings

The Behavioral Risk Factor Surveillance System (BRFSS) is an important tool for surveillance and evaluation of the relationships between depression, anxiety, and health-risk behaviors or health conditions, among the adult population. The monitoring of depression and anxiety appears increasingly vital to the assessment

of population health, as depression is expected to be second only to heart disease as the source of global burden of disease by 2020. Depression is one of the most widespread health conditions that negatively impact the ability of people to function and participate in the economic and social life of their communities.

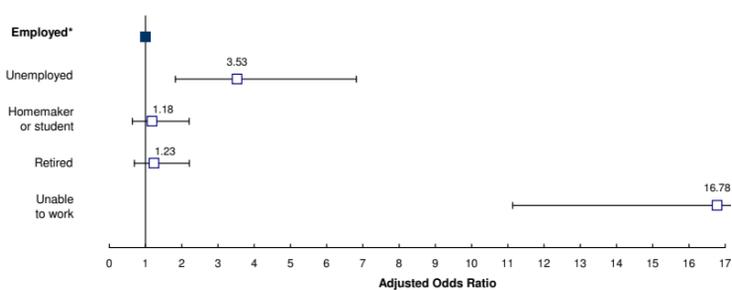
Current Depression

In Montana, the estimated prevalence of current depression among adults in Montana was 6.7% which equates to approximately 42,628 adults in 2006. Unadjusted and adjusted prevalence estimates are provided in Table 1. After adjustment for sex, age, race/ethnicity, education, marital status and employment status, women were significantly more likely than men to report being currently depressed, as were

adults aged 35 to 54 (compared to 65 and older), and as were adults who graduated from high school compared to those with college degrees. Additionally, adults who were unemployed or unable to work were significantly more likely to report current depressive symptoms (compared to those currently employed), as shown in Figure 1. Adults whose household income was less than \$50,000 per year were significantly more likely to report currently depressed than those

who household reported income of \$50,000 or more per year. The unadjusted prevalence of current depression was significantly lower among White, non-Hispanics (6%) than among American Indian/Alaska Natives (11%) and other racial subgroups (12%), but this relationship disappears in the fully adjusted model, i.e., there was no significant difference in current depressive symptoms among racial and ethnic categories in Montana.

Figure 1 Adjusted odds ratios¹ for current depression among Montana adults by employment status, 2006 (Confidence intervals at 95% level)



¹ Adjusted for: sex, age, race/ethnicity, education, marital status, employment.
* Referent for employment status odds ratios.

Table 1 Current Depression, Lifetime Diagnosis of Anxiety Among Montana Adults by Selected Characteristics, 2006

	CURRENT DEPRESSION Pop. Est. = 42,628; (n = 5262)				LIFETIME DIAGNOSIS OF DEPRESSION Pop. Est. = 117,802; (n = 5733)				LIFETIME DIAGNOSIS OF ANXIETY Pop. Est. = 74,915; (n = 5735)			
	Prevalence %	95% CI	Adj. Odds Ratio AOR	95% CI	Prevalence %	95% CI	Adj. Odds Ratio AOR	95% CI	Prevalence %	95% CI	Adj. Odds Ratio AOR	95% CI
All Adults	6.7	5.8 - 7.6			17.1	15.9 - 18.4			10.9	9.8 - 12.0		
Sex:												
Male	5.1	4.0 - 6.6	Referent		11.7	10.1 - 13.5	Referent		8.6	7.1 - 10.3	Referent	
Female	8.1	7.0 - 9.4	1.56	1.09 - 2.22	22.3	20.6 - 24.1	2.24	1.82 - 2.75	13.1	11.8 - 14.6	1.53	1.19 - 1.97
Age:												
18 - 24	6.4	3.5 - 11.2	2.23	0.85 - 5.82	12.4	8.5 - 17.9	1.67	0.91 - 3.05	9.8	6.1 - 15.3	2.14	0.95 - 4.80
25 - 34	6.3	4.4 - 8.8	2.05	0.99 - 4.24	18.6	15.2 - 22.6	2.65	1.69 - 4.13	13.3	10.2 - 17.0	3.31	1.91 - 5.74
35 - 44	8.5	6.5 - 11.2	3.05	1.54 - 6.01	18.8	16.0 - 22.0	2.62	1.75 - 3.91	12.4	10.1 - 15.2	3.10	1.89 - 5.07
45 - 54	7.4	5.9 - 9.3	1.99	1.05 - 3.78	20.8	18.4 - 23.5	2.75	1.88 - 4.02	12.8	10.8 - 15.0	2.91	1.81 - 4.69
55 - 64	7.3	5.8 - 9.2	1.67	0.92 - 3.03	20.5	17.9 - 23.3	2.47	1.75 - 3.48	10.7	8.8 - 12.8	2.01	1.32 - 3.07
65+	3.9	2.8 - 5.4	Referent		11.0	9.3 - 13.0	Referent		6.4	5.2 - 8.0	Referent	
Race/Ethnicity:												
White, non-Hispanic	6.1	5.3 - 7.0	Referent		17.1	15.8 - 18.5	Referent		10.4	9.3 - 11.5	Referent	
AI/AN*	11.4	7.1 - 18.0	1.35	0.66 - 2.77	16.6	12.5 - 21.7	0.83	0.56 - 1.23	13.2	9.5 - 18.1	0.94	0.60 - 1.47
Other or Hispanic**	11.8	7.0 - 19.2	1.83	0.94 - 3.56	18.2	12.9 - 25.1	1.03	0.67 - 1.58	18.8	12.2 - 27.9	1.72	0.97 - 3.03
Education:												
<High School	10.5	7.0 - 15.4	1.51	0.76 - 3.00	15.0	10.6 - 20.6	0.97	0.61 - 1.55	14.7	10.3 - 20.6	1.56	0.93 - 2.60
High School	7.9	6.2 - 10.0	1.54	1.04 - 2.28	17.4	15.1 - 19.9	1.20	0.96 - 1.51	11.0	9.3 - 12.9	1.26	0.94 - 1.68
Some College	7.2	5.7 - 9.0	1.33	0.91 - 1.96	20.0	17.6 - 22.6	1.33	1.07 - 1.66	12.9	10.6 - 15.5	1.40	1.05 - 1.88
College Degree	4.3	3.3 - 5.6	Referent		14.8	13.1 - 16.7	Referent		8.2	6.9 - 9.8	Referent	
Income:												
<\$15,000	17.3	13.6 - 21.7			29.4	24.7 - 34.5			21.8	17.5 - 26.8		
\$15,000 - \$24,999	10.6	8.1 - 13.7			20.9	17.8 - 24.3			13.4	10.9 - 16.4		
\$25,000 - \$49,999	7.2	5.5 - 9.3			16.9	14.8 - 19.3			11.0	9.1 - 13.1		
\$50,000+	2.4	1.7 - 3.4			13.1	11.2 - 15.2			7.4	5.8 - 9.3		
Marital Status:												
Married	5.9	4.9 - 7.0	Referent		15.9	14.5 - 17.4	Referent		9.6	8.5 - 11.0	Referent	
Previously married†	10.1	8.4 - 12.2	1.26	0.91 - 1.76	23.3	20.8 - 26.0	1.45	1.17 - 1.79	15.6	13.4 - 18.1	1.55	1.19 - 2.02
Never married‡	6.5	4.3 - 9.6	0.87	0.48 - 1.56	15.4	12.1 - 19.4	1.13	0.82 - 1.56	10.8	7.9 - 14.5	1.04	0.64 - 1.68
Employment:												
Currently employed	4.7	3.9 - 5.8	Referent		16.3	14.8 - 18.0	Referent		9.3	8.1 - 10.7	Referent	
Currently unemployed	17.4	10.6 - 27.4	3.53	1.83 - 6.82	24.7	17.6 - 33.3	1.64	1.05 - 2.58	18.7	12.4 - 27.2	1.97	1.17 - 3.31
Homemaker or student	6.2	3.8 - 9.9	1.18	0.64 - 2.20	14.7	11.4 - 18.8	0.86	0.62 - 1.20	12.0	8.8 - 16.3	1.30	0.87 - 1.95
Retired	3.3	2.3 - 4.7	1.23	0.69 - 2.21	12.5	10.6 - 14.7	1.30	0.93 - 1.81	6.9	5.5 - 8.7	1.45	0.93 - 2.25

¹ Adjusted for: sex, age, race/ethnicity, education, marital status, employment.
* American Indian or Alaska Native only.
** All other non-White (including multiracial) or Hispanic.
† Divorced, widowed, or separated.
‡ Includes members of an unmarried couple.

Nationwide in 2006

The median prevalence of current depression was 8.7%. West Virginia had the highest prevalence of current depression, at 13.7%. North Dakota had the lowest estimate of current depression at 5.3%.⁴

The median lifetime diagnosis of depression was 15.7%. Arkansas had the highest rate of lifetime diagnosis of depression, at 21.3%. The U.S. Virgin Islands had the lowest at 6.8%.

The median lifetime diagnosis of anxiety was 11.3% of adults. West Virginia had the highest prevalence of adults with a lifetime diagnosis of anxiety (17.2%), while the U.S. Virgin Islands had the lowest prevalence (5.4%) of lifetime diagnosed anxiety.

Lifetime Diagnosis of Depression

Respondents to the survey were also asked whether they were ever told by a healthcare provider that they had a depressive disorder at sometime in their lifetime. In Montana, almost one in five (17%) adults or approximately 117,802 adults in 2006 had ever been told by a doctor or other healthcare provider that they had a depressive disorder at some time in their lives. Adjusted prevalence estimates indicate women were significantly more likely than men to report having received a diagnosis of depression at sometime in their lifetimes, as were adults

ages 25 to 64 (compared with those 65 and older), those with some college education (compared with those with college degrees) and adults who were previously married, including divorced, separated or widowed (compared to those married). In Montana, there were no significant differences among White, non-Hispanic and other racial/ethnic groups, including American Indian/Alaska Natives in lifetime diagnosed depression. The highest prevalence of diagnosed lifetime depression was among adults who were unable to work or who were unemployed adults compared to currently employed adults.

Lifetime Diagnosis of Anxiety

Anxiety disorders are the most common of all mental disorders.³ In Montana, slightly more than one in ten (10.9%) Montana adults or approximately 74,915 adults in 2006 ever had been told by a doctor or other health care provider at sometime in their lives they had an anxiety disorder. As with a lifetime diagnosis of depression, Montana adults who had been diagnosed with anxiety were more likely to be female than

male, previously married, including divorced, widowed or separated, than married individuals or never married adults, and were unable to work or were unemployed than currently employed adults. Adults with some college were more likely to have been diagnosed with anxiety in their lives than adults with college degrees. In Montana, adjusted prevalence estimates indicate there were no significant differences among White, non-Hispanics and American Indian/Alaska Natives in lifetime diagnosed anxiety.

Table 2 Adjusted odds ratios for current depression, lifetime diagnosis of depression, and lifetime diagnosis of anxiety by selected health conditions and risk behaviors, Montana adults, 2006 (Confidence intervals at 95% level)

	Current Depression (n = 5262)		Lifetime Diagnosis of Depression (n = 5733)		Lifetime Diagnosis of Anxiety (n = 5735)	
	AOR	95% CI	AOR	95% CI	AOR	95% CI
Asthma, current:						
No	Referent		Referent		Referent	
Yes	2.89	1.91 - 4.38	1.74	1.27 - 2.38	1.86	1.28 - 2.70
Cardiovascular Disease:						
No	Referent		Referent		Referent	
Yes	1.85	1.13 - 3.02	1.61	1.19 - 2.18	1.45	1.02 - 2.08
Diabetes:						
No	Referent		Referent		Referent	
Yes	1.58	0.98 - 2.53	1.35	1.00 - 1.83	1.08	0.76 - 1.54
Disability:						
No	Referent		Referent		Referent	
Yes	4.69	3.24 - 6.79	3.03	2.45 - 3.75	2.61	2.02 - 3.36
Fair or Poor Health:						
No	Referent		Referent		Referent	
Yes	5.44	3.80 - 7.77	2.13	1.64 - 2.78	2.25	1.68 - 3.01
Obesity:						
Not overweight/obese	Referent		Referent		Referent	
Overweight	1.13	0.74 - 1.73	1.16	0.91 - 1.46	1.16	0.87 - 1.55
Obese	2.95	1.93 - 4.51	1.71	1.35 - 2.18	1.37	1.01 - 1.86
Physical Inactivity:						
No	Referent		Referent		Referent	
Yes	2.07	1.48 - 2.88	1.42	1.14 - 1.78	1.44	1.10 - 1.89
Cigarette Smoking:						
Never smoked	Referent		Referent		Referent	
Former smoker	1.31	0.88 - 1.95	1.65	1.34 - 2.04	1.82	1.35 - 2.46
Current smoker	2.30	1.55 - 3.41	2.20	1.69 - 2.88	2.55	1.87 - 3.49
Binge Drinking:						
No	Referent		Referent		Referent	
Yes	1.61	1.02 - 2.55	1.24	0.94 - 1.65	1.37	0.96 - 1.95
Heavy Drinking:						
No	Referent		Referent		Referent	
Yes	2.38	1.15 - 4.92	1.44	0.90 - 2.30	1.57	0.90 - 2.74

1 Adjusted for: sex, age, race/ethnicity, education, marital status, employment, and the indicated condition or behavior.

Relationships to Selected Health Conditions and Risk Behaviors

Unadjusted prevalence estimates indicated that asthma, cardiovascular disease, diabetes, disability, fair or poor health status, obesity, physical inactivity, and smoking were all significantly associated with current depression and lifetime diagnosed depression. Men who drank heavily were significantly more likely to be currently depressed than those who did not drink heavily; otherwise there was no association between binge or heavy drinking and current depression or lifetime diagnosed depression. For adults diagnosed with anxiety in their lifetime, the unadjusted prevalence estimates were significantly associated with all of these conditions or risk behaviors except with diabetes and binge or heavy drinking.

After adjustment for the above conditions, behaviors and sociodemographic characteristics, people with asthma, cardiovascular disease, disability, fair to poor health status, and who were obese (but not overweight), physical inactivity and current smokers were more likely than those without each condition to report being currently depressed, have a lifetime diagnosis of depression or a lifetime diagnosis of anxiety (Table 2). People who were also former smokers were more likely to have a diagnosis of depression or anxiety in their lifetime compared to those who never smoked, whereas people who binge drink or drink heavily were significantly more likely than those who did not to be currently depressed.

Discussion

Findings indicate strong associations between mental illness and chronic diseases or related adverse behaviors. Chronic diseases like asthma, cardiovascular disease, disability, and health risk factors such as obesity, physical inactivity, and smoking were all significantly associated with current depression and a lifetime diagnosis of depression or a lifetime diagnosis of anxiety. Therefore, depression and anxiety are linked to a number of important public health problems. Mental health disorders such as depression or anxiety can contribute to or be the result of unhealthy risk behaviors and/or chronic illnesses. Mental illness can influence the onset, progression, and outcome of other illnesses and correlates with health risk behaviors such as substance abuse, tobacco use, obesity and physical inactivity. It can adversely affect the course and management

of chronic health conditions. In addition, it was shown that depression and anxiety are significantly related to socioeconomic status in Montana. Employment is closely tied to one's personal identity and sense of self-worth. Adults who are unable to work or are currently unemployed were significantly more likely to report being depressed or suffering from anxiety. In other words, life circumstances and chronic diseases can have a profound impact on an individual's mental health; in turn, mental health status affects an individual's ability to participate in treatment and recovery and lead full and productive lives.⁵

Prevention of illness and integration of care and services must take place on a variety of different levels among our public health, mental health, and healthcare delivery systems.⁶ Integrating the range

of services needed by individuals has been a vexing problem for decades throughout our country. Public health agencies can incorporate mental health promotion into chronic disease prevention efforts and conduct continued surveillance and research to improve the evidence-based data about mental health and mental illnesses. It is increasingly clear that mental health concerns must be incorporated into the treatment of other chronic diseases as poor mental health can exacerbate these diseases or result in poor patient adherence to treatment of illnesses. Health promotion campaigns that educate the public about the symptoms of depression and anxiety and the potential ways to treat these illnesses may encourage those adults with these disorders to seek treatment in order to prevent increased severity or progression of the illnesses.

Recommendations

Undiagnosed, untreated or undertreated mental illnesses are significant, preventable contributors to the nation's poor mental health outcomes.⁷ Throughout the United States efforts are being made to collaborate with stakeholders and partners to develop comprehensive mental health plans that enhance coordination of health care and the integration of mental health services and primary healthcare.^{8,9,10,11} There is growing consensus that our current health care delivery systems are in need of reform.¹² Primary care has long been known as the *de-facto* setting to receive mental health treatment for individuals. The PHQ-8 module used to assess depression and anxiety in the 2006 BRFSS survey has proven to be a simple and valid mental health screening tool that can be easily incorporated into annual primary care physical exams. As shown in the related Montana BRFSS report,¹³ one-quarter to one-half of all adults with current depression never had

received a diagnosis of depression or anxiety by a healthcare provider. These are missed opportunities for disease prevention.

Mental health, risk behaviors, and co-morbidities of mental illnesses and chronic diseases need continued national and state surveillance. These findings indicate that BRFSS has provided an important means of measuring the **Healthy People 2010** objectives¹⁴ to improve mental health by establishing baseline data necessary for mental illness disease prevention, mental health promotion, and to improve access to appropriate, quality mental health services. Through these surveillance efforts, it is hoped that BRFSS has helped to lay the foundation for the integration of physical and mental health in the field of public health and create further dialogue with our healthcare delivery systems within the state and throughout the nation.

Survey Limitations

The BRFSS relies on self-reported data. This type of survey has certain limitations: many times, respondents have the tendency to underreport some behaviors that may be considered socially unacceptable (e.g., smoking, heavy alcohol use); conversely, respondents may over report behaviors that are desirable (e.g., physical activity, nutrition).

Background

The Montana Behavioral Risk Factor Surveillance System (BRFSS) has been collecting and reporting state-specific, population-based estimates of health-related data since 1984. The purpose of this statewide telephone survey of Montana residents aged 18 and older is to gather information regarding personal health risk behaviors, selected medical conditions, and the prevalence of preventive health care practices among Montana adults. These BRFSS results have been used by public health agencies, academic institutions, non-profit organizations, and others to develop programs that promote the health of Montana adults and reduce risks that contribute to the leading causes of death in the state. A full set of Montana yearly questionnaires and health indicators can be found on the Department of Public Health and Human Services (DPHHS) BRFSS database query system website at www.brfss.mt.gov. The CDC website (www.cdc.gov/brfss) also provides national, state, and some local area prevalence estimates of health indicators, as well as access to downloadable datasets for further analyses.

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Suggested citation

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Endnotes

- 1 U.S. Public Health Service, Report of the Surgeon General's Conference on Children's Mental Health: A National Action Agenda. Washington, DC: Department of Health and Human Services, 2000.
- 2 Current depression was measured by a score of ≥ 10 on the PHQ-8 standardized and validated instrument developed by Drs. R. Spitzer and K. Kroenke.
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