



MICHIGAN BRFSS SURVEILLANCE BRIEF

A NEWSLETTER FROM THE CHRONIC DISEASE EPIDEMIOLOGY UNIT, MDCH

Depressive Disorders Among Michigan Adults by Diabetes Status

Background. In 2011, the prevalence of Michigan adults who reported being diagnosed with diabetes was 10.0%. Diabetes increases the risk of comorbidities such as cardiovascular disease (CVD), chronic kidney disease, and hyperlipidemia, along with complications including blindness and lower extremity amputation. A growing literature has documented a link between diabetes and depression.^{1,2} The association appears bidirectional.³ We report the prevalence of depression among Michigan adults based on diabetes status, examining possible gender and racial/ethnic differences. The association of depression with the prevalence of various risk factors is assessed for persons with diabetes (PWD) residing in Michigan.

Methods. Questions related to depression, diabetes, and certain behavioral risk factors were included within the CDC core portion of the 2011 Michigan Behavioral Risk Factor Survey (MiBRFS). For the depression and diabetes questions, the respondents were asked if they have ever been told by a doctor, nurse, or other health professional that they had each condition. The definition of depression included depression, major depression, dysthymia, and minor depression, while the diabetes definition excluded both prediabetes and gestational diabetes.

These data were used to assess the prevalence of depression among Michigan adults by diabetes status and evaluate the prevalence of certain behavioral risk factors among Michigan adult PWD by depression status. Demographic subpopulations were compared to determine if significant differences existed based on both depression and diabetes status.

Results. In 2011, Michigan adults with diabetes were 43.4% more likely to have reported ever being told that they had depression when compared to Michigan adults without diabetes [28.4% vs. 19.8%] (Table 1). In addition, diabetic males and females (23.8% and 33.0%, respectively) reported a higher prevalence of depression than non-diabetic males and females (14.4% and 24.7%, respectively). Females with diabetes (33.0%) and without diabetes (24.7%) reported a higher prevalence of depression than their male counterparts (PWD: 23.8% and persons without diabetes: 14.4%).

PWD also reported a higher prevalence of depression than persons without diabetes within both the White, non-Hispanic (28.6% vs. 20.7%) and Black, non-Hispanic (23.2% vs. 13.7%, $p < 0.01$) populations (Table 1). The sample size was too small to determine prevalence estimates among Hispanic or other racial/ethnic populations residing in Michigan.

In 2011, Michigan adult PWD with depression were 17.5% more likely to be classified as obese when compared to adults with diabetes without depression [68.4% vs. 58.2%, $p = 0.02$] (Table 2). Furthermore, PWD with depression were more likely to report current cigarette smoking (30.8%) than those without depression (14.1%). The prevalence of inadequate fruit and vegetable consumption and no leisure-time physical activity

Table 1. Prevalence of Depression among Michigan Adults by Diabetes Status, 2011 Michigan BRFSS

	Ever Told Depression ¹ among Michigan Adults Who Were Ever Told They Had Diabetes ²	Ever Told Depression ¹ among Michigan Adults Who Were Never Told They Had Diabetes
Total	28.4% (24.9-32.2)	19.8% (18.6-21.0)
Gender		
Male	23.8% (19.3-29.0)	14.4% (12.8-16.2)
Female	33.0% (27.9-38.5)	24.7% (23.0-26.5)
Race/Ethnicity		
White, non-Hispanic	28.6% (24.5-33.0)	20.7% (19.4-22.2)
Black, non-Hispanic	23.2% (15.7-32.8)	13.7% (10.9-16.9)

¹Among all adults, the proportion who reported ever being told by a doctor that they had a depressive disorder including depression, major depression, dysthymia, or minor depression.

²Among all adults, the proportion who reported that they were ever told by a doctor that they had diabetes. Adults told they had prediabetes and women who had diabetes only during pregnancy were classified as not having been diagnosed.

MiBRFSS News

- The 2011 Michigan BRFSS Annual Report was published in late October 2012 and can be found on the MiBRFSS website (www.michigan.gov/brfs).
- The 2013 CDC BRFSS Annual Meeting is tentatively scheduled for March 23-27, 2013. More information to follow.
- Did you miss an issue of *Michigan BRFSS Surveillance Brief*? Back issues are available on our website.

was similar among adult PWD with and without depression.

Conclusions. Our results in Michigan support previous studies showing a relationship between depression and diabetes.¹⁻⁴ In Michigan, the prevalence of depression was significantly higher among adults with diabetes (28.4%) when compared to adults without diabetes (19.8%). The prevalence of depression among those with diabetes compared to those without diabetes was significantly higher regardless of gender or racial/ethnic group. Independent of diabetes status, a greater proportion of Michigan adult females reported depression compared to Michigan adult males. Other work similarly reported women having a higher prevalence of depression than men regardless of diabetes status but, interestingly, a stronger association between depression and diabetes among adult males than females.⁴

Table 2. Prevalence of Behavioral Risk Factors Among Diabetic Adults in Michigan by Depression Status, 2011 Michigan BRFSS

	Diabetic Adults Who Were <u>Ever</u> Told They Had Depression	Diabetic Adults Who Were <u>Never</u> Told They Had Depression
Obesity (BMI ≥ 30.0)	68.4% (60.8-75.1)	58.2% (53.8-62.4)
Inadequate Fruit & Vegetable Consumption (< 5 times/day)	87.6% (81.8-91.7)	85.0% (81.6-87.9)
No Leisure-Time Physical Activity	38.1% (30.8-46.0)	34.1% (30.1-38.4)
Current Smoking	30.8% (24.0-38.5)	14.1% (11.2-17.6)

Black and White adults with diabetes reported a higher prevalence of depression than their non-diabetic counterparts. Statistically, there was no evidence of a difference in the prevalence of depression among Blacks and Whites who were diagnosed with diabetes. However, Whites who were not diabetic tended to report a history of depression more often than Blacks. Difference in the prevalence of depression according to racial/ethnic groups has proven to be a complex issue related to various sociodemographic factors and social determinants, as well as disproportionate access to care.^{1,5} Therefore, it is difficult to assess the difference in the prevalence of depression among Blacks and Whites regardless of diabetes status; thus, this warrants further investigation.

Risk behavior can also be associated with depression making it difficult to discern whether it preceded the diabetes diagnosis or contributed to the disease.¹ Obesity prevalence among Michigan adult PWD with a history of depression was found to be significantly higher than the prevalence of obesity among adult PWD without depression. Disturbingly, the prevalence of smoking was more than double among adult PWD with depression history than adult PWD with no history of depression. Depression may further complicate the ability of PWD to make the best lifestyle choices to manage their health outcomes.

A recent meta-analysis of diabetes interventions indicated that psychotherapy combined with diabetes self-management education programs was more effective in diabetes/depression treatment than medication treatment alone.¹ Integrative, organized care with a focus on self-management interventions also appears to improve diabetes-related health outcomes.¹ Therefore, it would be important for diabetes education and self management programs to address the signs of depression, as well as primary care physicians to conduct regular screening for diabetes among depressed adults of any age.

References

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The Michigan Behavioral Risk Factor Surveillance System (MiBRFSS)

The MiBRFSS comprises annual, statewide telephone surveys of Michigan adults aged 18 years and older and is part of the national BRFSS coordinated by the CDC. The annual Michigan Behavioral Risk Factor Surveys (MiBRFS) follow the CDC BRFSS protocol and use the standardized English core questionnaire that focuses on various health behaviors, medical conditions, and preventive health care practices related to the leading causes of mortality, morbidity, and disability. Landline and cell phone interviews are conducted across each calendar year. Data are weighted to adjust for the probabilities of selection and a raking weighting factor that adjusts for the distribution of the Michigan adult population based on eight demographic variables. All analyses are performed using SAS-callable SUDAAN[®] to account for the complex sampling design.

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