Diabetes Prevention – Data Brief
Vermont Behavioral Risk Factor Surveillance System (BRFSS)

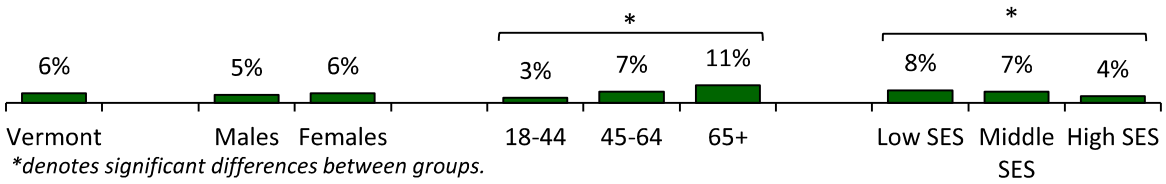
Background

Prediabetes, the condition typically preceding type 2 diabetes, is on the rise like diabetes itself. Diabetes-related morbidity and mortality have become a major public health concern.[1] From 1999 to 2010, there was a 21% increase in the prevalence of prediabetes in the U.S.[2] The prevalence of diabetes and prediabetes are strongly linked to modern lifestyle and influenced heavily by socioeconomic and social factors.[3] Diabetes is projected to be within the top five leading causes of death in high-income countries and within the top 10 leading causes of death worldwide by 2030.[4]

Prediabetes

Approximately 90% of cases of prediabetes go undetected.[5] In 2014, 6% (approximately 27,000 Vermont adults) had diagnosed prediabetes; however, an additional 243,000 adults may have prediabetes and not know it. Prediabetes significantly increased with advancing age and significantly decreased with increasing socioeconomic status. Females 18-44 years old were significantly more likely than males 18-44 to have prediabetes (5% vs. 1%). There were no statistical differences by gender or sexual orientation in the prevalence of prediabetes.

Demographics of Vermont Adults with Prediabetes, BRFSS 2014



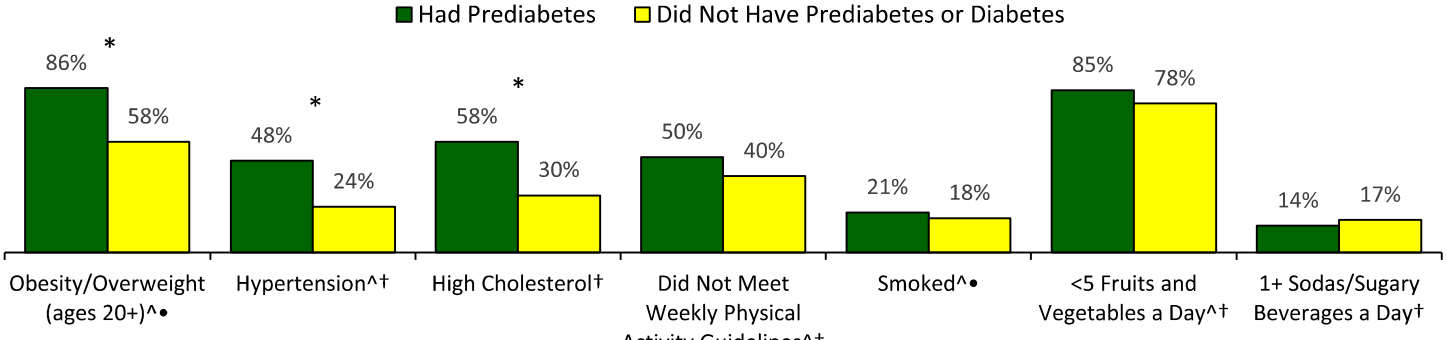
**denotes significant differences between groups.*

In 2014, 68% of all Vermont adults saw a doctor. Of those, a little over half had their blood sugar checked in the past 3 years (59%). Blood sugar testing within 3 years was significantly more likely for adults over the age of 45 (67%) than those 44 or younger (46%).

Lifestyle Factors

For those with prediabetes, lifestyle interventions have demonstrated the ability to reduce the risk of progression to diabetes and the potential to return individuals to normal blood glucose levels. The primary goal of lifestyle interventions are to prevent or delay diabetes and its complications by targeting the two most important modifiable risk factors: obesity and physical inactivity.[4] Vermont adults diagnosed with prediabetes were significantly more likely to be overweight/obese, hypertensive, and have high cholesterol when compared to adults who did not have prediabetes or diabetes.

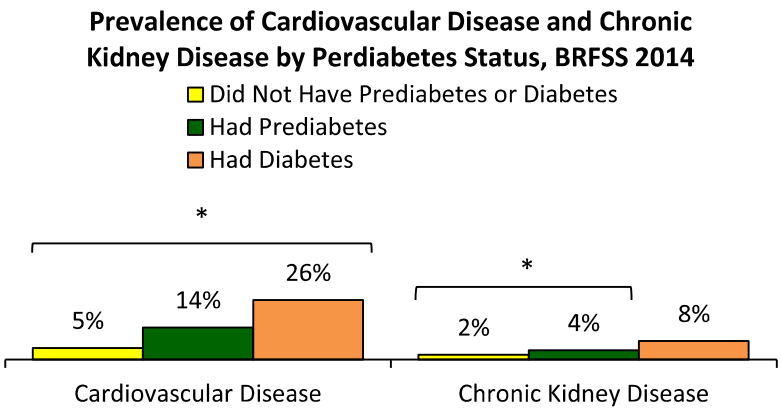
Prevalence of Diabetes-Related Risk Factors



^Age-adjusted to the U.S. 2000 population,
†BRFSS 2013; •BRFSS 2014

Cardiovascular and Chronic Kidney Disease Risk

CVD risk has been directly linked to increased levels of blood sugar. CVD risk increases at levels well below the diagnositic threshold for type 2 diabetes, indicating that risk begins before clinical onset of diabetes. Most patients with diabetes die of CVD.[1] Chronic Kidney Disease (CKD) is common among those with diabetes.[6] Evidence has also shown that kidney disease begins among those with prediabetes.[4] Among Vermont adults, CVD and CKD increased significantly with advancing diabetes status. In 2014, Vermont adults with prediabetes were significantly more likely to have CVD than adults who did not have prediabetes or diabetes. Those with diabetes were significantly more likely to have CVD than adults with prediabetes or without a diabetes-related diagnosis. Vermont adults with prediabetes and diabetes were also significantly more likely to have CKD when compared to adults that did not have prediabetes or diabetes.



Prevent Diabetes

The treatment of prediabetes is crucial to improving outcomes and halting or delaying progression to diabetes. Treatment through lifestyle intervention can prevent the progression to diabetes, mitigate some of the potential consequences of diabetes that have been found to have a health impact prior to the clinical onset of diabetes (CVD, CKD, and nerve damage), and prevent the consequences of prediabetes itself.[4] The national Diabetes Prevention Program has demonstrated that it is possible to prevent or delay the onset of diabetes among individuals at high risk. Modest weight loss and other lifestyle changes reduced the 3-year incidence of type 2 diabetes by 58%.[3] There is a growing body of evidence showing that the health consequences of diabetes begin among those with prediabetes, long before the clinical onset of type 2 diabetes. Early identification and treament has the potential to reduce or delay the progression to diabetes, related CVD, macrovascular disease, and end-organ (e.g. eyes, kidneys, blood vessels) damage.[1,3,4] Lifestyle invervention has been shown to reduce the cumulative diabetes incidence and maintain the reduced incidence levels for at least 10 years.[7]

Vermonters with prediabetes benefit from knowing their diagnoses and learning about free evidence-based programs available statewide. For information on these programs in Vermont visit http://myhealthyvt.org/.

For more information on this data brief please contact Paul Meddaugh, MS, Vermont Department of Health (paul.meddaugh@vermont.gov; 802-951-0133).

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[2] Bullard KM et al. Secular Changes in U.S. Prediabetes Prevalence Defined by Hemoglobin A1c and Faster Plasma Glucose. *Diabetes Care*. 2013;36:2286-2293.
[3] Benjamin SM et al. Estimated Number of Adults with Prediabetes in the U.S. in 2000. *Diabetes Care*. 2003;26(3):645-649.
[4] Tabák AG et al. Prediabetes: A high-risk state for developing diabetes. *Lancet*. 2012;379(9833):2279-2290.
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[6] Plantinga LC, Crews DC, Coresh J, Miller ER, Saran R, Yee J, et al. Prevalence of Chronic Kidney Disease in US Adults with Undiagnosed Diabetes or Prediabetes. *Clin J Am Soc Nephrol*. 2010;5:673-682.
[7] Diabetes Prevention Program Research Group. 10-year follow-up of diabetes incidence and weight loss in the Diabetes Prevention Program Outcomes Study. *Lancet*. 2009;374(9702):1677-1686.