

Women with Disabilities and Heart Disease—North Carolina 2009



Background

Heart disease (also known as cardiovascular disease) is the leading cause of death for both men and women in the United States. About 35 percent of women in the U.S. have some form of heart disease, while the estimate for men is about 38 percent.¹ The most common form of heart disease is known as coronary heart disease (CHD), which is a narrowing of the small blood vessels that supply blood and oxygen to the heart. Though there have been noticeable reductions in CHD deaths in men over the past 40 years, the decline in CHD death rates among women continues to lag behind that of men.²

The American Heart Association categorizes risk factors for heart disease into three groups: major risk factors, contributing risk factors, and modifiable risk factors.³ Major risk factors are those that cannot be changed such as advancing age or heredity. Contributing risk factors are those such as stress, where the significance or contribution to the disease has yet to be precisely determined. Modifiable risk factors for heart disease are risk factors (also major) that can be modified, treated, or controlled by medicine and/or lifestyle changes. These risk factors include smoking tobacco, high blood pressure, high cholesterol, physical inactivity, obesity and diabetes. More recently, poor sleep has been recognized as an important risk factor.⁴

This brief report examines trends in cardiovascular disease (CVD) and modifiable risk factors for CVD among women with and without disabilities.

Methods

The results of this study were derived from the North Carolina Behavioral Risk Factor Surveillance System (BRFSS) Survey. The outcome variable, history of CVD, was based on self-reports of ever being told by a doctor that the respondent had a heart attack, *or* had coronary heart disease, *or* had a stroke.

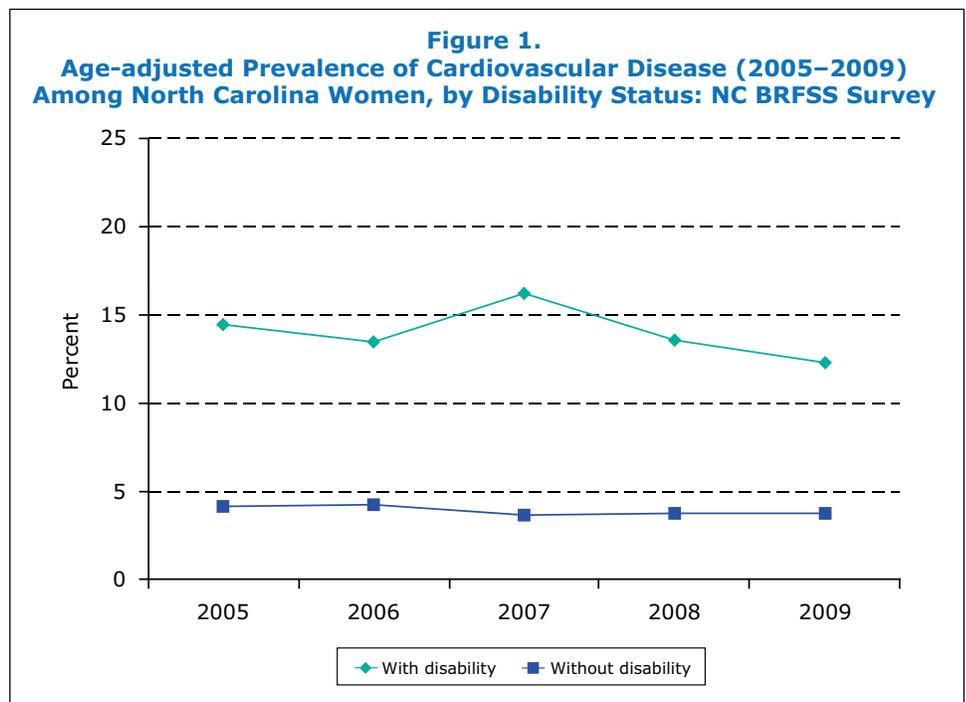
The definition for disability was derived from an affirmative response to at least one of four survey questions on (1) having an

activity limitation; (2) having the need for special equipment, e.g., wheelchair; (3) believing (self-perception) one has a disability; or (4) having trouble learning, remembering, or concentrating.^a

Two analyses were conducted for this study. In the first, we examined the rate of CVD over a five-year period from 2005 to 2009, for women with and without disabilities (Figure 1). Because women with disabilities tend to be older and given that advancing age is associated with CVD, we computed age-standardized rates. North Carolina's 2000 census population of females ages 18 and older was selected as the reference population because we compared two groups of females who reside in the state.

In the second analysis, we examined seven different risk factors for CVD using data from the 2009 survey (see Table 1). These risk factors included self-reports of doctor-diagnosed diabetes, high blood pressure, or high cholesterol. In addition, we included current smoking (daily or occasional); no leisure time activity in the past month; obesity (BMI greater than 35.0); and frequent poor sleep, defined as not getting enough rest or sleep in at least 14

Figure 1.
Age-adjusted Prevalence of Cardiovascular Disease (2005–2009)
Among North Carolina Women, by Disability Status: NC BRFSS Survey



^a North Carolina is the only state to use four BRFSS screener questions to identify adults with disabilities. It is important to note that the use of these four screener questions leads to a significantly larger disability population than would otherwise be obtained with fewer screener questions.

days out of the past 30 days. A summary index variable, “risk index,” was also constructed for those having three or more risk factors, among the seven studied. For each risk factor, we computed the age-adjusted prevalence and corresponding relative risk for those with a disability versus those without a disability.

Results

The results shown in Figure 1 highlight the elevated prevalence of CVD found among women with disabilities. From 2005 through 2009, the rate of CVD for women with disabilities ranged from a high of 16.2 percent in 2007 to a low of 12.3 percent in 2009. After adjusting for differences in age, the five-year annual rates of CVD were at least three times higher for women with disabilities compared to women without disabilities.

Table 1 shows that both the age-adjusted prevalence and relative risk for each of the risk factors, including the index variable, was significantly higher for women with disabilities compared to women without disabilities. The largest difference in prevalence was observed for poor sleep; among women with disabilities, the prevalence was 22.1 percentage points higher. For obesity, high blood pressure, and current smoking, the difference in prevalence rates was at least 10 percentage points higher for women with disabilities. Furthermore, almost 50 percent of women with disabilities, compared to about 21 percent with no disabilities, reported having *at least* three of the seven CVD risk factors shown in Table 1.

When we calculated the age-adjusted relative risks, we found that for all indicators in Table 1, the corresponding relative risk was statistically significantly higher for women with disabilities. The likelihood of reporting poor sleep or being a current smoker was at least 80 percent higher for women with disabilities, while the risk of having three or more risk factors present was 2.2 times higher.

Findings from this study reveal that women with disabilities have a persistently high prevalence of CVD. One of the reasons for this may be due to the multiplicity of risk conditions found among women with disabilities—even among young age groups.

We found that among women ages 18 to 44, the likelihood of having three or more risk factors for CVD was 2.9 times higher for women with disabilities compared to their counterparts in the same age group (results not shown). The National Lung, Blood and Heart Institute reports that having three or more risk factors can increase your risk of CVD more than tenfold.⁵ It follows that the challenge for public health is to intervene early in the lives of women with disabilities, when the opportunity for prevention of CVD due to high-risk behaviors, or incipient chronic disease, is most likely to be effective.⁶

Table 1.
Age-adjusted Prevalence and Relative Risk of Selected Risk Factors for Cardiovascular Disease Among Women, by Disability Status: NC 2009 BRFSS Survey.

Risk Factors for CVD	Prevalence		Relative Risk	
	Disability Status		aRR ¹	95% C.I. ²
	Yes (%)	No (%)		
Diabetes	15.2	6.7	2.3*	1.9–2.9
Obesity	41.1	25.5	1.6*	1.5–1.8
High blood pressure	39.5	25.9	1.4*	1.3–1.6
High cholesterol	47.1	30.8	1.4*	1.3–1.5
Current smoker	26.1	15.2	1.8*	1.5–2.0
Physical inactivity	39.9	24.4	1.7*	1.5–1.9
Poor sleep	49.9	27.8	1.9*	1.7–2.1
INDEX variable: three or more risk factors present	48.3	20.9	2.2*	2.0–2.5

* $p < 0.05$; ¹aRR – age-adjusted relative risk (Mantel–Haenszel); ²C.I. – confidence interval.

References

1. Zhang Y. Cardiovascular diseases in American women. *Nutrition Metabolism & Cardiovascular Diseases*. 2010 Jul;20(6):386–93.
2. American College of Cardiology. CardioSmart™ website: www.cardiosmart.org/HeartDisease/CTT.aspx?id=2638. Accessed June 21, 2011.
3. American Heart Association. *Understand Your Risk of Heart Attack* website: www.heart.org/HEARTORG/Conditions/HeartAttack/UnderstandYourRiskofHeartAttack/Understand-Your-Risk-of-Heart-Attack_UCM_002040_Article.jsp. Accessed June 20, 2011.
4. Shankar A, Syamala S, Kalidindi S. Insufficient rest or sleep and its relation to cardiovascular disease, diabetes and obesity in a national, multiethnic sample. *PLoS ONE*. 2010 Nov;30;5(11):e14189.
5. National Heart Lung and Blood Institute. *Heart Disease in Women* website: www.nhlbi.nih.gov/health/dci/Diseases/hdw/hdw_whoisatrisk.html. Accessed June 21, 2011.
6. Daviglius ML, Lloyd-Jones DM, Pirzada A. Preventing cardiovascular disease in the 21st century: therapeutic and preventive implications of current evidence. *American Journal of Cardiovascular Drugs*. 2006;6(2):87–101.

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