Multiple Risk Factors and Disparities associated with Heart Disease and Stroke among Mississippi Delta Adult Women

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Background

Prevalence of multiple risk factors (MRFs) for heart disease and stroke in Mississippi (MS) is among the highest in the United States[1]. In MS, black women experience a disproportionately greater burden of heart disease and stroke mortality than white women. Heart disease and stroke death rates among women in the 18-county MS Delta region are among the highest in the state (Figure 1 and 2). However, risk factor disparity among MS Delta women is unknown.

Figure 1. Mississippi Women: Heart Disease Age-adjusted Death Rates, 2005-2010

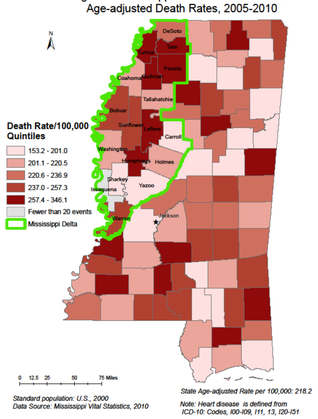
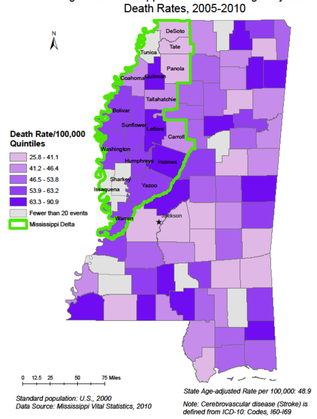


Figure 2. Mississippi Women: Stroke Age-adjusted Death Rates, 2005-2010



Objective

We examined MRFs for heart disease and stroke by age, race, socioeconomic status (SES), and healthcare coverage among MS Delta adult women.

Methods

Data Source and Study Population

- Self-reported Behavioral Risk Factor Surveillance System (BRFSS) data (2007- 2010; N = 5,390: 50.8% black; 49.2% white) of MS Delta women adults ≥ 18 years-old.

Study Variables

- Hypertension, hyperlipidemia, diabetes, smoking, obesity, and physical inactivity were assessed.
- MRFs was defined as having ≥ 2 of the these risk factors.

Statistical Analyses

- Prevalence estimates and 95% confidence intervals (CI) were used to calculate MRFs by age, race, SES, and healthcare coverage.
- Multivariate logistic regression models adjusting for age, race, SES (household income, education, and employment), and healthcare coverage were used to examine differences between subgroups.
- SAS 9.2 survey procedures were used to account for complex sampling design.

Results

- Half (49.7%) of respondents reported MRFs (Figure 3).
- Prevalence of MRFs was highest in those with less than high school education (60.3%), those with household income less than $10,000 (57.9%), those aged 65 years and older (52.7%), black women (48.0%), unemployed (47.5%) and those without healthcare coverage (47.2%) compared to their counterparts (Table 1).
- Respondents aged 50-64 years-old and those with household income less than $10,000 had the highest odds (adjusted odds ratio (AOR), 2.6, 95% CI 2.0-3.1; AOR, 2.4, 95% CI 1.6-3.2 respectively) of MRFs compared to their counterparts.
- The odds of MRFs decreases as household income and education level increases.
- Age (p<0.0001), education (p<0.0001) and household income (p<0.0001) were significantly associated with MRFs.

Results

Figure 3. Prevalence of heart disease and stroke risk factors and MRFs (≥ 2 risk factors) among MS Delta adult women

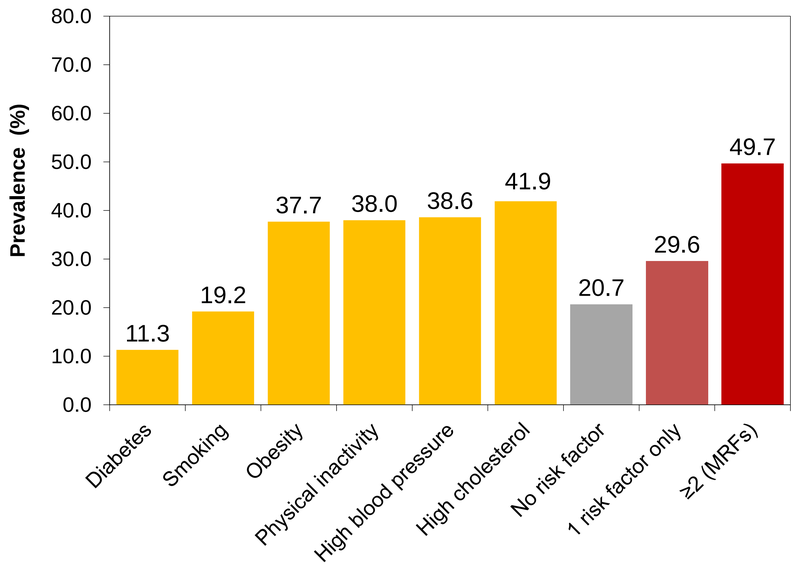


Table 1: Prevalence of MRFs (≥ 2 risk factors) for heart disease and stoke by select characteristics in MS Delta adult women, BRFSS, 2007-2010

Characteristic	n[a]	%[b]	95%CI[c]
Age (years)			
18-34	186	29.5	24.9-34.2
35-49	533	42.7	39.0-46.5
50-64	936	48.0	45.1-50.9
≥ 65	1,011	52.7	49.9-55.5
Race			
White	1,226	36.6	34.0-39.2
Black	1,412	48.0	45.1-50.9
Other*	30	28.9	17.2-40.6
Education			
< High school	426	60.3	55.5-65.2
High school or GED	943	46.7	43.4-49.9
Some college or higher	1,010	32.4	29.9-34.9
Employment			
Employed	889	35.5	32.6-38.4
Unemployed	173	47.5	39.6-55.4
Other**	1,612	48.7	46.1-51.4
Household Income ($)			
< 10,000	431	57.9	51.8-63.9
10,000-19,999	671	54.8	50.2-59.3
20,000-34,999	523	44.5	40.1-48.9
35,000-49,999	246	39.2	33.7-44.6
≥ 50,000	376	25.4	22.3-28.5
Healthcare coverage			
Yes	2,279	40.9	38.9-42.9
No	399	47.2	41.7-52.6

[a]Unweighted total number of survey respondents with multiple risk factors
[b]Weighted percentages
[c]Confidence interval around the weighted prevalence estimate
**Hispanic/Latino, Asian, American Indian/Alaska Native;*
***Homemaker, Student, Retired, and Unable to work*

Results

Table 2: Adjusted odds ratio and 95% CIs of select characteristics with MRFs for heart disease and stroke in MS Delta adult women, BRFSS, 2007-2010

Characteristic	Model[f]	
	AOR[a]	95% CI[b]
Age (years)		
18-34	1.0	Referent
35-49	2.0	1.6-2.7
50-64	2.6	2.0-3.1
≥ 65	2.2	1.7-3.0
Race		
White	1.0	Referent
Black	1.2	0.9-1.5
Other*	0.7	0.4-1.2
Education		
< High school	1.9	1.5-2.6
High school or GED	1.3	1.1-1.6
Some college or higher	1.0	Referent
Employment		
Employed	1.0	Referent
Unemployed	1.2	0.9-1.4
Other**	1.2	0.8-1.7
Household Income ($)		
<10,000	2.4	1.6-3.2
10,000-19,999	2.3	1.8-3.2
20,000-34,999	2.1	1.6-2.6
35,000-49,999	1.6	1.2-2.2
≥ 50,000	1.0	Referent
Healthcare coverage		
Yes	1.0	Referent
No	1.1	0.9-1.5

Results in RED indicated AORs were significantly higher than the reference group
Multiple risk factors defined as ≥2 of the following: high blood pressure, high cholesterol, obesity, smoking, diabetes, physical inactivity
[f]Model : Logistic regression adjusted for age, race, income, education, employment, and healthcare coverage
[a]AOR: adjusted odds ratio, [b]95% CI: 95% confidence interval around the adjusted odds ratio
**Hispanic/Latino, Asian, American Indian/Alaska Native, **Homemaker, Student, Retired, and Unable to work*

Limitations

- BRFSS utilizes self-reported information (recall bias)[2].
- We did not examine the intensity of individual risk factors.
- SES barriers to healthcare access may affect the likelihood of being screened and diagnosed for high cholesterol, high blood pressure, and diabetes.[1]

Conclusions

- MS Delta adult women have high prevalence of MRFs for heart disease and stroke.
- Age, household income and education are significantly associated with MRFs.
- There was no significant racial disparity.
- Focusing public health efforts on reducing MRFs in specific groups may help decrease cardiovascular disease related health disparities among MS Delta women.

References

1.Racial/Ethnic and Socioeconomic Disparities in Multiple Risk Factors for Heart Disease and Stroke -- United States, 2003. (2005). *MMWR: Morbidity & Mortality Weekly Report*, *54*(5), 113-117.
2.Hayes, D. K., Denny, C. H., Keenan, N. L., Croft, J. B., Sundaram, A. A., & Greenlund, K. J. (2006). Racial/Ethnic and Socioeconomic Differences in Multiple Risk Factors for Heart Disease and Stroke in Women: Behavioral Risk Factor Surveillance System, 2003. *Journal Of Women's Health (15409996)*, *15*(9), 1000-1008.