



Family History of Premature Heart Attack or Stroke, Michigan WISEWOMAN Program, 2001–2006

Ann Annis Emeott, RN, MPH, Robin Roberts, MA, Velma Theisen, RN, Deb Duquette, MS, CGC, Mary Teachout, MAT
Michigan Department of Community Health



Background

Family history of a first-degree relative (parent, sibling, child) with premature (or early-onset) cardiovascular disease (CVD):

- ❖ Is a recognized risk factor for the development of CVD
- ❖ Automatically places an individual in an intermediate to high CVD risk category^{1,2}

CVD onset is considered “early” if it occurs *before age 55 years in men or before age 65 years in women*.¹

Family health history represents the interaction between shared genetic susceptibilities, environment, and behaviors; therefore, it is an important *genomics* measure for assessing individual CVD risk.

In Michigan, *heart disease* is the *number one* cause of death for women, and *stroke* is the *third* most frequent cause of death.³

The Well-Integrated Screening and Evaluation for Women Across the Nation (WISEWOMAN) was developed by the Centers for Disease Control and Prevention (CDC) as an adjunct component to the National Breast and Cervical Cancer Early Detection Program (NBCCEDP). Women who are currently enrolled in the NBCCEDP are eligible to participate in WISEWOMAN, which is funded in 15 sites among 14 states throughout the U.S.

The Michigan WISEWOMAN program aims to reduce the burden of cardiovascular disease and its associated risk factors by helping women increase awareness of their personal risk factors, and increase healthy behaviors related to diet, physical activity and smoking. This project utilized family health history information (genomics) of participants to assess the prevalence of several CVD risk factors.

Objective

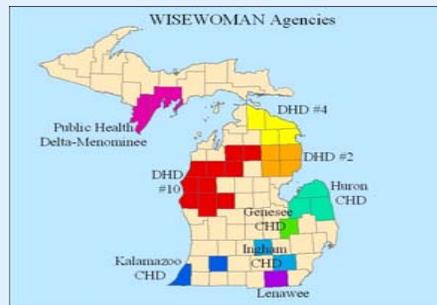
To describe the associations between family history of premature heart attack or stroke and cardiovascular disease risk factors among Michigan WISEWOMAN participants, 2001–2006.

Methods

The WISEWOMAN program serves financially disadvantaged and under- or uninsured women aged 40 to 64 years.

- Participants receive:
- CVD risk factor screening
 - Lifestyle intervention
 - Referral services

In Michigan, the WISEWOMAN program is implemented in 9 local health departments, serving 27 counties.



Data from 7323 Michigan WISEWOMAN participants, from October 2001 to April 2006 were examined, including:

- Self-reported history of previously diagnosed medical conditions (i.e., hypertension, heart disease)
- Physiologic measurements (i.e., BMI, blood pressure, cholesterol)
- Healthy lifestyle assessment (i.e., smoking)
- **Family history** of premature heart attack or stroke in first-degree relatives, as measured by two questions:

- ✓ Has your father or brother or *son* had a stroke or heart attack before age 55?
- ✓ Has your mother or sister or *daughter* had a stroke or heart attack before age 65?

“Son” and “daughter” were added to the questionnaire June 1, 2005.

The characteristics of participants with a family history of premature heart attack or stroke were compared to the characteristics of those without such family history.

Results

Over *one-third* (34.5%) of Michigan WISEWOMAN participants reported having a first-degree relative who has had a premature heart attack/stroke.

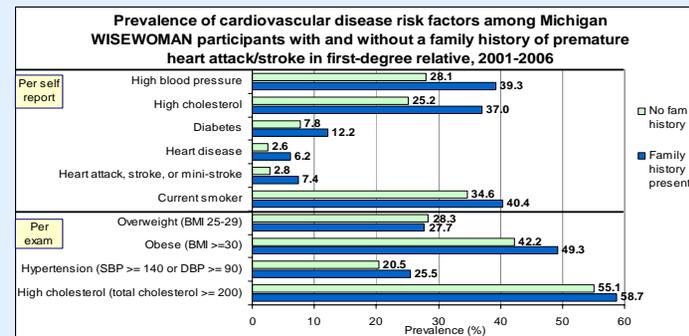
This proportion was even higher among women with selected risk factors (by self-report and by exam). Over *half* (54.3%) of women who reported having a personal history of heart disease also had a family history of premature heart attack/stroke. Similarly, 39.3% of women who were hypertensive upon examination had a family history of premature heart attack/stroke.

Prevalence of family history of premature heart attack or stroke* among Michigan WISEWOMAN participants with selected CVD Risk Factors, October 2001 to April 2006.

CVD Risk Factor	Percent reporting family history
Self-reported health history	
High blood pressure	41.9
High cholesterol	42.9
Diabetes	43.6
Heart disease	54.3
Heart attack, stroke, or mini-stroke	55.8
Current smoker	37.9
Current health status by examination	
Overweight (BMI 25-29)	33.9
Obese (BMI ≥ 30)	38.0
Hypertension (SPB ≥ 140 or DBP ≥ 90)	39.3
High cholesterol (total cholesterol ≥ 200)	35.9

* Family history of premature heart attack/stroke is defined as before age 55 in male first-degree relatives and before age 65 in female first-degree relatives.

The prevalence of *almost all* of the CVD risk factors (by self-report and by exam) in women with a premature heart attack/stroke family history was *significantly higher* than in women with no such family history.



Conclusions

This project found significant associations between family history of premature heart attack/stroke and several CVD risk factors. Findings demonstrate the importance of including family health history in CVD risk assessment and screening in order to identify individuals at increased disease risk who may benefit from targeted prevention therapies.

Family health history is both easily and inexpensively obtained on a routine health assessment survey. Additionally, only 5 to 7% of the subjects did not know their family history of premature heart attack/stroke in first-degree relatives, indicating fairly complete data.

In 2005, a family health history fact sheet was developed and is currently being distributed to Michigan WISEWOMAN participants in an effort to increase awareness of the implications of family health history in cardiovascular health.

It is hoped that by understanding how family health history affects their personal health, women will be motivated to make positive behavioral changes that may reduce their risk of CVD in the future.

Acknowledgements

The authors would like to express their appreciation to Patty Ferry for her help with and commitment to this project.

This project was supported in part by the CDC Cooperative Agreement, Grant #U58/CCU522826, Genomics and WISEWOMAN components.

References

1. Mosca, L, LJ Appel, EJ Benjamin, K Berra, N Chandra-Strobs, RP Fabunmi, et. al. Evidence-Based Guidelines for Cardiovascular Disease Prevention in Women. American Heart Association. Circulation. 2004;109:672-693.
2. Yoon, PW, MT Scheuer, KL Peterson-Oehlke, M Gwinn, A Faucett, MJ Khoury. Can Family History Be Used as a Tool for Public Health and Preventive Medicine? Genetics in Medicine. 2002;4(4):304-310.
3. 2004 Michigan Resident Death File, Vital Records & Health Data Development Section, Michigan Department of Community Health.