

# Cholesterol Screening and Awareness in Michigan

By: Michelle L. Cook, M.P.H.

## Background

- High cholesterol is a major risk factor for heart disease.<sup>1</sup>
- Unhealthy diet, obesity, and cigarette smoking contribute to higher levels of cholesterol found in the blood.<sup>2</sup>
- Among all participating states and U.S. territories in the 2003 Behavioral Risk Factor Survey, Michigan had the highest prevalence rate of high cholesterol (among those tested). Also, Michigan's prevalence rate of ever having their cholesterol checked was the 19<sup>th</sup> highest in 2003.
- In Michigan, the proportion who were ever told by a health care professional that they had high cholesterol (among those tested) increased from 33.0 ± 1.8% in 2001 to 37.6 ± 2.0% in 2003.

## Objectives

- To investigate trends in cholesterol screening and awareness in Michigan.
- To examine demographic and medical care associations that might contribute to the trends observed.

## Methods

### Michigan Behavioral Risk Factor Surveillance System

- Non-institutionalized, civilian population who lived in a household with a residential phone line.
- Data from 1993, 1995, 1997, 1999, 2001, and 2003 were combined using SPSS (v. 10.0.5).
- SUDAAN 9.0.0 was used for all population proportional estimates, proportional adjustments, and statistical tests.
- Estimates were weighted to adjust for the probabilities of selection and a post-stratification weighting factor that adjusted for the distribution of Michigan adults by age, sex, and race/ethnicity at the state level.

### Non-Lipid Modifiable Risk Factors for Coronary Heart Disease (CHD)

- Diabetes was considered to be a CHD risk equivalent.
- Other risk factors:
  - Self-reported high blood pressure
  - Obesity (based on self-reported height and weight)
  - Current cigarette smoking

### Non-Lipid Non-Modifiable Risk Factors for CHD

- Age
- Gender

### Multiple Logistic Regression Modeling

- Multivariable-adjusted estimates (adjusted for age, gender, race, educational attainment, health care coverage, non-lipid modifiable risk factors for CHD, and one interaction term for gender and age) were calculated for those who reported ever having had their blood cholesterol checked.
- Multivariable-adjusted estimates (adjusted for age, gender, race, non-lipid modifiable risk factors for CHD, and one interaction term for gender and age) were calculated for those who reported ever being told by a health care professional that they had high cholesterol (among those tested).
- The conditional marginals are shown in Figure 6 to Figure 8.

## Results

Figure 1: Prevalence of Ever Told High Cholesterol U.S. vs. Michigan, 1993-2003

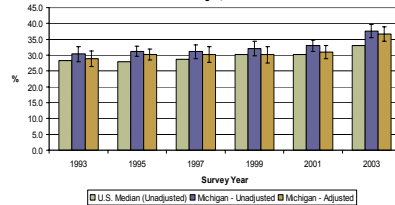


Figure 2: Prevalence of Ever Told High Cholesterol by Gender (Unadjusted) Michigan, 1993-2003

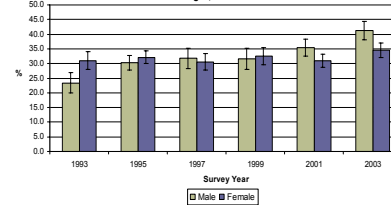


Figure 3: Prevalence of Zero Non-Lipid Modifiable Risk Factors for Cardiovascular Heart Disease by Gender (Unadjusted) Michigan, 1993-2003

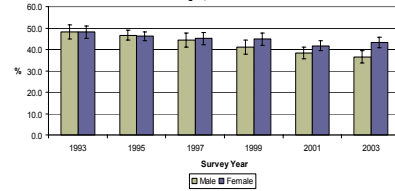


Figure 4: Age and Gender Distribution Michigan Census, 1990 vs. 2000

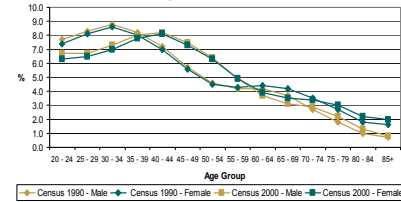


Figure 5: Prevalence of Cholesterol Ever Checked by Age Group (Adjusted) Michigan, 1993-2003

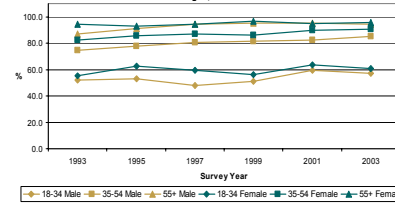


Figure 6: Prevalence of High Cholesterol (Among Those Tested) by Age Group (Adjusted) Michigan, 1993-2003

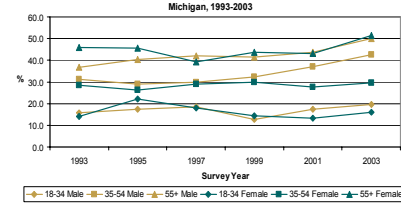


Figure 7: Prevalence of Cholesterol Ever Checked by Non-Lipid Modifiable Risk Factors for CHD (Adjusted) Michigan, 1993-2003

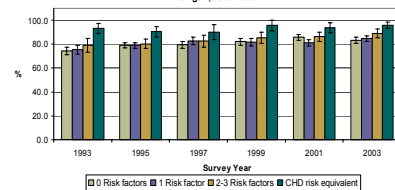
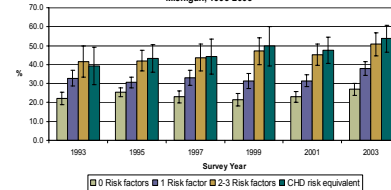


Figure 8: Prevalence of High Cholesterol (Among Those Tested) by Non-Lipid Modifiable Risk Factors for CHD (Adjusted) Michigan, 1993-2003



## Summary of Results

- Michigan has consistently had higher unadjusted prevalence rates for high cholesterol (among those tested) than the U.S. median (Figure 1).
- In 1993, women were more likely than men to have ever been told that they had high cholesterol, whereas in 2003, men were more likely (Figure 2).
- The prevalence of 0 non-lipid modifiable risk factors for CHD decreased for both men and women, but the prevalence for men decreased at a faster rate than for women (Figure 3).
- In 2000, there was a higher percentage of men and women aged 40-59 than there was in 1990 (Figure 4).
  - Michigan's median age in 1990 was 32.6<sup>3</sup> and in 2000 was 35.5.<sup>4</sup>
- Among 35-54 year old men, the prevalence rate for ever having had their cholesterol checked did not increase between 1999 and 2003 (Figure 5), however, the prevalence rate for ever being told by a health care professional that they had high cholesterol (among those tested) did increase (Figure 6). This was apparent before and after adjusting.
- The proportion who had ever had their cholesterol checked was similar across groups who had 0, 1, 2-3 risk factors (Figure 7). However, among those whose cholesterol had been tested, those with a greater number of risk factors were more likely to report having high cholesterol (Figure 8).

## Conclusions

- Men have an earlier onset of CHD than women, usually in their 40's or 50's, whereas women have an onset about 10-15 years later.<sup>1</sup> According to the National Cholesterol Education Program (NCEP) guidelines, a 10-year risk assessment for CHD should be done for those who have multiple risk factors (e.g., cigarette smoking, hypertension, gender, and age). To complete an assessment, cholesterol screening needs to occur. Since there was not a significant increase in the prevalence of cholesterol testing among men between 1999 and 2003, something else might be occurring to increase the prevalence of high cholesterol.
- Michigan's prevalence rates for nutritious diet (15.2%), obesity (25.7%), and cigarette smoking (29.5%) were ranked 10<sup>th</sup>, 12<sup>th</sup>, and 5<sup>th</sup> respectively in 2003 for men. (1<sup>st</sup> being the worst). These prevalence estimates may have increased the prevalence of high cholesterol in Michigan men.

## Public Health Implications

- Due the increase in high cholesterol among middle-aged men in Michigan, further evaluation tools need to be developed to determine which type of treatment has been recommended and used to control their high cholesterol.

## Limitations

- Recall bias, data were self-reported.
- Non-institutionalized, civilian population who lived in a household with a residential phone line.
- There were some minor modifications in the NCEP guidelines between the Adult Treatment Panel (ATP) II in 1994 and ATP III in 2001 (updated 2004).

## References

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