

CARDIOVASCULAR RISK FACTORS IN ECONOMICALLY DISADVANTAGED WOMEN: A STUDY OF PREVALENCE AND AWARENESS

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This study examined the prevalence of cardiovascular risk factors among low-income women and assessed the level of awareness and attitudes about these risk factors in the community. A survey instrument was developed and administered by a single researcher to a convenience sample of women in health clinics and nonclinical community settings. These settings included: an academic clinic, community clinics, women's shelters, free meal sites, community centers, public housing units, and private homes in Philadelphia, Pennsylvania.

Two hundred two women were selected without regard to age or race. The mean number of cardiovascular risk factors per subject was 2.6 (SD 1.4). Each of eight established cardiovascular risk factors was identified by 4% to 34% of subjects. Among those women with a specific risk factor, only 0% to 45% reported that they were at increased risk due to the presence of that factor. The prevalence of cardiovascular risk factors among low-income women is substantial. Knowledge and understanding of these risk factors is suboptimal, particularly among women personally affected by risk factors for cardiovascular disease. (*J Natl Med Assoc.* 1998;90:531-536.)

Key words: cardiovascular risk factors
◆ low-income women ◆ heart disease

Heart disease is the leading cause of death among women in the United States. While age-adjusted death rates are higher for men than for women, the number of cardiovascular events has been shown to be equal for men and women.¹

It is well-established that several modifiable and nonmodifiable risk factors play a role in the development of heart disease and stroke in both men and women. This study examined the prevalence and

awareness of cardiovascular risk factors in women in an economically disadvantaged, primarily African-American area of Philadelphia and assessed their self-reported level of preventive care.

MATERIALS AND METHODS

The population in this study included women living in west and southwest Philadelphia. This is an economically disadvantaged, predominantly African-American area. Subjects were surveyed by convenience sample in two types of settings—clinical and nonclinical—without regard to age or race.

Ninety-nine women were recruited from 12 non-clinical community sites, including five housing shelters (n=52), a Philadelphia Housing Authority dwelling (n=10), two senior centers (n=19), a community education organization (n=11), and three indigent meal program sites (n=7). In addition, 103 women were recruited from seven clinical settings, including two Philadelphia City Health District clin-

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ics (n=38), a primary care community clinic at the Hospital of the University of Pennsylvania (n=12), four community-based clinics (n=49), and through home visits with a home health care program of the University of Pennsylvania (n=5). Subjects were interviewed by the same researcher within a 5-week period during the summer of 1995. The survey instrument was approved by the director of each site prior to administration, and each subject gave oral or written consent.

Survey Instrument

The survey was developed using standard instruments modified according to feedback from pilot interviews to maximize the ease of understanding for the subjects and to include culturally relevant vocabulary and issues.

Awareness of Risk Factors

Each subject was told that cardiovascular disease includes any kind of heart disease—such as heart attack, congestive heart failure, coronary artery disease, or atherosclerosis—and stroke. Awareness of the contributions of various risk factors to the development of cardiovascular disease was assessed by first asking open-ended and then asking directed questions in the form of a checklist. Subjects were asked to: 1) list any personal risk factors for cardiovascular disease, 2) list risk factors for cardiovascular disease for anyone, and 3) identify whether each of the following is a risk factor for heart disease and stroke: smoking, obesity, high cholesterol, lack of exercise, high blood pressure, diabetes, family history of heart disease or stroke, and age.

Smoking, Alcohol, and Drugs

Subjects were asked if they smoke currently or if they had ever smoked regularly in the past. Pack years were calculated for present and past smokers. Those who had stopped smoking >10 years were not considered at risk for cardiovascular disease.

In addition, each smoker was asked whether she had ever considered stopping smoking and whether anyone had ever told her she should stop and if so, who had asked her to stop.

Weight Assessment

Self-reported height and weight were used to calculate body mass index (BMI), or Quetelet's Index, which is the weight (kilogram) divided by the height (meters) squared.² Information was available to

make this calculation for 191 of the 202 women. The following criteria were used: goal BMI is 22.4, 20% overweight BMI is 26.9, and 40% overweight BMI is 31.4.² Women who were at least 20% overweight were considered at risk for cardiovascular disease.

Cholesterol

Subjects were asked if they had ever had their cholesterol level checked, whether anyone had ever told them they had high cholesterol, and what methods, if any, were being used to control it. Women who reported being told they had high cholesterol were considered at risk for cardiovascular disease, with the exception of one subject who reported an isolated elevated high-density lipoprotein level.

Activity Level Assessment

Subjects were asked how many hours of the following activities they performed each week: running, volleyball, racquetball/handball, jumping rope, swimming laps, basketball, dancing/aerobics, hiking, bicycling, football, tennis, walking, softball/baseball, soccer, weight lifting, heavy housework, or other exercise. The interviewer calculated an activity level for each subject following the protocol of Simonsick et al³ with modifications according to American Heart Association (AHA) recommendations.

Women performing regular vigorous exercise of at least 1 hour weekly were rated as highly active. Those performing less vigorous activity, such as walking, bicycling, exercising lightly, or dancing occasionally during the week but also performing several hours of housework, child care, or gardening on a regular basis were rated as moderately active. Women who reported only walking that could not be quantified or established as regular, as well as women who reported none of the above activities, were rated as inactive. In accordance with the guidelines of the AHA, those who were only moderately active or inactive were considered at risk for cardiovascular disease.

Blood Pressure

Subjects were asked if they had ever had their blood pressure checked, how long it had been since the last time it was measured, how frequently they have it measured, whether they know their blood pressure, whether anyone had ever told them they had high blood pressure, and if so, what methods, if any, were being used to control it. All subjects reporting that a physician told them that they had

high blood pressure were considered at risk for cardiovascular disease.

Diet Advice

Subjects were asked whether anyone had ever given them any advice about their diet.

Medical and Family History

Subjects were asked if they or any immediate family members (parents, grandparents, or siblings) had diabetes, a history of heart disease or stroke.

Estrogen Replacement Therapy

Subjects were asked if they had heard about estrogen replacement therapy for women after menopause, from where they had heard of it, whether a doctor had ever suggested it for them, and whether they were currently taking it.

Prevention Counseling

The women were asked to identify their health-care providers and to recall what, if anything, the providers had ever told them about preventing heart disease and stroke.

RESULTS

The average age for all subjects was 37.6 years (range: 15 to 91 years). Ninety percent were African American, 3% white, 3.5% multiracial, and 3.5% other. There were no significant differences in age or racial distribution between the subjects recruited from clinical sites and subjects recruited from non-clinical community settings.

In addition, there were no significant differences between the groups in prevalence, awareness, or medical attention received. Thus, the following results have been combined and represent the entire sample of 202 women.

Risk Factor Profile

The prevalence of each risk factor is reported in Table 1. The mean number of risk factors per person was 2.6 (SD 1.4).

The risk factor with the highest prevalence was insufficient exercise, or sedentary lifestyle. Eighty-five percent of the sample population was considered at risk for cardiovascular disease due to insufficient exercise.

Forty-eight percent of the sample population was at risk for cardiovascular disease from obesity. Of the 191 women for whom percentage ideal body

Table 1. Prevalence of Cardiovascular Risk Factors Among 202 Women

Risk Factor	Affected No. (%)
Insufficient exercise	171 (85)
Overweight	95 (48)
Family history of cardiovascular disease	96 (48)
Smoking	65 (32)
High blood pressure (known)	53 (26)
High cholesterol (known)	24 (12)*
Previous cardiovascular disease	16 (8)
Diabetes	11 (5)

*This represents 12% of the total sample population. Of the subjects who reported having had their cholesterol level checked, 21% reported being told they had high cholesterol.

weight could be calculated, 95 (50%) weighed 20% or more greater than ideal body weight. Fifty-four (28%) of the women weighed at least 40% greater than ideal body weight.

The 32% of women classified as at-risk from smoking included 63 current smokers and 2 women who recently quit and were still considered at risk. The average number of cigarettes smoked by these women was 3.3 packs per week.

Only 57% of the sample reported having been screened for hypercholesterolemia. Of the screened individuals, 21% reported having been told that it was high.

Subgroup Analysis

The data regarding the prevalence of risk factors in the 171 women ≤ 65 years were compared with the 31 women > 65 . As expected, there was a significantly higher prevalence of previous heart disease, high cholesterol, high blood pressure, and diabetes reported in the older age category. Of note, compared with 36% of the women ≤ 65 who were smokers, only 13% of the older women reported smoking (two-sided $P < .02$). Insufficient exercise was significantly more prevalent in the older age group, with 97% of the women > 65 and 82% of the women ≤ 65 considered at risk (two-sided $P < .05$). Interestingly, the prevalence of obesity in both groups was 48%.

Awareness of Risk Factors

Prior to questioning about established risk factors, subjects were asked to identify their own risk

Table 2. Knowledge of Cardiovascular Risk Factors

Risk Factor Identified	% Subjects Listing for Self*	% Subjects Listing for Anyone†
Diet	5	34
Smoking	9	27
Stress	4	26
High blood pressure	9	25
Obesity	4	22
Family history of cardiovascular disease	9	17
Diabetes	4	11
Insufficient exercise	0	10
Drinking alcohol	0	10
High cholesterol	3	9
Heat or sun	1	6
Overwork	0	5
Drug use	0	4

*This column represents the percent of subjects who listed the given risk factor among their responses when asked to identify cardiovascular risk factors affecting them personally.
 †This column represents the percent of subjects who listed the given risk factor among their responses when asked to identify any cardiovascular risk factors of which they were aware.

factors and then to list any cardiovascular risk factors of which they were aware. Nine percent of the subjects listed smoking, 9% listed high blood pressure, and 9% listed family history of cardiovascular disease as risk factors that affected them personally. Other responses were each given by ≤5% of subjects (Table 2).

Risk factors identified as applying to anyone are presented in Table 2 in order of frequency. Diet, stress, and obesity were identified by 34%, 26%, and 22% of subjects, respectively, as cardiovascular risk factors while <5% of all subjects had identified these risk factors in reference to themselves.

After subjects were asked to identify cardiovascular risk factors, they were presented with a checklist of established risk factors. They were asked whether each of these factors put people at risk of developing cardiovascular disease. Fifty-six percent acknowledged that insufficient exercise and diabetes were risk factors; 69% acknowledged a family history of cardiovascular disease; and 82% to 92% had each of the following: high cholesterol, high blood pressure, smoking, and obesity. Of note, the response that

Table 3. Risk Factors Identified by Affected Subjects as Personal Risks for Cardiovascular Disease

Risk Factor	% Subjects Identifying for Self
Insufficient exercise	0
Obesity	8
Family history of cardiovascular disease	18
Smoking	28
High blood pressure	30
High cholesterol	17

individual factors increased the risk of cardiovascular disease was the same in those affected and those not affected by that factor, with the exception of those affected with hypertension (two-sided $P<.02$) and diabetes (two-sided $P<.001$).

Subgroups of respondents were selected based on the reported presence of the risk factors of interest. Table 3 shows the percentage of subjects with each risk factor who identified that risk factor as increasing their own risk. Overall, <50% of those affected by each risk factor had stated in the initial part of the survey that they were at increased risk from having this risk factor (Table 4).

Health Prevention or Treatment

Of the 202 women interviewed, only 34% reported that their doctor or health-care provider had ever talked to them about preventing heart disease and stroke. Of the 95 women at risk from being overweight, 40 (42%) subjects reported that they had not received dietary advice from their doctor.

Medical attention received by subjects affected by modifiable risk factors is summarized in Table 5. While the majority of hypertensive and hypercholesterolemic subjects reported that they had been treated, many smokers and overweight individuals had not been counseled about modifying their risks.

All subjects were given the opportunity at the end of the interview to state how, if at all, a health-care provider had counseled them about the prevention of cardiovascular disease. Of the inactive group, none volunteered that they had been told by a health-care provider to exercise. Seventy-two percent of subjects at risk from smoking reported that a health-care provider had not advised them to stop smoking.

Ninety-eight percent of the women in this sample

Table 4. Risk Factors Identified by Affected Subjects

Risk Factor	% Subjects Identifying for Anyone
Insufficient exercise	11
Overweight	37
Family history of cardiovascular disease	26
Smoking	49
High blood pressure	43
High cholesterol	17

population reported having had their blood pressure checked at least once in the past. Many reported that their provider checks their blood pressure during every office visit, and subjects reported having it checked on average 5.6 times per year. Of the 53 hypertensive women in the sample, 87% (46) reported that their high blood pressure was being treated with medications (33), diet (4), or a combination of these.

All of the women were asked whether they had heard of estrogen replacement therapy for postmenopausal women. Of the 69 women aged ≥ 40 years, 43 (62%) had heard of this treatment from a variety of sources including doctors, friends, family, television, newspaper, magazines, and radio. Only 13 (19%) of the 69 reported that a doctor had suggested it for them, and only 1% (3 subjects aged 44, 56, and 70 years) reported current use of estrogen replacement therapy.

DISCUSSION

African-American women have higher rates of coronary artery disease and stroke than white women.⁴ There have been no recent studies of the attitudes and awareness of this population in regard to risks for cardiovascular disease. While there are reports of the prevalence of each risk factor among economically disadvantaged African-American women,⁵ there have been no studies of the awareness of the importance and potential impact of individual risk factors.

Risk Factor Profile

A high prevalence of the established risk factors for cardiovascular disease was found in this sample population. The prevalence for smoking, hypertension, and elevated cholesterol status corresponded closely to national findings.⁶ However, the preva-

Table 5. Lack of Medical Attention for Affected Subjects

Risk Factor	% Did Not Receive Medical Attention
Overweight	42*
Smoking	36†
High blood pressure	13
High cholesterol	4
Age >40 years	81‡

*Proportion of overweight individuals who reported not being advised to modify their diet.

†Proportion of smokers who reported not being advised to stop smoking.

‡Proportion of women ≥ 40 years who reported not being advised to use estrogen replacement therapy.

lence of obesity in the sample population was 48%, in contrast to the overall national prevalence of one third in African-American women.⁵

Awareness of Risk Factors

At the beginning of each interview, subjects were asked to identify risk factors that increased their own risk of developing cardiovascular disease and then to list risk factors that affect anyone in general. Fewer subjects listed risk factors for themselves than they listed as risk factors for the population in general, even if the risk factor affected them. There seems to be a lack of personal identification with cardiovascular risk factors in this population. Whether this is a manifestation of a lack of knowledge or a depersonalization or denial of the presence of health risks cannot be determined from this study.

When asked directly about each risk factor in checklist format, the majority of subjects correctly acknowledged established risk factors. With the exception of those affected by high cholesterol and diabetes, individuals in whom a particular risk factor was present were no more knowledgeable about that risk factor than those not affected. Together, these responses suggest that passive questioning, such as that frequently performed in a medical interview, is not an effective means of assessing subjects' understanding of their personal risks for cardiovascular disease.

Preventive Counseling

Any one of the risk factors discussed warrants counseling about risk factor modification and car-

cardiovascular disease prevention. Considering that many of these women had multiple risk factors, it is even more striking that more did not report such counseling. However, it is also possible that some of the women were counseled about preventing heart disease and stroke but did not remember what they had been told perhaps because the information was not presented in a memorable fashion. Communication that actively engages patients in a thought process about risk factors and their personal relevance may identify gaps in patients' awareness that can be addressed by the medical professional.

Assessment of true patient knowledge in an office setting is critical to the delivery of effective counseling. If, for example, knowledge is evaluated based on the standard checklist pattern of asking patients to answer yes and no questions, a false sense of awareness is likely to be created, and fewer opportunities for provider intervention and education will present themselves. Open-ended questioning about cardiovascular risk factors would aid doctors and other health-care providers in accurately assessing patient knowledge and insight; this information can aid in tailoring counseling to each patient's level of risk awareness.

CONCLUSIONS

In a survey of 202 women in west Philadelphia, the prevalence of cardiovascular risk factors paralleled the most recent national statistics for economically disadvantaged African-American women. Eighty-five percent of the sample population did not exercise enough to meet minimum AHA guidelines. Nearly one half of the subjects were overweight; nearly one half reported a positive family history for cardiovascular disease; one third smoked; one fourth reported hypertension; and about one fifth of those screened for cholesterol reported hypercholesterolemia.

In contrast to the high prevalence of these risk factors, there was little awareness that these factors constitute personal risks for cardiovascular disease. This study revealed a discrepancy between the responses to open-ended questions about risk factors compared with the responses to a checklist, with the

latter being significantly higher. Furthermore, with the exception of subjects affected by hypertension and diabetes, subjects affected by specific risk factors reported knowledge of those same factors in no greater number than those not affected. These observations suggest that there was at least a superficial awareness of some cardiovascular risk factors in the subject population. However, a deeper understanding appears to be lacking, even when awareness of specific risk factors that personally affect subjects is considered.

Cardiovascular disease continues to be a significant cause of morbidity and mortality in women of economically disadvantaged urban areas. Since many of these risk factors are potentially modifiable, the medical profession is presented with the opportunity to reduce the risk of cardiovascular disease. However, before there can be any improvement in the health status of this population, medical providers must be aware not only of the magnitude of the health risks but also of the attitudes toward cardiovascular disease risk factors in lower socioeconomic settings. More extensive and effective screening and counseling attuned to the unique medical and cultural setting of each community is needed if the prevalence of cardiovascular disease and its sequelae are to decline.

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