How Concerned Are Elderly Patients Without Coronary Heart Disease About Hypercholesterolemia and Heart Disease?

An UPRNet Study

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BACKGROUND. There has been much controversy in the medical literature regarding the benefit of treating elevated cholesterol levels in asymptomatic elderly people (65 years of age and older) to prevent coronary heart disease (CHD). Little has been published about the attitudes and beliefs of elderly patients regarding the importance of cholesterol levels to their health. This study seeks to describe the importance that elderly persons place on cholesterol in regard to heart disease, how worried they are about it, and what behavior changes they are making to control their own cholesterol levels.

METHODS. We used a cross-sectional questionnaire to study elderly primary care patients in a rural setting with no personal history of coronary heart disease.

RESULTS. Six hundred eighty patient questionnaires were analyzed. Ninety-six percent of respondents believed high cholesterol to be at least moderately important for heart disease; 67% believed it to be very important. Fifty-nine percent were at least slightly worried about their own cholesterol level. Seventy-four percent said they had had their cholesterol checked within the past 2 years, and 66% had discussed their cholesterol level with their physician within the past 2 years. Sixty-six percent were trying to keep their cholesterol level down by dieting (42%), exercising (39%), or taking prescription medicine (15%).

CONCLUSIONS. Elderly patients who responded to this questionnaire are aware that hypercholesterolemia is a risk factor for CHD, and many eat a low-fat diet, exercise, or take prescription medication to lower their cholesterol. Physicians should be aware that many elderly patients without an established diagnosis of CHD are concerned about their cholesterol level. Physicians should be prepared to discuss with their elderly patients the potential advantages and disadvantages of the treatment of asymptomatic hypercholesterolemia.

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Coronary heart disease (CHD) is the leading cause of death for both men and women in the United States and is also the leading cause of death in the elderly (ages 65 and older).[1-7] Approximately one half of the entire population will die of degenerative vascular disease, either heart attack or stroke. The absolute rate of degenerative vascular diseases, especially coronary artery disease, increases with advancing age. More than half of all deaths in those aged 65 and older are due to cardiovascular causes.[1-8]

Most of the risk factors that predict CHD in middle-aged people, including hypercholesterolemia, also predict CHD in older people.[1,3,5-7] Although hypercholesterolemia is a risk factor for CHD, mortality from CHD in older people is less strongly associated with it.[1,10-12]

While it has been established that treatment of asymptomatic hypercholesterolemia in younger adults prevents myocardial infarction and cardiac death,[9,20,23-26] treatment benefits in people older than 65 have not been well defined.[1-6,13] To date there

UPRNet is the Upper Peninsula Research Network, a rural primary care research network in northern Michigan with 15 clinics that cooperate on research projects.

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have been no prospective randomized clinical trials demonstrating significant benefit in treating hypercholesterolemia in elderly people without symptomatic CHD. As a result, the treatment of asymptomatic hypercholesterolemia in elderly people has been the subject of much debate.[1-5,12,13,15,17] Some clinicians believe that asymptomatic hypercholesterolemia in the elderly does not warrant treatment while others hold the opposite view.[1-8,12,13,17-19] Some experts are reluctant to recommend preventive measures because the relative risk of hypercholesterolemia declines with age and conclusive evidence of efficacy is lacking. A cohort study of the very old (ages 85 and older) done recently in the Netherlands found that high total cholesterol levels are associated with longevity in this age group, owing to lower mortality from cancer and infection.[14] Others extrapolate the findings in younger people and argue that, because the attributable risk (the total burden of disease in the population) is even higher in elderly than middle-aged people, an even greater benefit would accrue in the elderly.[5-9, 12, 23]

Because of the uncertainty regarding the benefits and risks of treating asymptomatic hypercholesterolemia in the elderly, a general understanding of patients' beliefs and preferences would help physicians manage their care. No such data have been published. This study seeks to describe the importance that elderly persons without symptomatic CHD place on cholesterol levels in regard to heart disease, how worried they are about it, and what they are doing to control their cholesterol levels.

METHODS

The population studied was a predominantly white (95%) rural population in northern Michigan. Fifteen family practice offices participated, all members of the Upper Peninsula Research Network (UPRNet). Questionnaires were distributed by receptionists to consecutive patients 65 years of age and older during routine office visits during the summer of 1995. Patients were informed that the purpose of the study was to survey their attitudes about the importance of cholesterol to their health and to ascertain information about their lifestyle patterns. The office nurse explained the contents and the purpose of the questionnaire to each patient, and informed consent was obtained.

The questionnaire included questions about demographics, cardiac-related illnesses, and lifestyle patterns, such as diet, exercise, smoking, and alcohol use. Subjects were asked when their physician last discussed their cholesterol level with them, when they last had their cholesterol checked, and whether they were taking medication to control their cholesterol level. The remaining questions addressed their degree of worry regarding cholesterol levels and their opinions about taking medication to lower cholesterol if indicated. The patient's highest cholesterol level was taken from the office chart and recorded by the nurse.

Data were analyzed using frequency distributions and chi-squared testing. Patients who reported a diagnosis of heart attack, angina, heart bypass, or angioplasty were excluded from analysis. We did subgroup analyses to compare responses by sex, age group, and cardiac risk group. As recommended by the Second Report of the National Cholesterol Education Program (NCEP)[26], the risk factors we considered were smoking, hypertension, diabetes, and family history of heart disease. Data on high density lipoproteins were not gathered, and all patients in this sample had age as a risk factor.

We assigned subjects to one of four risk categories as follows: group A—highest cholesterol level of <240 mg/dL (6.2 mmol/L) and 0 to1 risk factors; group B—highest cholesterol level of >240 mg/dL (6.2 mmol/L) and 0 to 1 risk factor; group C—highest cholesterol level of <240 mg/dL (6.2 mmol/L) and 2 or more risk factors; group D—highest cholesterol level of >240 mg/dL (6.2mmol/L) and 2 or more risk factors.

The study protocol was approved by the University Committee on Research Involving Human Subjects of Michigan State University.

RESULTS

Respondents. A total of 994 questionnaires were distributed. Sixty-two patients refused to participate, 28 patients were enrolled who were not in the specified age range, and 7 questionnaires were missing essential data. Two hundred seventeen patients were excluded because of a history of CHD, leaving 680 for analysis. Because no cholesterol level was available on the charts of 96 patients, the analysis by risk category included only 584 patients. The mean age of the 680 patients enrolled was 73, with a range of 65 to

104. The sample included 245 (36%) men and 435 (64%) women. Regarding educational attainment, 33% had less than a high school education, 46% had a high school diploma, and 18% had more advanced education. (Three percent did not respond to this question.) A diagnosis of stroke was reported by 8%, diabetes mellitus by 15%, and hypertension by 45%. Eleven percent were current smokers.

General Findings. Ninety-six percent of respondents believed that a high cholesterol level was at least moderately important for heart disease. Sixty-seven percent believed it to be very important. Fifty-nine percent were at least slightly worried about their own cholesterol level, and 32% were at least moderately worried. Seventy-four percent reported having their cholesterol checked within the past 2 years, and 66% had discussed their cholesterol with their physician within the past 2 years. Only 12% had never discussed their cholesterol with their physician.

For responses to a general question regarding diet and exercise, 58% reported following a low-fat diet and 57% reported exercising regularly. Sixty-six percent of respondents were actively trying to keep their cholesterol level down. Forty-two percent reported following a special diet to lower cholesterol, 39% reported exercising, and 15% reported taking medication.

Of those not taking cholesterol-lowering medication, 47% would be willing to take cholesterol-lowering medication if prescribed by their doctor, and 10% would not. The remainder (43%) had no opinion on this matter.

For the 584 patients with cholesterol values in the chart, the mean highest value was 246 mg/dL (6.4 mmol/L, SD = 50), with a range from 97 mg/dL to 580 mg/dL (2.5 mmol/L to 15 mmol/L).

Sex Differences. There were some differences in responses by sex. Men were slightly more likely to exercise (62% vs 53%, $P = .05$) and women were more likely to diet (62% vs 44%, $P = .0001$). More women than men were at least moderately worried about their cholesterol (34% vs 23%, $P = .0004$).

For the subgroup of 584 with cholesterol levels available in their charts, the mean high cholesterol was significantly higher for women than men (255 mg/dL vs 226 mg/dL, 6.6 mmol/L vs 5.8 mmol/L, $P < .0001$). More women (45%) than men (26%) were in the highest risk group ($P < 0001$). Table 1 shows the distribution of patients by sex and cardiac risk groups.

There was no difference between men and women regarding their belief about the importance of cholesterol for heart disease, when they last discussed their cholesterol level with their providers, and when they last had their cholesterol checked.

Age Differences. Age group differences are presented in Table 2. Respondents 80 years of age and older were less likely to believe cholesterol is important for heart disease, and were less likely to worry about their cholesterol. Their reported behaviors were consistent with these beliefs. Nonetheless, 43% of those 80 and older reported following a low-fat diet and exercising regularly, and 50% had discussed their cholesterol with their physician within the past 2 years.

Risk Group Differences. The risk group analysis is summarized in Table 3. All groups believed cholesterol to be an important factor for heart disease, and there were no differences in reported exercise or willingness to take medication, if indicated. Differences were noted in all other responses. In general, responses of patients with higher cholesterol values (240 mg/dL, or 6.2 mmol/L or above) were similar, regardless of the number of cardiac risk factors. The same was true of those with lower cholesterol values.

DISCUSSION

Most elderly patients without symptomatic CHD visiting these rural northern Michigan practices are aware that a high cholesterol level is a risk factor for coronary heart disease. Despite lack of conclusive evidence for treatment efficacy, many of them are pursuing some kind of treatment to lower their cholesterol readings, either by lifestyle modification or medication. Many are concerned about their own cholesterol level, have discussed it with their physician, and are actively trying to manage it.

Men in our study exercise slightly more than women and monitor their diet less than women. Even at the median age of 73, 62% of the women report that they were following a low-fat diet. Consistent with other studies, these older women had higher cholesterol levels than men.[2-4, 8] Nearly

TABLE 1

Distribution of Elderly Patients by Sex and by Cardiac Risk Groups (row percent)

	Cardiac Risk Groups*			
	Group A	Group B	Group C	Group D
Men (n=204)	25	11	38	26
Women (n=380)	12	15	28	45
Total† (n=584)	17	14	31	38

* A: Highest cholesterol level of <240 mg/dL and 0 to 1 risk factors
B: Highest cholesterol level of ≥240 mg/dL and 0 to 1 risk factor
C: Highest cholesterol level of <240 mg/dL and 2 or more risk factors
D: Highest cholesterol level of ≥240 mg/dL and 2 or more risk factors
Risk factors include: >45 years of age, diabetes, hypertension, smoking, family history of coronary heart disease.
†No cholesterol level was available on the charts of 96 patients, so this analysis by risk category includes only 584 patients.

twice as many women as men (45 vs 26) were in the highest risk group (group D); 45% of all women were in group D. Therefore, it is not surprising that more women than men in this sample were at least moderately worried about their cholesterol.

Patients older than 80 years of age were less concerned about their cholesterol levels than younger patients and were less likely to report modifying their lifestyle patterns or taking prescription medication to lower cholesterol. They were less likely to have had their cholesterol levels checked or to have discussed it with their physicians. This may be a function of both the physicians' and patients' attitudes; both may believe that elevated cholesterol is of little consequence for people older than 80. This subgroup of patients probably has a genetically lower risk for CHD and therefore may not benefit from aggressive treatment of hypercholesterolemia. Also, they were not raised in a cholesterol-conscious era. These hunches about cholesterol levels in people older than 80 have been confirmed by a study done in 1997 in the Netherlands that found that high cholesterol in the very old has a protective effect.[14] As more people are living beyond 80 years, it may be interesting to study this subgroup of patients in further detail.

Regardless of what risk group they belonged to, these elderly patients thought that high cholesterol was an important risk factor for coronary heart disease. Not surprisingly, patients in the higher risk groups were more worried about their cholesterol than those in lower risk groups and were more likely to report taking medication or modifying their lifestyle to prevent heart disease. However, no group was strongly opposed to taking medication if indicated, and 15% of these elderly patients with asymptomatic hyperlipidemia were taking prescription medication to lower cholesterol. Aggressive treatment of asymptomatic hypercholesterolemia in younger people (aged 45 to 65) significantly reduces CHD mortality and morbidity.[9, 21, 24-26]

TABLE 2

Percentage of Elderly Adults Who Responded Yes to Questions Regarding Cholesterol and Heart Disease, by Age Group (N = 680)

	Age Group (in years)				
	65-69 (n=191)	70-74 (n=204)	75-79 (n=182)	80+ (n=103)	*P* Value
Do you believe that cholesterol levels are at least moderately important to CHD?	99	97	97	87	.0006
Are you at least moderately worried about your cholesterol level?	37	31	19	20	.002
Do you follow a low-fat diet?	67	69	60	43	.006
Do you exercise regularly?	58	57	61	55	NS
Have you had your cholesterol checked within the past 2 years?	80	73	74	57	.02
Have you discussed your cholesterol level with your physician within the past 2 years?	75	69	64	52	.01
Would you be willing to take prescription medication if indicated by your physician?	56	56	51	57	NS

NS denotes not significant, $P = .05$.

TABLE 3

Percentage of Elderly Adults Who Responded Yes to Questions Regarding Cholesterol and Heart Disease, by Risk Group (n = 584)*

	Cardiac Risk Group†				
	Group A	Group B	Group C	Group D	*P* Value
Do you believe that cholesterol levels are at least moderately important to CHD?	98	99	92	98	NS
Are you at least moderately worried about your cholesterol level?	16	52	22	43	< .0001
Do you follow a low-fat diet?	45	77	50	70	< .0001
Do you exercise regularly?	55	59	55	57	NS
Have you had your cholesterol checked within the past 2 years?	65	80	69	81	.01
Have you discussed your cholesterol level with your physician within the past 2 years?	59	78	61	78	.0003
Are you currently taking prescription medication to lower your cholesterol level?	5	26	9	26	< .0001
Would you be willing to take prescription medication if indicated by your physician?	52	56	56	58	NS

*No cholesterol level was available on the charts of 96 patients, so this analysis by risk category includes only 584 patients.

†A: Highest cholesterol level of <240 mg/dL and 0 to 1 risk factors
B: Highest cholesterol level of ≥240 mg/dL and 0 to 1 risk factor
C: Highest cholesterol level of <240 mg/dL and 2 or more risk factors
D: Highest cholesterol level of ≥240 mg/dL and 2 or more risk factors

Risk factors include: >45 years of age, diabetes, hypertension, smoking, family history of coronary heart disease.
NS denotes not significant, $P = .05$.

To what extent elderly people benefit from this approach is unknown. Based on case series data, Ornish[17, 18] claims that significant decreases in mortality and morbidity from CHD are achievable, irrespective of age, by following a rigid regimen of diet, exercise, and stress-relaxation techniques.

There are several limitations to this descriptive study. The results may not apply to the general population of the elderly because the respondents were active patients and are more likely to be conscious of health risk factors than the general population. Our risk classification is not identical to the NCEP classification because we did not gather data on high-density lipoprotein levels. Also, we used the highest cholesterol level available in the chart to define risk category rather than an average of several readings as is generally recommended because of the wide intraperson variation in cholesterol levels. Nonetheless, our classification provides a reasonable stratification of cardiac risk. Finally, because this is a survey, usual biases of recall and self-report of behaviors apply.

Our study of rural elderly patients with no coronary heart disease indicates that most are aware that hypercholesterolemia is a risk factor for CHD. They are receptive to making lifestyle modifications and to taking prescription drugs to lower their lipid levels if necessary. Therefore, physicians and health care providers caring for elderly patients should discuss the importance of a healthy diet and regular exercise and discuss management options, including medication, for treating hypercholesterolemia. Many "young elderly," in their late 60s and early 70s, are healthy and vigorous and have life expectancies of 20 to 30 years. It makes sense to us to consider more aggressive treatment in this younger group. At this time it seems reasonable to treat asymptomatic hypercholesterolemia in elderly patients after careful discussion of potential risks and unproven but potential benefits. Definitive recommendations must await controlled trials of treatment in elderly people.

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