

# Perceived Quality of Care and Lifestyle Counseling Among Patients With Heart Disease

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## ABSTRACT

**Background:** To examine patients' perceived quality of care and reported receipt of information on diet and exercise related to cardiovascular disease prevention.

**Methods:** Patients admitted with acute coronary syndromes or elective cardiac catheterization were eligible for enrollment. Baseline medical information was collected through medical-record review. Patients completed surveys at the time of hospitalization that included items on perceived quality of care and whether they had received information from a healthcare provider on diet and exercise as related to their heart. Perceived quality of care was grouped into 3 categories: (1) poor to fair, (2) good, and (3) very good to excellent.

**Results:** Among the 182 cardiac patients who completed the survey, those who reported poor to fair quality of care were more likely to report that they had received no advice regarding diet as compared with those who perceived their quality of care as good or very good to excellent (61%, 59%, and 26%, respectively,  $P < 0.0001$ ). A similar pattern was observed for exercise (71%, 74%, and 36%, respectively,  $P < 0.0001$ ).

**Conclusions:** Patients with low perceived quality of care were less likely to have discussed diet and exercise habits with healthcare providers. Improving receipt of lifestyle counseling is warranted given the central role that diet and exercise play in secondary prevention.

## Introduction

An estimated 16.8 million American adults carry a diagnosis of coronary heart disease, with almost 8 million having experienced a myocardial infarction (MI).<sup>1</sup> A critical component of secondary prevention is lifestyle modification to improve diet and increase physical activity. Major guidelines for risk-factor modification and treatment of cardiac disease all recommend that healthcare providers advise patients regarding lifestyle modifications.<sup>2,3</sup> Medical societies such as the American Heart Association have recently begun several programs aimed at patients and their families that provide medical knowledge, including recommendations for dietary and physical-activity goals.<sup>4,5</sup> To evaluate such educational initiatives, an understanding is needed of current sources of information used by cardiac patients and information on factors that may affect how and why patients seek medical information. Patient satisfaction with their healthcare may be one such factor.

Using data from an observational study of recently hospitalized cardiac patients, we examined self-reported patient satisfaction for medical care in relationship to

patient-reported receipt of advice on diet and physical activity. We hypothesized that patients who reported higher levels of satisfaction were more likely to report having received advice on diet and exercise.

## Methods

### Data Source

Patients admitted to the University of Massachusetts Health Center's University Hospital between September 2004 and October 2008 with diagnosis of acute coronary syndrome (ACS) or elective coronary angiography were eligible for study inclusion. Patients admitted for elective coronary angiography were excluded if they had no prior history of coronary artery disease (CAD) or no significant CAD was found at the time of the angiogram; significant CAD was defined as the presence of a coronary stenosis (defined as  $\geq 50\%$  stenosis in  $\geq 1$  vessels). ACS was defined as unstable angina (UA), ST-segment-elevation myocardial infarction (STEMI), or non-ST-segment-elevation myocardial infarction (NSTEMI) using standard definitions.<sup>6</sup> The diagnosis of ACS was documented by the presence of symptoms consistent with acute coronary insufficiency, increases in cardiac enzymes (creatinine kinase MB  $> 2\times$  the upper limit of the hospital's normal range and/or positive troponin I), and/or positive acute electrocardiographic changes including (1) transient ST-segment elevations of  $\geq 1$  mm in  $\geq 2$  contiguous leads, (2) ST-segment depressions of  $\geq 1$  mm,

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(3) new T-wave inversions of  $\geq 1$  mm, and (4) new left bundle branch block. Type of ACS and other eligibility criteria were based on review of medical records. Information on comorbidities including history of angina, MI, hyperlipidemia, peripheral vascular disease, diabetes mellitus (DM), hypertension, and prior stroke were also obtained through review of medical records. Patients were excluded if they lived outside of the Worcester metropolitan area, were unable to complete the baseline surveys, were nursing-home residents, had a life expectancy  $\leq 6$  months, or whose cardiac events were the result of trauma or bleeding.

Baseline demographic information including age, gender, and race/ethnicity was collected from patients during the index hospitalization. Patients were also asked to complete questions regarding cardiac risk factor knowledge, satisfaction of care, and sources of medical knowledge during the index hospitalization. Information on cardiac risk factor knowledge included questions about perceived impact of specific behaviors, including diet and physical activity, on a patient's risk for heart disease. The survey included questions asking whether anyone had spoken with the patient regarding foods that may lower risk for heart disease (yes, no) and, if yes, who had provided such information. Predefined responses included family members, friends, physicians (cardiologists, primary care physicians), nurses or nurse practitioners, dietitians, and cardiac rehabilitation staff. Similar items were administered regarding weight and exercise habits. The participants were asked to rate their interest in and confidence for improving their diet, weight, and physical activity. Lastly, the participants were asked about additional sources of medical information, including family members, friends, magazines, the Internet, and books.

Patient-reported satisfaction for their cardiac care was assessed through 2 questions<sup>7</sup> that asked patients to rate their overall quality of care and the outcome of their care on a Likert scale ranging from poor to excellent. Patients were divided into 3 groups according to their responses: (1) poor to fair, (2) good, and (3) very good to excellent.

The study personnel were trained to administer surveys and review medical records in a standardized format. Data were collected on standardized forms and then forwarded to a database service for data entry after review for face validity. Data not within the set limit ranges, inconsistencies, and/or unrecorded fields were flagged and then returned for clarification and correction. All aspects of this study were approved by the institutional review boards from University of Massachusetts Medical School and the University of Michigan Health System. Informed consent was obtained from all patients.

Summary statistics are presented as frequencies and percentages or as means and SDs. Student *t* tests and  $\chi^2$  tests were used to compare differences in the baseline physical and clinical characteristics between levels of patients' satisfaction for their care. Analysis of variance was

used to evaluate the differences between groups in reported sources of information on diet and/or exercise. Similar comparisons were made for patient-reported confidence in their ability to change diet and/or physical activity, and for reported sources of medical information. All analyses were performed using SAS version 9.1 (SAS Institute Inc., Cary, NC).

## Results

A total of 182 participants (mean age 59.9 years) who completed the baseline surveys were included in this study. Of these, 68.1% ( $n = 124$ ) were men and 87.9% ( $n = 160$ ) were white (Table 1). The majority of respondents had graduated from high school and 25% reported completing college. Cardiovascular risk factors were common, with  $>40\%$  of the subjects having a prior history of hypertension and/or hyperlipidemia. Patients with DM comprised 19.3% of the study population. Approximately 30% of patients reported a prior history of heart disease. STEMI was the primary diagnosis for 32.2% of the study population, with a further 37.4% of patients admitted for NSTEMI, and the remainder admitted for elective angiography.

Table 1. Baseline Characteristics

Characteristics	Participants (N = 182)
Age, y, mean (SD)	59.9 $\pm$ 12.3
Male sex, n (%)	124 (68.1)
White ethnicity, n (%)	160 (87.9)
Education, n (%)	
No high school diploma	29 (15.9)
High school diploma and/or some college	107 (58.8)
College diploma and/or graduate degree	46 (25.3)
Clinical factors	
Preexisting heart disease	59 (32.6)
DM	35 (19.3)
Hypertension	79 (43.7)
Hyperlipidemia	79 (43.7)
Admission type	
STEMI	56 (32.2)
NSTEMI or UA	65 (37.4)
Elective angiography	53 (30.5)

Abbreviations: DM, diabetes mellitus; NSTEMI, non-ST-segment-elevation myocardial infarction; SD, standard deviation; STEMI, ST-segment-elevation myocardial infarction; UA, unstable angina.

Baseline characteristics were then examined in relation to patient self-reported perceived quality of care (Table 2). Age, gender, ethnicity, education level, and preexisting comorbidities did not differ for patients who reported poor to fair quality of care, good quality of care, or very good to excellent quality of care. Patients who were admitted for an elective coronary angiography were more likely to report either good or very good to excellent quality of care.

Few patients reported receiving advice on diet (40%) or exercise (30%) from their providers (Table 3). Overall, 41% of patients reported having no discussion on diet with

Table 2. Baseline Characteristics by Perceived Quality of Care

Characteristics	Perceived Quality of Care			P Value
	Poor to Fair (N = 28)	Good (N = 58)	Very Good to Excellent (N = 89)	
Age, y, mean (SD)	55.1 ± 12.7	60.1 ± 12.9	60.9 ± 12.1	0.10
Male sex, n (%)	21 (75)	43 (74)	56 (63)	0.26
White ethnicity, n (%)	25 (89)	52 (90)	77 (87)	0.83
Education level, n (%)				
Low (less than high school)	5 (18)	12 (21)	12 (21)	0.51
Intermediate (any postsecondary)	11 (39)	16 (39)	31 (28)	0.50
High (university or college)	12 (43)	28 (48)	46 (52)	0.71
Clinical factors				
Preexisting heart disease	9 (32)	18 (31)	29 (33)	0.98
DM	5 (18)	13 (22)	17 (22)	0.85
Hypertension	8 (29)	22 (38)	45 (51)	0.08
Hyperlipidemia	7 (25)	24 (41)	42 (47)	0.12
Admission type				
STEMI	5 (18)	17 (29)	21 (24)	0.49
NSTEMI or UA	8 (29)	23 (40)	31 (35)	0.59
Elective angiography	3 (11)	11 (19)	36 (19)	0.001

Abbreviations: DM, diabetes mellitus; NSTEMI, non-ST-elevation myocardial infarction; SD, standard deviation; STEMI, ST-elevation myocardial infarction; UA, unstable angina.

Table 3. Sources of Medical Advice by Perceived Quality of Care

Sources, n (%)	Perceived Quality of Care			P Value
	Poor to Fair (N = 28)	Good (N = 58)	Very Good to Excellent (N = 89)	
Discussed diet and heart disease				
Family member	2 (7)	6 (10)	27 (30)	0.004
Friends	2 (7)	2 (3)	16 (18)	0.03
Doctors	7 (25)	16 (28)	50 (56)	<0.0001
Nurses (or nurse practitioner)	4 (14)	4 (7)	30 (34)	<0.0001
No discussion	17 (61)	34 (59)	23 (26)	<0.0001
Discussed exercise and heart disease				
Family member	1 (4)	2 (3)	20 (22)	<0.0001
Friends	1 (4)	0 (0)	14 (16)	0.003
Doctors	2 (7)	10 (17)	44 (49)	<0.0001
Nurses (or nurse practitioner)	1 (4)	1 (2)	19 (21)	<0.0001
No discussion	20 (71)	43 (74)	32 (36)	<0.0001

anyone, including healthcare providers (doctors, nurses, and nurse practitioners), family, and friends. Approximately half of all patients reported having a discussion about exercise, most often with their physician. Patients who reported receiving advice from a healthcare provider regarding lifestyle (diet or physical activity) had similar baseline characteristics to those who reported not receiving such advice, with 2 exceptions: Patients with a history of hyperlipidemia or who were admitted for elective angiography were more likely to report having received lifestyle counseling from a provider.

Patients who perceived their quality of care as poor to fair were more likely to report having no discussion on diet (related to heart disease) as compared with patients who reported very good to excellent care (61% vs 26%,  $P < 0.0001$ ). Patients who were satisfied with their care reported having discussed diet and heart disease more often with family members and friends as well as with doctors and nurses. A similar pattern was observed between perceived quality of care and patients who reported having discussed their exercise habits with a healthcare professional. Those who reported higher levels of quality of care were more likely to report having such discussions with healthcare providers, and family and friends. In contrast, >71% of those who reported either poor to fair or good quality of care reported having no discussion about exercise

Table 4. Reported Confidence in Ability to Make Lifestyle Modifications and Perceived Quality of Care

Lifestyle Factors, n (%)	Perceived Quality of Care			P Value
	Poor to Fair (N = 28)	Good (N = 58)	Very Good to Excellent (N = 89)	
Improving diet				
Low (1, 2)	2 (7)	9 (16)	4 (16)	<0.01
Intermediate (3)	8 (29)	10 (17)	14 (17)	0.30
High (4, 5)	16 (57)	38 (66)	70 (66)	0.05
Improving physical activity				
Low (1, 2)	6 (21)	14 (24)	7 (24)	0.02
Intermediate (3)	6 (21)	15 (26)	15 (26)	0.42
High (4, 5)	13 (46)	28 (48)	65 (48)	<0.01

and heart disease, whereas only 36% of those who reported very good to excellent quality of care reported no discussion on exercise.

We also asked patients to rate their confidence in making lifestyle modifications related to diet and physical activity. Overall, those who reported good or very good to excellent quality of care had higher levels of confidence in their ability to modify their diet. Even in the group who reported poor to fair quality of care, the majority of respondents (57%) reported a high level of confidence for making dietary changes. A similar pattern was observed for patients' confidence in improving their physical activity.

In terms of specific sources of information, the majority of patients reported their doctors as being a primary source of medical information (Table 5). However, many patients reported magazines and newspapers as sources of information, and 25% of patients reported using the Internet as a source of medical information. Overall, patients who reported poor to fair quality of care were less likely to use any of these resources, which included healthcare providers, family or friends, and media sources such as newspapers, the Internet or books.

### Discussion

Using a survey of cardiac patients admitted to a major teaching hospital, we observed that the majority of patients reported not receiving diet or exercise advice from their physicians. Patients who perceived their quality of care as poor to fair were more likely to report not having discussed lifestyle modification, as compared with patients who were satisfied with their care.

Diet and physical activity recommendations are included in many cardiac guidelines and are a well-known component

Table 5. Sources of Medical Information That Patients Feel Comfortable Using and Perceived Quality of Care

Sources, n (%)	Perceived Quality of Care			P Value
	Poor to Fair (N = 28)	Good (N = 58)	Very Good to Excellent (N = 89)	
Doctors	24 (86)	54 (93)	87 (98)	0.01
Nurses	3 (11)	9 (16)	35 (39)	<0.0001
Nurse practitioners	12 (43)	32 (55)	53 (60)	0.05
Family members	13 (46)	21 (36)	27 (30)	0.02
Friends	4 (14)	7 (12)	13 (15)	0.08
Magazines or newspapers	10 (36)	20 (34)	40 (45)	0.55
Internet	7 (25)	19 (33)	18 (20)	0.02
Books	0 (0)	4 (7)	7 (8)	0.04

of secondary prevention.<sup>2,3</sup> We rely on healthcare providers to promote these guideline recommendations by educating their patients about a cardiac-healthy lifestyle. Provider counseling is associated with smoking cessation, weight loss, and exercise, all of which are components of secondary prevention.<sup>8–12</sup> However, few providers counsel their patients on diet and exercise.<sup>13–17</sup> Barriers to such counseling include time limitations, reimbursement, providers' confidence in their counseling ability, and providers' perception of their patients to make lifestyle changes.<sup>12,18,19</sup> An examination of all these factors is beyond the scope of this current study. However, our findings do suggest that patients' perceived quality of care relates to their reported receipt of lifestyle counseling. These data suggest the need to better understand factors that influence patients' perceived or real receipt of information on health. Ongoing evaluations of such factors should be a key component of interventions to modify lifestyle behaviors among cardiac patients.

Several limitations exist for the current study. As a cross-sectional examination of cardiac patients at 1 institution, our results may not directly apply to other patients or hospitals. Potential biases may exist, including selection bias, which further limit generalizability of our findings. Given the relatively small sample size, we were limited from examining specific groups of patients or groups of factors that could influence patient satisfaction and/or receipt of information on lifestyle.

### Conclusion

Increasing the number of patients who report having discussed lifestyle as it relates to secondary cardiac

prevention is a critical component of cardiac care. Perceived quality of care appears to be one factor related to patients' receipt of counseling on diet and exercise. Interventions to reduce barriers to lifestyle counseling, such as incorporation of such counseling into current measures of quality, need to be considered to optimize current nonpharmacologic prevention efforts.

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