

Preventive Care and Health Behaviors Among Overweight/Obese Men in HMOs

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The dramatic increase in the prevalence of overweight and obesity presents a serious threat to public health. Two-thirds of US adults are overweight (body mass index [BMI] ≥ 25 kg/m²), and approximately one-third are classified as obese (BMI ≥ 30 kg/m²).^{1,2} Overweight and obesity are associated with multiple serious and costly health outcomes, including coronary heart disease, high blood cholesterol, hypertension, stroke, type 2 diabetes, gallbladder disease, osteoarthritis, sleep apnea, and some forms of cancer such as kidney and colorectal.^{3,4} Adding to this substantial health burden are weight-related social and psychological consequences that can adversely affect the quality of care received by overweight and obese patients, and promote behaviors that are harmful to their health.⁵⁻¹⁰

Negative attitudes and stereotypes about overweight and obesity are widespread and may be especially acute in the medical setting.^{10,11} Heavier patients report that physicians are one of the most common sources of weight bias.¹⁰ National surveys among large random samples of primary care physicians found more than 50% viewed obese patients as unattractive and noncompliant.¹² Numerous studies find that health professionals describe overweight and obese patients as unmotivated and nonadherent to prevention and healthcare recommendations.¹²⁻¹⁶ Consequently, physicians may have low expectations for heavier patients, find it less satisfying to treat them, and be less likely to promote preventive services or spend time on health education counseling.^{8,15-17} Weight stigma can further impact health through patients' negative responses to perceived bias including delays in seeking care, missed appointments, unhealthy eating behaviors, and exercise avoidance.^{6,7,9,10}

While the pervasiveness of weight-related stereotypes is well documented, it is unclear whether and how weight stigma translates into disparities in receipt of healthcare services. In response to persistent concerns about the quality of care received by overweight and obese patients, recent studies were conducted among Medicare recipients and US veterans.^{18,19} The purpose of this study conducted among socioeconomically diverse middle-aged and older men enrolled in 2 large managed care plans is 2-fold. First, we examined potential weight-related disparities in receipt of preventive screening exams that are commonly included in quality performance measures.²⁰ Secondly, we compared

Objectives: To examine potential weight-related disparities in receipt of preventive screening exams and to compare several quality indicators and health behaviors among overweight/obese men and healthy-weight men enrolled in 2 large managed care plans.

Study Design: Cross-sectional analysis nested within a diverse cohort of men participating in the California Men's Health Study (CMHS) (N = 80,771).

Methods: We extracted utilization of serum cholesterol, triglycerides, glucose, glycosylated hemoglobin, sigmoidoscopy exams, and prostate-specific antigen tests from health plan electronic sources. CMHS survey data provided information about diet and physical activity. Adjusted odds ratios and 95% confidence intervals were estimated to assess the association of screening exams and behaviors with categories of body mass index (BMI).

Results: Tests for cholesterol, glucose, and diabetes control increased across categories of BMI, while overweight and obese men were less likely to undergo screening exams for colorectal and prostate cancer. Smoking and alcohol consumption were less frequent among overweight/obese men; however, they reported diets higher in fat and lower in fruits and vegetables, and were much less likely to report moderate/vigorous activity and much more likely to be sedentary.

Conclusions: Managed care organizations might reduce weight-related health risks and disparities in care with targeted efforts to promote cancer screenings, healthy diets, and physical activity among overweight and obese patients.

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Take-Away Points

Concerns persist about quality of care and health behaviors that contribute to the elevated health risks of overweight/obese patients. Among men enrolled in managed care we found:

- Overweight/obese men were more likely to be screened for serum cholesterol, glucose, and among patients with diabetes, blood sugar control.
- In contrast, overweight/obese men were less likely to be screened for colorectal and prostate cancer.
- While overweight/obese men were less likely to consume alcohol or smoke, they reported less healthy diets and much less physical activity.

Measures

Body mass index was calculated as weight in kilograms divided by the square of height in meters (kg/m^2) and classified according to guidelines of the National Heart, Lung, and Blood Institute.²³ We defined underweight as a BMI of less than 18.5 kg/m^2 , healthy weight as a BMI of 18.5-24.9 kg/m^2 , overweight as a BMI of 25.0-29.9 kg/m^2 , and obese as a BMI of 30 kg/m^2 or greater. We further categorized obesity into

health behaviors across categories of BMI to identify potential opportunities to reduce some of the increased risks of overweight and obesity.

class I obesity (BMI 30.0-34.9 kg/m^2) and class II/III obesity (BMI 35.0+ kg/m^2).²⁴

METHODS

Design and Recruitment

This study was conducted among subjects in the California Men's Health Study (CMHS). Participants were recruited from the Kaiser Permanente Southern and Northern California health plans. Together, these nonprofit managed care organizations provide comprehensive health care to more than 6 million members. The study protocol was approved by the institutional review boards of both organizations.

Eligible participants included all 850,000 male health plan enrollees between 45 and 69 years of age. Between 2002 and 2003, 84,170 men joined the cohort. Participants were comparable to similar-aged men enrolled in the health plans (and to men residing in California) with respect to sociodemographic characteristics and BMI.^{21,22} Details of the cohort design and recruitment methods were described previously by Enger and colleagues.²¹

In all analyses, we excluded men for whom we could not calculate a valid BMI ($n = 2863$) or who reported a BMI of less than 18.5 kg/m^2 ($n = 536$), resulting in a sample of 80,771. When examining cancer screenings, we excluded men younger than 50 years, those who had been a member of the health plans for fewer than 5 years, and those at above-average risk for prostate or colorectal cancer (CRC).

Data Collection

We extracted data on membership, primary care utilization, laboratory tests, and cancer screenings from health plan electronic databases. The CMHS baseline survey collected sociodemographic information (race/ethnicity, age, educational attainment, household income, marital status, country of birth), height and weight, personal and family histories of disease, and health behaviors.

We examined 6 quality performance measures for common preventive services related to cardiovascular disease, diabetes, and cancer screening. Recommendations for these tests are not weight related. Time intervals for the screening tests were based on the health plans' clinical practice guidelines in place when the cohort was established. Utilization of laboratory tests was obtained for the 2 years prior to the baseline survey, including serum glucose, cholesterol, triglycerides, and among participants with diabetes, glycosylated hemoglobin (A1C). We assessed CRC screening with use of sigmoidoscopy, the first-line screening test for CRC recommended by the health plans in the 5 years preceding the baseline survey.²⁵ To differentiate screening from diagnostic sigmoidoscopy we used *Current Procedural Terminology, 4th Edition* codes and a validated automated data algorithm²⁶ and limited this assessment to men at average risk (ie, those with no personal history of CRC or colorectal polyps, and no family history of CRC). Serum prostate-specific antigen (PSA) testing was extracted from laboratory databases during the 5 years preceding the baseline survey. To differentiate screening from diagnostic tests, we excluded men whose PSA tests were ordered by a urologist, and men who reported they had completed a PSA test due to symptoms or as follow-up to previous abnormal results.²⁷

Dietary factors were assessed with a detailed semiquantitative food-frequency questionnaire developed for the Women's Health Initiative and other studies²⁸⁻³⁰ and modified for men's health.³¹ We calculated total energy intake, percentage of calories from fat, and daily servings of fruits and vegetables. Consumption of alcoholic beverages included beer, wine, and liquor.

Physical activity was determined with questions adapted from the Coronary Artery Risk Development in Young Adults (CARDIA) Physical Activity History,^{32,33} which asked about the frequency and duration of participation in specific types of moderate and vigorous recreational, household, and work-related activities. The CARDIA Physi-

cal Activity History has indirect validity against aerobic capacity and percentage of fat, and a strong inverse relationship with most cardiovascular disease risk factors.^{34,35} Regular moderate/vigorous physical activity was defined as 3.5 hours per week or more spent in activities of 3 or more metabolic equivalents. Participation in vigorous physical activity was defined as 3.5 hours per week or more spent in activities of 6 or more metabolic equivalents. We defined sedentary behavior outside of work with reports of the total time spent watching television, sitting at a computer, or reading 6 or more hours per day.

Data Analysis

We determined the frequencies of sociodemographic characteristics, preventive screening exams, and health behaviors to describe these factors across categories of BMI. Given the large sample size, and therefore the probability of detecting clinically irrelevant differences, analyses focused on the adjusted magnitude of the differences found for overweight/obese men compared with healthy-weight men. We fit multivariable logistic regression models to calculate the adjusted odds ratio (AOR) and 95% confidence interval (CI) estimating the effect of BMI categories on utilization of screening exams and health behaviors. Models were adjusted for race/ethnicity, age, education, income, marital status, country of birth, number of outpatient visits, department of primary care provider, and health plan. Models were run with BMI categorized as described above, as well as a continuous factor, to test for trends in utilization of screening exams and health behaviors with increasing BMI. Analyses were conducted using SAS version 9.1.3 (SAS Institute Inc, Cary, North Carolina).

RESULTS

The majority of the subjects were white non-Latino, were less than 60 years old, had at least some college, had a household income of \$60,000 or more, and were married or living with a partner. In the previous 5 years, a quarter had 31 or more outpatient visits (Table 1). Almost two-thirds had a primary care physician in internal medicine, and approximately half were members of Kaiser Permanente Southern California. Most had been born in the United States (data not shown).

A quarter of the men were in the healthy weight range (BMI 18.5-24.9 kg/m²), almost half were in the overweight range (BMI 25.0-29.9 kg/m²), a fifth were in the class I obesity range (BMI 30.0-34.9 kg/m²), and 8% were in the class II/III obesity category (BMI 35.0+ kg/m²). Proportionately, fewer Latinos and African Americans and more Asians

were in the healthy category compared with whites (16%, 18%, and 51% compared with 25%, respectively). Healthy-weight men more often had a college education and were less likely to be born in the United States. As expected, healthy-weight men had less outpatient utilization (Table 1).

Table 2 describes utilization of preventive services. The overall frequency of testing for serum glucose, cholesterol, and triglycerides in the previous 2 years was 52%, 70%, and 63%, respectively. Among men with diabetes, 70% had an A1C test. Across all these tests, adjusted results found overweight and obese men were significantly more likely to have been tested. Less than one-third of men 50 years of age or older at average risk for CRC had undergone screening sigmoidoscopy in the preceding 5 years. In contrast to results found for laboratory tests, compared with healthy-weight men, CRC screening decreased significantly across categories of BMI (overweight men, AOR 0.93, 95% CI 0.88-0.99; class I obesity, AOR 0.84, 95% CI 0.78-0.90; class II/III obesity, AOR 0.72, 95% CI 0.65-0.80). Similarly, while almost three-fourths of men had a PSA test in the previous 5 years, those with class I obesity were 10% less likely and men with class II/III obesity were 20% less likely than healthy-weight men to have been tested.

Table 3 displays men's reported health behaviors by BMI categories. As expected, total daily average calorie intake increased with BMI. Less than one-third of the men met national recommendations for dietary fat intake ($\leq 30\%$ calories from fat), and the likelihood of meeting the recommendations decreased significantly with increasing BMI. Compared with healthy-weight men, obese men were less than half as likely to eat a lower fat diet. Similarly, fewer than one-third of all men met the national recommendation for consuming at least 5 daily servings of fruits and vegetables, with overweight and obese men about 10% less likely than healthy-weight men to meet this recommendation. Although almost two-thirds of the men reported participating in regular moderate/vigorous activity, overweight men were almost 20% less likely and class I and II/III obese men were 49% and 69%, respectively, less likely than were healthy-weight men to be active. Similar results were found for vigorous activity. Conversely, the percentage of men reporting 6.5 or more sedentary hours each day increased significantly from the healthy to obese weight categories. On the positive side, heavier men were less likely to report drinking more than 5 alcoholic beverages per week or to be a current smoker, and were more likely to have never smoked. Of note, similar results were found when the analyses for preventive services and health behaviors were run with BMI as a continuous variable, and when men with class II/III obesity were included in or excluded from the models.

■ **Table 1.** Characteristics of the California Men’s Health Study by Body Mass Index

Characteristic	Healthy Weight BMI 18.5- 24.9 kg/m ² (n = 20,697)		Overweight BMI 25.0- 29.9 kg/m ² (n = 38,097)		Class I Obesity BMI 30.0- 34.9 kg/m ² (n = 15,819)		Class II/III Obesity BMI 35.0+ kg/m ² (n = 6158)		Total (N = 80,771)	
	No.	%	No.	%	No.	%	No.	%	No.	%
Race/ethnicity										
White, non-Latino	12,889	62.4	24,348	64.0	10,194	64.6	3944	64.2	51,375	63.7
Latino	1742	8.4	5614	14.8	2734	17.3	1055	17.2	11,145	13.8
African American	1114	5.4	2836	7.5	1513	9.6	651	10.6	6114	7.6
Asian	3434	16.6	2773	7.3	429	2.7	99	1.6	6735	8.4
Other	1480	7.2	2456	6.5	911	5.8	392	6.4	5239	6.5
Missing	38		70		38		17		163	
Age, y										
45-49	3134	15.1	5574	14.6	2267	14.3	1003	16.3	11,978	14.8
50-54	4104	19.8	7373	19.4	3261	20.6	1311	21.3	16,049	19.9
55-59	4324	20.9	8337	21.9	3596	22.7	1470	23.9	17,727	21.9
60-64	4286	20.7	8289	21.8	3412	21.6	1252	20.3	17,239	21.3
65+	4849	23.4	8524	22.4	3283	20.8	1122	18.2	17,778	22.0
Education										
High school or less	2903	14.1	6868	18.1	3370	21.4	1337	21.8	14,478	18.0
Vocational or some college	5812	28.2	13,101	34.5	6340	40.3	2684	43.8	27,937	34.7
College or more	11,888	57.7	17,971	47.4	6037	38.3	2110	34.4	38,006	47.3
Missing	94		157		72		27		350	
Annual household income, \$										
0-39,999	4210	21.1	7000	19.2	3132	20.6	1344	22.7	15,686	20.2
40,000-59,999	3769	18.9	6985	19.1	3057	20.1	1269	21.4	15,080	19.4
60,000-79,999	3519	17.6	6869	18.8	2947	19.4	1199	20.3	14,534	18.7
80,000+	8444	42.3	15,646	42.9	6071	39.9	2106	35.6	32,267	41.6
Missing	755		1597		612		240		3204	
Marital status										
Married/living with partner	16,246	78.8	31,447	82.9	13,149	83.5	4969	81.1	65,811	81.8
Other	4362	21.2	6503	17.1	2601	16.5	1161	18.9	14,627	18.2
Missing	89		147		69		28		333	
Outpatient visits in previous 5 years, by quartile (Q)										
Q1, <9	5369	25.9	9093	23.9	3284	20.8	972	15.8	18,718	23.2
Q2, 9-16	5307	25.6	9513	25.0	3665	23.2	1284	20.9	19,769	24.5
Q3, 17-30	5321	25.7	10,341	27.1	4346	27.5	1673	27.2	21,681	26.8
Q4, 31+	4700	22.7	9150	24.0	4524	28.6	2229	36.2	20,603	25.5

BMI indicates body mass index.

DISCUSSION

In a diverse cohort of middle-aged and older men, we assessed utilization of preventive screening exams and health behaviors by BMI ranging from healthy weight to class II/III obesity in the managed care setting. We found no evidence for weight-related disparities in laboratory tests associated with cardiovascular disease and diabetes. However, despite equivalent access to care, overweight and obese men were less likely to be screened for

CRC and prostate cancer. In addition, while heavier men reported less consumption of alcoholic beverages and were less likely to smoke, their diets and levels of physical activity more often failed to meet national recommendations for health.

The majority of Americans are at elevated risk for numerous diseases as a result of their higher-than-recommended weight. The widespread and increasing prevalence of perceived weight discrimination in the United States¹¹ raises concern about the healthcare that heavier patients receive. Unhealthy behaviors

Table 2. Preventive Healthcare Utilization by Members of the California Men’s Health Study by Body Mass Index^a

Preventive Measure	Healthy Weight BMI 18.5- 24.9 kg/m ² (n = 20,697)	Overweight BMI 25.0- 29.9 kg/m ² (n = 38,097)	Class I Obesity BMI 30.0- 34.9 kg/m ² (n = 15,819)	Class II/III Obesity BMI 35.0+ kg/m ² (n = 6158)	Total (N = 80,771)
Glucose^b					
Any in 2 years before survey, n (%)	9926 (48.0)	19,700 (51.7)	8799 (55.6)	3652 (59.3)	42,077 (52.1)
Adjusted OR, 95% CI	1.00	1.18, 1.14-1.23	1.39, 1.33-1.46	1.56, 1.45-1.66	
Cholesterol^b					
Any in 2 years before survey, n (%)	13,989 (67.6)	26,664 (70.0)	11,400 (72.1)	4536 (73.7)	56,589 (70.1)
Adjusted OR, 95% CI	1.00	1.14, 1.09-1.19	1.26, 1.19-1.33	1.29, 1.20-1.39	
Triglycerides^b					
Any in 2 years before survey, n (%)	12,054 (58.2)	23,820 (62.5)	10,388 (65.7)	4197 (68.2)	50,459 (62.5)
Adjusted OR, 95% CI	1.00	1.22, 1.17-1.27	1.40, 1.34-1.48	1.48, 1.38-1.59	
A1C^{c,d}					
Any in 2 years before survey, n (%)	947 (67.8)	2684 (69.5)	2014 (70.1)	1297 (72.5)	6942 (70.0)
Adjusted OR, 95% CI	1.00	1.07, 0.92-1.25	1.14, 0.96-1.36	1.22, 1.00-1.50	
Sigmoidoscopy^{b,e}					
Any in 5 years before survey, n (%)	3298 (33.5)	5778 (32.1)	2211 (29.9)	770 (27.4)	12,057 (31.7)
Adjusted OR, 95% CI	1.00	0.93, 0.88-0.99	0.84, 0.78-0.90	0.72, 0.65-0.80	
PSA laboratory^{b,f}					
Any in 5 years before survey, n (%)	9850 (72.3)	18,307 (73.0)	7580 (72.1)	2992 (70.7)	38,729 (72.5)
Adjusted OR, 95% CI	1.00	0.99, 0.93-1.04	0.91, 0.85-0.98	0.80, 0.73-0.88	

A1C indicates glycosylated hemoglobin; BMI, body mass index; CI, confidence interval; OR, odds ratio; PSA, prostate-specific antigen.
^aAll ORs were adjusted for race/ethnicity, age, education, income, marital status, country of birth, number of outpatient visits, department of primary care provider, and health plan.
^bP for trend ≤.001.
^cP for trend <.05.
^dAmong men with diabetes.
^eScreening sigmoidoscopy among men 50 years and older who had been enrolled in health plans for 5+ years and were at average risk for colorectal cancer.
^fScreening PSA test among men enrolled in health plans for 5+ years.

that add to the adverse effects of overweight/obesity are common and may be exacerbated in response to perceived weight bias. Our findings highlight factors that healthcare organizations could address to reduce the risk associated with overweight and obesity.

Previously, the limited studies of weight-related disparities in care found mixed results, perhaps due to small sample size and reliance on self-report.^{36,37} In addition, those studies were mainly focused on cancer screening in women.^{38,39} Recently, 2 large studies assessed quality indicators among overweight and obese patients during comparable years and with time intervals for screening exams similar to those in our study. Like us, Chang and colleagues¹⁸ found higher rates of A1C and lipid screening among overweight and obese male Medicare beneficiaries and US veterans. However, their examination of lipid screening was limited to patients with diabetes. They found no differences in receipt of CRC screening by weight category; however, their overall rates were higher (52% and 73% in the Medicare and veteran samples, respectively, compared with 32% in this study), possibly due to the older age

of the subjects, inclusion of fecal occult blood testing as a CRC screening test, and reliance on self-reports from many subjects. Also in contrast to our study, Yancy and colleagues¹⁹ found higher rates of CRC and PSA testing among obese male veterans compared with those at healthy weights. Although they too included more screening tests for CRC in addition to sigmoidoscopy, overall rates were similar to those found in our analysis. The rate of PSA testing, on the other hand, was less than half of the rate observed among our health plan members, perhaps due to services received outside the US Department of Veterans Affairs system. Unlike previous studies, we attempted to exclude tests for CRC and prostate cancer that had a high probability of being ordered for diagnostic purposes instead of screening. This may account for differences in our findings. Overweight and obese men are at greater risk for colon cancer⁴⁰ and possibly more aggressive forms of prostate cancer,⁴¹ and have higher prostate cancer mortality.⁴² Managed care organizations should monitor the use of cancer screening exams among heavier patients, raise provider awareness about potential disparities, and promote use among

■ **Table 3.** Health Behaviors of Members of the California Men's Health Study by Body Mass Index^a

Health Behavior	Healthy Weight BMI 18.5- 24.9 kg/m ² (n = 20,697)	Overweight BMI 25.0- 29.9 kg/m ² (n = 38,097)	Class I Obesity BMI 30.0- 34.9 kg/m ² (n = 15,819)	Class II/III Obesity BMI 35.0+ kg/m ² (n = 6158)	Total (N = 80,771)
Total kilocalories/day, mean (SD)^b	2039 (772.2)	2091 (805.0)	2178 (805.9)	2299 (907.9)	2110 (817.3)
≤30% calories from fat, n (%)^b					
Yes	6909 (36.2)	9656 (27.4)	2858 (19.6)	846 (15.0)	20,269 (27.2)
No	12,165 (63.8)	25,609 (72.6)	11,753 (80.4)	4798 (85.0)	54,325 (72.8)
Missing	1623	2832	1208	514	6177
Adjusted OR, 95% CI	1.00	0.70, 0.67-0.73	0.47, 0.45-0.50	0.37, 0.34-0.41	
Servings of fruits and vegetables per day, n (%)					
5 or more ^b	6460 (33.9)	10,906 (31.0)	4339 (29.7)	1717 (30.5)	23,422 (31.5)
4 or less	12,580 (66.1)	24,292 (69.0)	10,256 (70.3)	3917 (69.5)	51,045 (68.5)
Missing	1657	2899	1224	524	6304
Adjusted OR, 95% CI	1.00	0.89, 0.85-0.92	0.86, 0.82-0.91	0.90, 0.83-0.97	
Total alcohol consumption (drinks), n (%)^b					
Fewer than 1/month	6746 (33.2)	12,188 (32.5)	5880 (37.8)	2785 (46.0)	27,599 (34.7)
1-3/month	1840 (9.0)	3454 (9.2)	1566 (10.1)	659 (10.9)	7519 (9.5)
1-4/week	4603 (22.6)	8661 (23.1)	3614 (23.2)	1297 (21.4)	18,175 (22.9)
5 or more/week	7152 (35.2)	13,251 (35.3)	4498 (28.9)	1310 (21.6)	26,211 (33.0)
Missing	356	543	26	107	1267
Adjusted OR, 95% CI (5+/week)	1.00	0.96, 0.92-1.01	0.67, 0.63-0.71	0.44, 0.41-0.48	
Smoking status, n (%)^b					
Current	2590 (12.5)	4381 (11.5)	1756 (11.1)	655 (10.7)	9382 (11.6)
Quit	7969 (38.6)	17,695 (46.6)	7958 (50.4)	3140 (51.1)	36,762 (45.6)
Never	10,104 (48.9)	15,922 (41.9)	6068 (38.4)	2353 (38.3)	34,447 (42.7)
Missing	34	99	37	10	180
Adjusted OR, 95% CI (current yes/no)	1.00	0.83, 0.78-0.87	0.71, 0.66-0.76	0.61, 0.55-0.68	
Moderate/vigorous physical activity, n (%)^{b,c}					
Yes	14,278 (69.2)	24,494 (64.5)	8401 (53.3)	2515 (41.0)	49,688 (61.7)
No	6351 (30.8)	13,470 (35.5)	7366 (46.7)	3624 (59.0)	30,811 (38.3)
Missing	68	133	52	19	272
Adjusted OR, 95% CI	1.00	0.81, 0.79-0.84	0.51, 0.48-0.53	0.31, 0.29-0.34	
Vigorous physical activity, n (%)^{b,d}					
Yes	4590 (22.3)	6463 (17.0)	1793 (11.4)	442 (7.2)	13,288 (16.5)
No	16,039 (77.7)	31,501 (83.0)	13,974 (88.6)	5697 (92.8)	67,211 (83.5)
Missing	68	133	52	19	272
Adjusted OR, 95% CI	1.00	0.73, 0.70-0.77	0.47, 0.44-0.50	0.29, 0.26-0.33	
Sedentary ≥6 hours/day, n (%)^b					
Yes	5066 (26.1)	11,917 (33.3)	6123 (41.4)	2660 (46.3)	25,766 (34.0)
No	14,378 (73.9)	23,838 (66.7)	8653 (58.6)	3085 (53.7)	49,954 (66.0)
Missing	1253	2342	1043	413	5051
Adjusted OR, 95% CI	1.00	1.33, 1.28-1.39	1.77, 1.68-1.86	2.04, 1.90-2.18	

BMI indicates body mass index; CI, confidence interval; OR, odds ratio.

^aAll ORs were adjusted for race/ethnicity, age, education, income, marital status, country of birth, number of outpatient visits, department of primary care provider, and health plan.

^bP for trend ≤.001.

^cModerate/vigorous physical activity defined as ≥3.5 hours/week in activities of ≥3 metabolic equivalents.

^dVigorous physical activity defined as ≥3.5 hours/week in activities of ≥6 metabolic equivalents.

all patients. Future studies of weight-related disparities need to examine cancer screening among patients of similar age, avoid reliance on self-reports of health service utilization, and distinguish between screening and diagnostic exams.

Dietary Guidelines for Americans, 2005 recommended a diet limiting fats to 20% to 35% of total calories and consumption of at least 5 servings of fruits and vegetables per day.⁴³ While less than one-third of men met those dietary goals, overweight and

obese men were significantly less likely to consume a diet that decreased their risk for cardiovascular disease, type 2 diabetes, and some cancers, as well as weight gain and obesity. Similarly, physical activity is associated with multiple health benefits⁴⁴ and prevents weight gain and increases weight loss, especially when combined with reduced caloric intake. Of concern, this study found obese men were at least half as likely as healthy-weight men to report recommended levels of moderate/vigorous physical activity. Despite long-standing calls for physicians to advise patients about the risks of excess weight,²³ fewer than half of obese patients report receiving such advice.⁴⁵ Yet when patients are advised by their physicians, they are more likely to try to lose weight, demonstrating once again the importance of physician recommendations.⁴⁶ We found overweight and obese men made substantially more primary care visits, thus providing clinicians added opportunities to counsel patients about health behaviors, as well as cancer screening.

A recent review described the growing evidence for the impact of weight bias on healthcare utilization as a result of both physician and patient factors.⁵ Misconceptions about the causes of obesity and the motivation of heavier patients are commonly identified in surveys and experimental studies conducted among health professionals.^{8,12,15,16} On the other hand, overweight and obese patients may be reluctant to seek care due to embarrassment and perceived antifat bias.^{10,17} Provider education can help reduce negative attitudes about obesity⁴⁷ and consequently might reduce weight-related disparities in care. Education also can help clinicians be sensitive to the stigmatizing experiences heavier patients deal with in the medical setting, and the importance of their attitude and choice of words when treating these patients.⁴⁸ Future studies need to identify effective interventions for counseling patients about weight-related health issues. Healthcare organizations must ensure providers have and spend sufficient time in counseling their overweight and obese patients.

A strength of this study is the availability of health plan data, as patients who feel that physicians are negatively biased may also have a greater tendency to underreport care. Other strengths include the large, multiethnic cohort of men and the examination of healthcare utilization without the confounding effect of insurance coverage. In contrast to previous reports, we distinguished diagnostic from screening cancer exams and adjusted results for outpatient utilization.

While responses to the CMHS survey are subject to the potential limitations of self-reported cross-sectional data, it is reassuring that the prevalences of overweight and obesity were similar to those in reports with men living in California²² and the nation⁴⁹ in comparable years. In addition, we were able to validate the self-reported heights and weights with the electronic medical records of nearly 20,000 men.²¹ Overall re-

ports of dietary data and levels of physical activity are consistent with national surveys.^{40,50} Other limitations include our inability to explain why overweight and obese men were less likely to be screened for CRC and prostate cancer. Perhaps urgent problems or management of comorbidities were the focus of physician concern during medical encounters. Tests might have been recommended, but patients might have refused or did not follow through with exams that were ordered. In addition, these results might not generalize to women or to younger adults, for whom the stereotypes and stigma associated with obesity may be more salient than in this older cohort.⁵¹ Future research into weight-related disparities in care and health behaviors should include reports from both patients and providers about delivery and adherence to health recommendations. Effective patient counseling and interventions that reduce barriers to care need to be developed and tested among overweight and obese patients.

CONCLUSIONS

Among men enrolled in 2 large managed health plans, we found weight-related disparities in 2 common quality measures for cancer screening, in contrast to increased utilization of laboratory tests that screen for cardiovascular disease and diabetes. In addition, overweight and obese men more often reported behaviors associated with increased risk for cardiovascular disease and cancer. Managed care organizations may reduce weight-related health risks, as well as potential disparities in care, with targeted efforts to promote cancer screenings, healthy diets, and physical activity among overweight and obese patients.

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