ORIGINAL CONTRIBUTION

National Patterns of Physician Activities Related to Obesity Management

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Context: National physician practices related to the clinical recognition and management of obesity are unknown.

Objectives: To estimate national patterns of office-based, obesity-related practices and to determine the independent predictors of these practices.

Design: Serial cross-sectional surveys of physician office visits.

Setting: Ambulatory medical care in the United States.

Patients: We analyzed 55858 adult physician office visits sampled in the 1995-1996 National Ambulatory Medical Care Surveys. Data from the Third National Health and Nutrition Examination Surveys, 1988-1994 were used to assess and, then, adjust for the underreporting of obesity.

Main Outcome Measures: Reporting of obesity at office visits and physician counseling for weight loss, exercise, and diet among patients identified as obese.

Results: Physicians reported obesity in only 8.6% of 1995-1996 National Ambulatory Medical Care Surveys visits. The 22.7% prevalence rate of the Third National Health and Nutrition Examination Surveys, 1988-1994 suggests that physicians reported obesity in only 38% of their obese patients. Among visits by patients identified as obese, physicians frequently provided counseling for weight loss (35.5%), exercise (32.8%), and diet (41.5%). Adjusted for population prevalence; however, each service was provided to no more than one quarter of all obese patients. While patients with obesity-related comorbidities were treated more aggressively, in these patients, weight loss counseling occurred at only 52% of the visits.

Conclusions: Specific interventions to address obesity are infrequent in visits to US physicians. Obesity is underreported and interventions are only moderately likely among patients identified as obese, even for those with serious obesity-related comorbidities.

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Editor's Note: Sometimes we use research to remind us of the obvious. Physicians often do not note or treat obesity, even when patients have major comorbidities. Obesity is a national epidemic in the United States. How and when are we going to actually tackle this issue? What can you do in your office? When feeling frustrated about your potential influence, it can help to remember that even small amounts of weight loss, or prevention of that weight gain in the first place, can make significant differences. Also, obesity is often a family disease. Since we see many family members over time for different reasons, each of these visits can be the opportunity for an obesity intervention that could make the difference for that person and that family.

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THE PREVALENCE of obesity has risen dramatically in the United States over the past 4 decades. It has grown from 12.8% in 1960-1962 to 22.5% in 1988-1994 among the adult US population.[1-3] The cause of this complex, multifactorial condition is linked to a gamut of environmental, hereditary, psychological, and physiological factors.[4,5] *Obesity* is an excess of body fat. While 20% or more above desirable weight was once a standard definition, the body mass index (BMI, calculated as the weight, in kilograms, divided by the height, in meters, squared) is the accepted metric for defining obesity. In recent years, obesity has been defined as a BMI of 30.0 or more.[5]

A 70% increase in adverse clinical outcomes is associated with a BMI of 27 or more.[6] Obesity is highly associated with type 2 diabetes mellitus, hypertension, osteoarthritis, gout, lipid disorders, cardiovascular disease, stroke, cholecystitis, gallbladder disease, respiratory tract disease, arthritis, and some cancers.[4,5,7,8] The presence of obesity-associated comorbidities substantially increase mortality, hospital lengths of stay, and health care costs.[9]

MATERIALS AND METHODS

DATA SOURCES

Data for this study were obtained from the 1995-1996 NAMCS, and the NHANES III, both conducted by the National Center for Health Statistics, Hyattsville, Md.[22-25] The NAMCS data were used to estimate national patterns of physician practices for the identification and management of obese patients and to determine independent predictors that may influence these practices. The NHANES III data were used to obtain national estimates of the prevalence of obesity among the adult US population; these prevalence estimates were then used to calculate population-based national estimates of physician practice patterns.

NATIONAL AMBULATORY MEDICAL CARE SURVEYS

National Ambulatory Medical Care Surveys are an ongoing annual survey of US office-based physicians. Participants are selected from the master files of the American Medical Association, Chicago, Ill, and the American Osteopathic Association, Chicago. The physicians are randomly selected by geographical area and specialty (as designated by the US Bureau of the Census and the physicians, respectively). The unit of analysis is the patient visit. Government-operated facilities and hospital-based outpatient department visits were excluded. Of selected physicians, 73% (1995) and 70% (1996) agreed to participate in the study.[22,23] For each participating physician, 1 week of the year was randomly selected for systematic sampling of 20% to 100% of patient visits.

For each selected patient visit, physicians completed encounter forms detailing specific clinical services provided during the visit, as well as patient demographics, *International Classification of Diseases, Ninth Revision, Clinical Modification* diagnostic codes, reason for visit codes, physician characteristics, visit characteristics, new or continued medications, diagnostic tests, and types of counseling provided. We limited our analysis to patients aged 18 years or older; this constituted 55 858 adult office visits.

We used available information on the type of examination, medications, services provided, physician characteristics, and patient demographics to examine their effect on the identification and management of the obese patient.

DEPENDENT VARIABLES

Reporting of Obesity

The encounter forms contained a check box enabling physicians to identify patients as obese. Survey instructions defined obesity as being 20% over the standard optimum weight. In addition to this check box, we identified a few additional patients by a NAMCS "reason for visit" code of 1040.0 or an *International Classification of Diseases, Ninth Revision, Clinical Modification* diagnostic code of 278.0.[26] We interpreted obesity identification as an indicator that this condition was both present and considered clinically relevant by the reporting physician.

Screening Tests

A check box enabling the physicians to specify whether blood pressure and cholesterol screening were performed allowed us to determine whether these screening tests were ordered.

Prescription of Antiobesity Medications

National Ambulatory Medical Care Surveys drug codes were used to identify if any potential antiobesity medications were prescribed at the office visit. We considered antiobesity medications to include the following: amphetamine sulfate/dextroamphetamine sulfate, benzphetamine hydrochloride, phendimetrazine tartrate, phentermine hydrochloride, diethylpropion hydrochloride, mazindol, phenylpropanolamine hydrochloride, methamphetamine hydrochloride, dexfenfluramine hydrochloride, and fenfluramine hydrochloride.

Counseling Provided

Management of obesity included diet, exercise, weight reduction, and cholesterol reduction counseling. A check box for each of these services was included on the encounter forms, enabling us to assess whether they were provided.

INDEPENDENT VARIABLES

Overall Comorbidity Risk Status

For visits where patients were identified as obese, we stratified the patients according to degree of overall comorbidity risk status. We used established clinical guidelines that were modified owing to limitations in our data.[5] Patients with any 1 of the following were classified as "very high risk" for obesity-related disease complications and mortality: (1) coronary heart disease, (2) diabetes mellitus, or (3) sleep apnea. Patients with any 1 of the following were categorized as "high risk": (1) osteoarthritis, (2) gallstones, (3) stress incontinence, (4) hyperlipidemia, (5) cigarette smoking, (6) hypertension, or (7) men aged 45 years or older and females aged 55 years or older. Finally, patients who were identified as being obese, but had no other obesity-related risk factors, were classified as "lower risk."

Insurance Status

We classified payment sources into 2 categories: (1) private (Blue Cross/Blue Shield, health maintenance

organizations, or other private insurance) and (2) nonprivate (Medicare, Medicaid, workers' compensation, other insurance, and self-pay).

Physician Specialty

The American Medical Association designations were used to define physician specialty into the following 4 categories: (1) internal medicine, (2) cardiology, (3) general/family practice, or (4) other specialties.

First Visit Status

Encounter forms identified patients who were being seen by the physician for the first time.

Demographic Data

Patients' race, sex, age, geographic region, and smoking status also were available from the NAMCS data files.

THE THIRD NATIONAL HEALTH AND NUTRITION EXAMINATION SURVEY, 1988-1994

The NHANES is a periodic survey conducted by the National Center for Health Statistics. The NHANES III was conducted from 1988 through 1994. This survey used a complex, multistage sample design (through interviews and direct physical examinations) to provide national estimates of the health and nutritional status of the noninstitutionalized, civilian population within the United States. We used the NHANES III data to obtain national estimates of the prevalence of obesity among the adult US population seeing physicians in the previous year. These estimates of prevalence allowed for the adjustment of the NAMCS data to obtain national estimates of physician practice patterns of obesity identification and management. We limited our analysis to persons aged 18 years or older who had visited a physician in the past year, constituting a sample size of 13 536 adults.[24,25]

While standards for defining obesity have changed over the last few years, we elected to use BMI to identify obese patients. We used the generally accepted standard that a patient is considered obese when the BMI is 30.0 or greater.[5]

STATISTICAL METHODS

The goals of our statistical analysis were as follows: (1) to examine whether differences exist between the prevalence rate from NHANES III and the reported rate of obesity among the NAMCS patient population, and (2) to determine independent predictors that influence physician practice patterns for the identification and treatment of obesity (obtained from NAMCS). Our outcome measures were whether a patient was identified as obese and, if so, whether obesity-related clinical activities were reported.

Overall Rate of Obesity

In NAMCS and NHANES III, the National Center for Health Statistics provided visit and survey weights, respectively, that were adjusted for nonresponses. The statistical use of these weights allowed for the estimate of national practice patterns for the reporting and treatment of obesity by office-based physicians and estimates of the prevalence of obesity within the United States. We further modified these weights using proportional scaling to provide effective sample sizes for use in statistical testing.[27]

Predictors of Obesity Identification

χ^2 Tests were used to assess the relations between being identified as obese and smoking status, insurance status, physician specialty, and patient age. Because we were unable to account for the clustered sampling algorithm of NAMCS, we conservatively considered a $P \leq .01$ to be statistically significant.

A log-linear model was used to test for demographic differences in the rates that obese patients were reported as obese. This was accomplished by calculating the variance of the logarithm of the ratio of the NAMCS to the NHANES III obesity rates for each demographic subgroup (age, race, and sex), using the visit and survey weights provided by the National Center for Health Statistics with the data. The variance of the logarithm of the ratio was then analyzed for demographic differences using a generalized linear model (PROC GENMOD) with fixed variances.[28] The reported adjusted ratios are calculated as the exponent of the least squared-mean for each group.

Overall Rate of Treatment Activities Among Obese Patients

After stratification of the obese patients by overall comorbidity risk status, we employed simple descriptive statistics to determine overall rates of services provided to each stratum. A χ^2 test for trend was used to measure the association between treatment provided and increasing risk status. We adjusted these treatment rates to account for the underreporting of obesity during office visits. We calculated adjusted treatment rates as the weighted mean of the NAMCS-derived treatment rate for patients reported to be obese and the rate for patients not reported to be obese. Weighting for these calculations was determined by the fraction of patients likely to be obese (from NHANES III) who were reported to be obese in NAMCS.

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Independent Predictors of Physician Activities

Three multivariate logistic regression models were estimated to assess the extent to which nonclinical patient and physician characteristics and clinical risk status categories predicted the likelihood of obesity treatment.[28] The dependent variables in these regression models were weight reduction counseling, diet counseling, and exercise counseling. Independent variables included patient age, patient race, patient sex, geographic region, physician specialty, patient visit status, insurance status, and overall comorbidity risk status. We calculated 99% confidence interval based on these regression models.

Ranking second only to smoking as a preventable cause of death, obesity-related conditions account for 300 000 deaths annually, 13% of all US deaths.[10,11]

The United States spends $68 billion annually on direct obesity-related medical expenses,[12] and $30 billion on diet foods, products, and programs.[13] In addition, society's indirect costs are enormous. In 1994, 39.2 million days of work were missed and 239 million restricted-activity days were caused by obesity.[14]

Several obesity management options are available, including the following: (1) surgical treatment, (2) behavior modification, (3) medications, and (4) diet restriction. Surgical procedures are effective, but are also associated with complications[15,16] (including death). Thus, surgery should only be considered for patients who are morbidly obese (BMI >40 or >35 with certain comorbidities) and only after other less invasive treatments for weight loss have failed. Research has shown that behavior modification (both eating and physical activity behaviors, such as diet and exercise) provides the best results for weight reduction and maintaining weight loss.[15] Medications work well during initial obesity treatment, but uncertain long-term effectiveness and adverse effects render medications problematic for chronic management of obesity.[15,16] With the recall of some diet medications in 1997 owing to serious complications,[5] more attention has been focused back on diet counseling and behavior modification. Diet restriction, or reducing and controlling the amount and types of foods ingested, works well initially, but without continued behavior modification, weight is inevitably regained.[15]

Physicians may encounter several difficulties in addressing obesity. They may believe that counseling patients to lose weight is futile. Follow-up studies indicate that after 7 years, 95% of dieters are back to their prediet weights.[17] Barriers that physicians may face include lack of the skills needed to help patients lose weight, failure to prioritize obesity as a medical issue, lack of reimbursement for obesity-related activities, and failure to involve other ancillary providers—dietitians, physical therapists, and mental health professionals.

Despite these difficulties, however, physician interventions that produce even small reductions in the prevalence of obesity may have a substantial public health and economic effect. Efforts to address obesity are particularly important if obesity-related chronic conditions are present. Clinical guidelines suggest that physicians should stratify patients according to the presence of obesity-associated morbidities and treat patients at higher risk more aggressively.[5]

Physicians are increasingly likely to endorse the importance of counseling and education about weight loss, including prescriptions for exercise and dietary modifications.[18,19] While physicians seem willing to discuss obesity with their patients, they often have few concrete weight reduction strategies.[20] In addition, treatment patterns may not be uniform across patients. For example, physicians' weight loss activities are more prevalent with high-income patients rather than low-income patients.[21]

While a substantial literature is available on obesity management, little data are available on physician practice patterns. Using data from the National Ambulatory Medical Care Survey (NAMCS)[22,23] and the Third National Health and Nutrition Examination Survey, 1988-1994 (NHANES III),[24,25] we investigated national office-based physician activities related to obesity. We were particularly interested in physician and patient characteristics that influence obesity identification and treatment patterns.

Using the NAMCS data set, we determined physician rates of obesity reporting and physician treatment patterns according to comorbidity risk status. The NHANES III data set provided national estimates of obesity prevalence that we used to adjust the NAMCS data to obtain population based estimates of both obesity identification and obesity treatment.

RESULTS

DEMOGRAPHIC CHARACTERISTICS OF THE NAMCS POPULATION

Based on the NAMCS sample, we extrapolated a weighted national estimate of 561 million annual adult visits to office-based physicians. The patients represented in this adult sample were 82% white non-Hispanic and 62% female. Most patients had private insurance (56%). Almost one third of the visits were by patients 65 years and older (31%). By physician specialty general/family practice physicians accounted for 27% of the visits; internal medicine, 18%; cardiology, 3%; and other specialties, 53%.

RATE OF OBESITY REPORTING VARIED BY CLINICAL AND NONCLINICAL FACTORS

Office-based physicians reported obesity in 8.6% of all adult patient visits. Women (10.0%) were more likely to be reported as being obese compared with men (6.4%, $P \leq .001$). Physician specialties differed in their reporting of obesity: general/family practice, 11.0%; internal medicine, 11.8%; cardiovascular disease, 11.6%; and other specialties, 6.2% (χ^2 test, $P \leq .001$). The likelihood of smokers being reported as obese (10.5%) was greater than that for nonsmokers (8.4%; χ^2 test, $P \leq .001$). Patients aged 40 to 64 years had the highest rates of reported obesity (11.5%), compared with both younger (7.8%) and older patients (6.9%, χ^2 test, $P \leq .001$).

IDENTIFICATION OF OBESITY

A low rate of obesity identification was noted for the NAMCS compared with population prevalence estimates obtained from NHANES III. While office-based physicians in NAMCS identified 8.6% of their adult patients as obese, the prevalence of obesity among the general population who had visited a physician in the last year was 22.7%. This suggests that physicians identified only 38% of their obese patients (**Table 1**).

The likelihood that obesity would be clinically identified varied by patient characteristics. The likelihood of a patient who is obese, being identified as obese, decreased with patient age with the highest rates for 18 to 29 year olds (43% of obese patients were identified as obese) and the lowest rates for patients 65 years and older (31%, $P = .003$, Table 1). A statistically significant interaction between race and sex was found. In men, obesity was less likely to be identified in whites (29%) and Hispanics (28%) compared with blacks (45%), while only small racial differences in obesity identification were noted among women ($P \leq .001$, Table 1).

TREATMENT OF OBESITY

Low Levels of Counseling and Screening

Among patients identified as obese, weight reduction counseling occurred in 35.5% of visits. Similar fractions of obese patients received counseling for exercise (32.8% of visits) and diet counseling (41.5%). In addition, blood pressure was measured at 68.2% of visits by patients identified as obese, while cholesterol testing was obtained in 8.7% of visits.

Using the NHANES III prevalence estimates, we adjusted the NAMCS treatment rates to reflect counseling and screening rates among all obese patient visits, rather than only those specifically reported to be obese. Adjusted for NHANES III population prevalence, weight loss counseling occurred in only 15% of all visits by obese patients, while exercise (18%) and diet counseling (23%) occurred at somewhat higher adjusted rates. Blood pressure measurement (57%) and cholesterol testing (6%) were less affected by adjustment for the underreporting of obesity.

Table 1. Comparison of Obesity Identification Rates From NAMCS With Estimated Prevalence of Obesity From NHANES III With Adjusted Ratio of Rates*

Category	Unadjusted Rate, %		Adjusted Rate Ratio	99% CI
	NAMCS	NHANES III		
Age group, y†				
18-29	6.0	14.2	0.43	0.34-0.54
30-44	8.8	23.1	0.39	0.33-0.45
45-64	11.5	30.5	0.37	0.33-0.42
≥65	6.9	22.4	0.31	0.27-0.35
Race/sex‡				
W/F	9.5	22.3	0.40	0.36-0.45
W/M	6.3	20.7	0.29	0.25-0.34
B/F	13.6	35.2	0.37	0.31-0.44
B/M	7.8	20.7	0.45	0.32-0.62
Hispanic/F	11.3	30.5	0.35	0.27-0.46
Hispanic/M	6.4	22.2	0.28	0.18-0.43
Other/F	6.2	22.0	0.26	0.14-0.48
Other/M	5.9	9.9	0.73	0.13-3.98
Total reported obese	8.6	22.7		

**NAMCS indicates 1995-1996 National Ambulatory Medical Care Surveys[22,23]; NHANES III, Third National Health and Nutrition Examination Survey, 1988-1994[24,25]; and CI, confidence interval.*
†P = .003, χ^2 test.
‡P < .001, χ^2 test.

Effect of Risk Category

A higher comorbidity risk status was associated with increased counseling and screening services to patients specifically identified as obese (χ^2 test for trend $P < .001$). For example, weight reduction advice increased from 30.9% (lower risk) to 42.2% (very high risk), while blood pressure measurement increased from 64.2% (lower risk) to 73.3% (very high risk) (**Table 2**). As an exception to this pattern, the likelihood of antiobesity medications decreased with increasing risk status (6.3%-0.6%).

MULTIVARIATE LOGISTIC REGRESSION MODELS

According to the multivariate logistic regression models, the effect of overall clinical risk status was similar to that found in the bivariate analysis, with the likelihood of obesity treatment increasing with comorbidity risk status (**Table 3**). Age younger than 65 years and residence outside of the Western region of the country generally predicted greater likelihood of counseling (Table

3). While no statistically significant difference was noted among the specialties of internal medicine, cardiology, and general/family practices, other specialties were about 40% less likely to provide counseling for weight reduction, exercise, or diet (Table 3). Patients with private insurance were more likely to be counseled.

Table 2. Screening and Treatment Activities in Patients Identified as Obese; by Risk Category; NAMCS*

	Risk Category, %†		
	Very High	High	Lower
All obese patients, %	25.1	46.8	28.1
Screening tests			
Blood pressure measured	73.3	67.9	64.2
Cholesterol tested	12.2	9.2	4.8
Prescribed treatments/counseling			
Weight reduction counseling	42.2	34.7	30.9
Diet counseling	53.1	40.0	33.9
Exercise counseling	39.4	31.5	29.2
Cholesterol reduction counseling	15.7	10.1	4.9
Antiobesity medications	0.6	3.4	6.3
None of the above treatments	39.0	49.2	55.4

*NAMCS indicates 1995-1996 National Ambulatory Medical Care Surveys.[22,23]
†All values show χ^2 test for trend $P<.001$.

COMMENT

While there is substantial literature recommending specific strategies for the management of the obese patient, little data are available on physician practice patterns. Our findings suggest that physicians may be underreporting and undertreating obesity. Only 8.6% of all office visits had obesity reported, suggesting that office-based physicians seem to identify only one third of all of their obese patients. Younger obese patients were more likely to be identified as obese by physicians.

A significant portion of patients reported to be obese received no screening tests or treatment. Although obesity treatment was more likely in those with higher comorbidity risk status, this group still had only modest rates of treatment. Almost 40% of those whose comorbidities placed them at very high risk received no reported treatment for their obesity.

Table 3. Independent Predictors of Counseling Activities in Obese Patients, NAMCS*

		Adjusted Odds Ratios (95% CI)		
Predictor	% Among Obese	Weight Reduction Counseling	Diet Counseling	Exercise Counseling
Race				
Nonwhite	23.3	0.89 (0.69-1.15)	0.99 (0.77-1.26)	0.83 (0.64-1.08)
White	76.7	1.00 (Reference†)	1.00 (Reference)	1.00 (Reference)
Sex				
M	28.1	1.14 (0.90-1.44)	1.11 (0.88-1.39)	1.19 (0.94-1.51)
F	71.9	1.00 (Reference)	1.00 (Reference)	1.00 (Reference)
Region				
Northeast	19.8	1.61 (1.18-2.20)	1.18 (0.88-1.59)	1.32 (0.97-1.81)
Midwest	23.5	1.54 (1.14-2.08)	1.09 (0.82-1.46)	1.11 (0.82-1.51)
South	29.2	1.43 (1.08-1.90)	1.36 (1.04-1.79)	1.22 (0.92-1.63)
West	27.5	1.00 (Reference)	1.00 (Reference)	1.00 (Reference)
Overall comorbidity risk status				
Very high	25.1	1.55 (1.10-2.17)	2.22 (1.59-3.10)	1.59 (1.13-2.23)
High	46.6	1.16 (0.87-1.54)	1.31 (0.99-1.74)	1.13 (0.85-1.52)
Lower	28.3	1.00 (Reference)	1.00 (Reference)	1.00 (Reference)
First visit status				
Patient seen prior to this visit	88.6	0.99 (0.71-1.38)	0.98 (0.70-1.35)	0.88 (0.63-1.22)
New patient	11.4	1.00 (Reference)	1.00 (Reference)	1.00 (Reference)
Physician specialty				
Internal medicine	24.3	0.96 (0.73-1.27)	1.24 (0.95-1.62)	0.97 (0.74-1.29)
Cardiology	3.5	1.48 (0.84-2.61)	1.18 (0.67-2.08)	1.37 (0.77-2.41)
Other specialties	38.4	0.56 (0.43-0.72)	0.57 (0.45-0.73)	0.64 (0.50-0.83)
General family practice	33.8	1.00 (Reference)	1.00 (Reference)	1.00 (Reference)
Insurance status				
Private	58.1	1.13 (0.91-1.41)	1.24 (1.00-1.53)	1.08 (0.86-1.35)
Nonprivate	41.9	1.00 (Reference)	1.00 (Reference)	1.00 (Reference)
Age group, y				
18-29	9.5	1.27 (0.80-2.01)	1.55 (1.00-2.40)	1.54 (0.97-2.43)
30-44	26.5	1.43 (1.03-2.00)	1.34 (0.97-1.86)	1.45 (1.03-2.03)
45-64	39.3	1.47 (1.11-1.95)	1.28 (0.98-1.68)	1.51 (1.14-2.01)
≥65	24.7	1.00 (Reference)	1.00 (Reference)	1.00 (Reference)

*NAMCS indicates 1995-1996 National Ambulatory Medical Care Surveys[22,23]; CI, confidence interval.
†Reference indicates that within the logistic regression model the effects of other factors were calculated in comparison with this category.

According to recent clinical guidelines, it is recommended that management of the obese condition be initiated when obesity-related diseases are present.[29] Although office-based physicians are often overwhelmed by a variety of competing tasks, our findings suggest that they may be providing obesity treatment at inadequate levels. Almost 46% of all obese patients with at least one obesity-related disease had no weight reduction counseling at physician office visits. Evidence supports the health and economic benefits of managing obesity in this group of patients.[29]

There is controversy about the relative benefits of treatment for obese patients lacking obesity-related disease. Consistent with this controversy, we found that while a sizable portion of these patients received treatment (45%), they were significantly less likely to be treated compared with higher-risk patients. The guidelines fall short of recommending treatment of these patients owing to a lack of supporting evidence of the long-term efficacy of weight reduction programs.[29] While this lower-risk group may benefit from treatment, physician resources may be better used if focused on higher-risk patients with comorbidities.

LIMITATIONS

The NAMCS data contain physician-reported information that could not be objectively verified. The physician may have addressed the issue of treatment and once the patient declined obesity management, the physician may not have recorded that treatment was offered. Also, since the NAMCS data set is a visit-based survey, there may be a reduced likelihood of treatment for patients at any given visit who see physicians more often. Patients lacking services at a particular visit may have received these services at another visit.

Different definitions of obesity were used in NAMCS and NHANES III. In NAMCS, the physician was asked to classify the patient as obese if they were 20% or greater than standard optimum weight. National Ambulatory Medical Care Surveys data did not provide height and weight measurements and it was impossible to verify the accuracy of the obesity reporting. In NHANES III, we employed the current and preferred definition of a BMI greater than 30. Because the NAMCS definition would tend to encompass a greater proportion of patients, the underreporting of obesity may actually be greater than we report.

Some of our calculations have assumed that the NAMCS and NHANES III populations are representative of each other. Despite differing methods, both samples are constructed to be nationally representative. To make the 2 data sets as similar as possible, we limited the NHANES III population to those who had seen a physician within the last year.

Data limitations in NAMCS required us to modify current clinical guidelines[5] in determining overall comorbidity risk status. Definitions, however, differed only in that, in NAMCS, we could not assess family history or objective markers of cardiovascular disease risk. Also, within NAMCS, physicians may not have reported clinical comorbidities completely. The lack of financial reimbursement for some obesity-related services may make physicians generally less likely to fully report obesity and obesity-related services.

IMPLICATIONS FOR HEALTH POLICY

Our findings suggest that obesity is underappreciated in clinical practice. While this may reflect the multiple competing demands faced by office-based physicians and their perception that obesity is untreatable, it also may indicate that physicians fail to recognize the strong association between obesity and adverse clinical events. We also noted that obese patients identified to be at very high risk based on comorbidities still had only a moderate likelihood of receiving obesity-related services.

Although it may be difficult to justify obesity-related activities in lower-risk patients, even a small increase in physician identification and treatment of higher-risk obese patients may have a large public health effect. Obesity-related chronic conditions increase health care costs and reduce quality of life for patients, making it vital that treatment be offered to these patients.

Efforts to address the increasing prevalence of obesity should emphasize physician supervised management of the obese patient and include the ancillary services of other health care professionals. These efforts, however, need to acknowledge the substantial barriers to optimal obesity management. Among these, it may be most fruitful to focus on (1) improving medical education in the area of obesity management, (2) providing practicing physicians with concrete strategies to guide their clinical approach to obese patients, (3) addressing the current lack of financial incentive to provide preventive services, and (4) directing physicians' activities toward patients with obesity-related comorbidities.

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