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Patient-health care professional gender or race/ethnicity concordance and its association with weight-related advice in the United States

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Abstract

Objective—Examine association between adult **patients'** and health care providers' (HCPs) gender or race/ethnicity concordance and **patients' reported receiving** weight-related advice from HCP's in USA.

Methods—Using Medical Expenditure Panel Survey (MEPS) 2004–2007 data, studied prevalence of weight-related advice (on exercise and diet) given to patients and its association with patients/HCPs concordance in gender (n=9,686) and race/ethnicity (n=8,825).

Results—Overall, 46% of patients received HCP advice on diet and 49% on exercise. Overweight females seeing female HCPs were more likely to receive exercise advice than those seeing male HCPs (OR=1.44 [95% CI: 1.10–1.89]). Race/ethnicity concordance was associated with lower odds of advice-receiving in certain populations (OR=0.80 [0.67–0.97] for exercise and OR=0.42 [0.19–0.91] for diet among white patients, OR=0.47 [0.23–0.98] for exercise among Hispanic overweight patients).

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Conclusions—Patient/HCP gender or race/ethnicity concordance was not positively associated with HCPs providing weight-related advice. Patients with female HCPs or with racial/ethnic discordant HCPs (especially black or Asian HCPs) were more likely to receive advice.

Practice Implications—Health care providers need be empowered, particularly white and male HCPs, to improve delivery of weight-related advice. It may reflect better of receiving weight-related advice based on patients' recall.

Keywords

Obesity; overweight; health disparity; concordance; health care professional

1. Introduction

The prevalence of overweight and obesity in the U.S. has increased steadily in the past four decades [1, 2]. Health care professionals (HCPs) play a key role in helping overweight and obese patients to adopt healthful lifestyles and achieve or maintain a healthy body weight. However, only 36-42% of obese patients in the US reported ever receiving weight-related advice from their HCP [3-6]. In addition to the health care systems' insufficient effort on obesity prevention and control, research has found significant gender and race/ethnicity differences in patients' receiving advice on diet and exercise in the US [7-9]. Research has also found that HCPs' gender and race/ethnicity play a role in HCPs' provision of weight-related advice to patients [10, 11].

Patients and HCPs have their own visible characteristics (e.g., gender, race/ethnicity). During a clinical encounter, concordance in these characteristics between patients and their HCPs may influence the patient-provider relationship. For example, patient-provider race concordance is related to the patient's greater satisfaction with care [12], better patient-physician communication, and higher patient involvement [13, 14]. Gender concordance between patient and physician has been shown to impact communication in various dimensions, including patient agendas elicited, talk content, communication style, nonverbal communication, exhibition of power, and length of consultation [15], and therefore enhances the patient's trust and satisfaction [16].

We are aware of two studies exploring the role of gender or race/ethnicity concordance between a patient and an HCP on weight-related advice [7, 8]. These studies, however, were both based on physicians' reports, focused only on white and black patients, and only on obese patients. The present study takes the patients' perspective and examines the impact of patient-HCP gender and race/ethnicity concordance on patients' recall of receiving weight-related advice. It is important to study the delivery of weight-related advice in practice based on patients' reported information rather than based on HCPs', since the advice recalled by patients may imply successful delivery of clinical advice.

We hypothesized that patient-HCP gender and race/ethnicity concordance would be positively associated with patients receiving such advice. Assuming that HCPs' clinical decision-making on weight-related counseling may differ by patients' weight status [17], we

also explored whether the association between the patient receiving weight-related advice and the concordance of patient-HCP characteristics varies by the patient's weight status.

2. Methods

2.1. Study design and data

This is a cross-sectional study conducted using nationally representative data from the Medical Expenditure Panel Survey (MEPS) Household Components (HC), 2004–2007. All years of data were pooled for this analysis. The MEPS-HC uses a complex sampling design, incorporating stratification, clustering, multiple stages of selection and disproportionate sampling of non-institutionalized U.S. civilians [18]. Using computer-assisted personal interviewing technology, the MEPS-HC interviews were conducted in the respondent's language of choice in order to minimize language barriers for minorities. Respondents were queried about their health status, demographic and socioeconomic characteristics, health insurance coverage, and use of, access to and satisfaction with health care services.

2.2. Subjects

Eligible subjects were respondents aged 18 years old who were not pregnant during the study period, had a usual source of care and at least one visit to a doctor's office or clinic in the previous 12 months (not including emergency room visits) ($n = 23,213$). We dropped 12,898 persons because they reported that their primary HCP was a facility. We also excluded patients with missing body mass index (BMI) ($n = 607$), or extreme BMI values ($78, n = 4$). The final analytic sample included only those who reported that their primary HCP was an individual person ($n = 9,704$).

2.3. Study variables

2.3.1. Outcome variables—Patients' recall of whether they had received weight-related advice was used to create the two outcome variables used in this analysis. Specifically, “Has a doctor or other health provider ever recommended that you eat fewer fat or high-cholesterol foods?” and “When was that?” were used to create the variable on receiving advice to restrict high fat/cholesterol in the previous 12 months, and “Has a doctor or other health provider ever recommended that you to exercise more?” and “When was that?” were used to create the variable on receiving advice to exercise more in the previous 12 months. MEPS stated that the health providers referred to in the survey could be a general doctor, a specialist doctor, a nurse practitioner, a physician's assistant, a nurse or any other health professional a patient would see for health care services.

2.3.2. Primary independent variables—Gender concordance was defined as whether a patient reported his/her HCP was of the same gender as the patient (e.g., male patient/male HCP dyads and female patient/female HCP dyads); other gender combinations were defined as gender discordance.

The MEPS asked two questions to identify the HCP's race/ethnicity: 1) Is the provider Hispanic or Latino? and 2) What is the provider's race/ethnicity? The first question is a yes/no question and the second lets patients check one specific race/ethnicity from a list of

options. For the purpose of this study, race/ethnicity was categorized as White Non-Hispanic, black Non-Hispanic, Hispanic and Asian.

Race/ethnicity concordance was defined as when a patient and his/her HCP had the same race/ethnicity (white patient/white HCP; black patient/black HCP; Hispanic patient/Hispanic HCP; and Asian patient/Asian HCP). Other combinations were defined as race/ethnicity discordance.

2.3.3. Other covariates—Based on previous studies [7, 8, 19], we controlled for the following important demographic and socioeconomic factors, as well as health status, as covariates in our model:

1. Patients' characteristics: Patients' age, language spoken/used at home (English, Spanish and other languages), educational status, residence region (Northeast, Midwest, South and West), whether the residence is in a metropolitan statistical area (MSA) and survey year.
2. Patients' weight status: BMI was calculated from self-reported weight and height, e.g., normal weight (18.5 BMI 24.9), overweight (25.0 BMI 29.9), and obesity (BMI 30.0).
3. Count of the patient's chronic diseases based on respondents' reports of: diabetes mellitus, lipid metabolism disorder, essential hypertension, hypertension with complications and secondary hypertension, acute myocardial infarction, coronary atherosclerosis and other heart diseases, nonspecific chest pain, acute cerebrovascular disease, other cerebrovascular diseases, transient cerebral ischemia, cancers, coma, stupor and brain damage, paralysis, gout and other crystal arthropathies, and blindness. The number of chronic conditions ranged from 0 to 10.
4. Self-rated health status was measured on a 5-point Likert scale and further categorized into three groups: excellent/very good, good, and fair/poor.
5. Insurance type was categorized into three types: private, public and uninsured.
6. HCP specialty was categorized as general internist, family physician, specialist physician or other type of HCP (e.g., nurse, nurse practitioner, chiropractor, etc.)

2.4. Statistical analysis

All analyses were conducted using the commands for complex survey data (svy commands) in Stata, version 11.2 (StataCorp LP, College Station, Texas). The MEPS sampling weights and variance adjustment variables were incorporated to provide nationally representative estimates. Distributions of the study population's characteristics are presented in means (continuous variables) or percentages (categorical variables). Logistic regression models were used to examine the association of receiving weight-related advice with patient-HCP gender concordance and race/ethnicity concordance, controlling for patient age, gender, language spoken at home, BMI, number of chronic diseases, self-rated health status, clinic visit times, education, insurance type, region, MSA, data collection year and HCP gender and specialty. Separate models were conducted for diet advice and exercise advice, and some

models were also stratified by the patient's weight status: normal weight (18.5 BMI 24.9), overweight (25.0 BMI 29.9) or obesity (BMI 30.0).

First, we examined the association of weight-related advice with gender and race/ethnicity concordance. We compared the odds of receiving weight-related advice between concordant groups (including, e.g., male patient/male HCP and female patient/female HCP) and discordant groups (e.g., male patient/female HCP and female patient/male HCP). Second, to investigate whether the concordance effect varied with patients' gender and race/ethnicity, we further stratified the previous models by the patients' gender and by the patients' race/ethnicity. Third, we also interacted patient and HCP gender, as well as patient and HCP race/ethnicity, to test the separate and joint contributions of the patient's demographics and the HCP's demographics to the odds of receiving weight-related advice. Finally, we created dummy indicators for 4 types of gender combinations (male patient/male HCP; male patient/female HCP; female patient/female HCP and female patient/male HCP) to compare the relative odds of receiving weight-related advice across the 4 groups.

Stratifying the data by the patient's race/ethnicity, we separately estimated the odds of receiving weight-related advice for those with an HCP of other race/ethnicity as compared to the odds of advice from an HCP of the same race/ethnicity. Adjusted odds ratios (ORs), 95% confidence intervals (CIs) and statistical significance were reported. The statistical significance level was set as $p < 0.05$.

3. Results

The sample for gender concordance analysis included 9,686 subjects who reported both their own and the HCP's gender. Patients or HCPs in the “other race/ethnicity” group were excluded in the race/ethnicity concordance analysis because this group contained a mixture of several racial/ethnic groups and therefore we were not able to generate a patient-HCP concordance variable. The final sample size for the race/ethnicity concordance analysis was 8,825.

3.1. Characteristics of study subjects

The mean age of all patients was 53 years; over half of them were female (58%); three quarters were non-Hispanic white (79%). More than one third of them were overweight (35%) and another third were obese (30%). Fifty-four percent of these patients had at least one chronic disease. Forty-seven percent of the sample rated their health as excellent or very good. On average, these patients visited outpatient clinics 3 to 4 times in the year prior to the interview. Most of these patients' primary HCPs were male (78%), non-Hispanic white (75%) and general internists or family physicians (68%). Overall, 46% of the patients reported receiving advice from their HCPs to restrict high-fat and high-cholesterol food, and 49% reported receiving advice to exercise more. See Appendix 1 for detailed characteristics of the study subjects.

3.2. Gender concordance and weight-related health advice

Table 1 presents the unadjusted distribution of receiving weight-related health advice for patients of any weight, stratified by gender concordance status. Compared with male patients

seeing male HCPs, male patients seeing female HCPs had a higher unadjusted probability of receiving exercise advice from their HCPs ($p = 0.02$). The probability of receiving weight-related advice was similar between female patients seeing female HCPs (diet/exercise: 42.5%/48.4%) and female patients seeing male HCPs (diet/exercise: 43.5%/48.2%).

After adjusting for potential confounders, there were no statistically significant differences in receiving weight-related health advice between gender-concordant and gender-discordant pairs (for both male and female concordance) (Table 2). This is true for patients in all weight categories. Table 3 presents the concordance effect further stratified by patients' gender. Overweight male patients whose HCPs were male were less likely to receive exercise advice than overweight male patients whose HCPs were female (OR = 0.62, 95% CI = 0.43 to 0.89). The same is true for diet advice for obese male patients (OR = 0.66, 95% CI = 0.44 to 0.98). For female patients, overweight females were more likely to receive exercise advice if their primary source of care was a female HCP than when their usual source of care was a male HCP (OR = 1.44, 95% CI = 1.10 to 1.89). These findings suggest that male patients were less likely to receive weight-related advice if the HCP had the same gender as the patient, while female patients were more likely to receive the advice when the HCP had the same gender concordant relationship. When we added an indicator for gender concordance to the model (data not shown), this variable showed no statistically significant differences (patient-HCP gender interaction term for advice to restrict fat/cholesterol: $p = 0.46$, for advice to exercise more: $p = 0.07$), which suggests that the combination of patients' and HCPs' genders did not account for the odds of receiving advice.

Figure 1 compares the odds of receiving weight-related health advice across 4 combinations of patient and HCP's gender. Compared with the male patient-male HCP, male patients with female HCPs were more likely to receive advice to exercise (OR = 1.33, 95% CI = 1.04 to 1.69), and female patients with male HCPs were less likely to report receiving advice to restrict high fat/cholesterol (OR = 0.88, 95% CI: 0.79 to 0.98).

3.3. Race/ethnicity concordance and weight-related health advice

In patients of all weight categories, a significantly higher proportion of white patients ($p = 0.02$) received exercise advice when their usual source of care was non-white HCPs (52%) compared to those who have white HCPs (47%) as their usual source of care. However, for the other race/ethnicity groups, patients were less likely to receive such advice if their HCPs were of a different race/ethnicity (though the differences did not reach statistical significance).

Race/ethnicity concordance was associated with lower odds of receiving exercise advice compared to race/ethnicity-discordant dyads after controlling other factors (Table 2). This result holds for the normal-weight group but not in the overweight and obese groups. Obese patients with the same race/ethnicity HCPs are, however, more likely to report receiving diet advice. Table 3 shows that white patients in race/ethnicity-concordant dyads were less likely to receive exercise advice than patients in discordant dyads when using the whole sample, but this result did not hold when stratified by weight status. Overweight Hispanic patients were less likely to report diet and exercise advice when in race/ethnicity concordant dyads.

However, among normal-weight Hispanic patients, seeing Hispanic HCPs was associated with greater odds of receiving diet advice compared to seeing a discordant HCP.

Table 4 provides further information on the adjusted effect of HCPs' different race/ethnicity on their patients' report of receiving advice, stratified by patient race/ethnicity. White patients seeing Asian HCPs were more likely to receive exercise advice (OR = 1.28, 95% CI = 1.02, 1.59) compared to white concordant dyads. Black patients were also more likely to receive diet advice if their primary HCPs were Asian (OR = 1.86, 95% CI = 1.11, 3.14). Hispanic patients were more likely to receive both exercise and diet advice from black HCPs than from Hispanic HCPs (diet advice: OR = 2.91, 95% CI = 1.04, 8.05; exercise advice: OR = 5.18, 95% CI = 1.70, 15.75).

4. Discussion and Conclusions

4.1. Discussion

We hypothesized that gender and race/ethnicity concordance between patients and their HCPs may be associated with a higher probability of patients' receiving weight-related advice. However, this study does not find support for these hypotheses. Patient-HCP gender concordance was not associated with greater odds of weight-related advice for patients. Neither was patient-HCP race/ethnicity concordance. Moreover, patients' weight status did not affect the association of gender and race/ethnicity concordance with weight-related advice. Several factors may help explain the findings.

4.1.1. Gender concordance and weight-related advice—Patients of both genders appeared to be more likely to receive weight-related advice from female than from male HCPs. Our findings are consistent with the previous studies that showed female physicians provided more counseling and immunization services to their patients [20, 21]. It is likely that female HCPs provide more weight-related professional advice to their patients, regardless of their patients' gender. Research has suggested that female HCPs have a stronger belief that preventive counseling is beneficial to patients; thus, they usually provide more preventive services and receive higher patient satisfaction ratings [16, 22]. In addition, research indicates that female HCPs generally spend more time per visit [23]. Female HCPs also tended to have better communication skills with which to build health partnerships with their patients [7, 11, 24] and to facilitate agreement with their patients on nutrition and exercise [19]. Taken together, the longer visits and better communication skills may result in patients' having better recall of receiving weight-related advice from female providers.

These findings are different from one previous study where patients in male gender-concordant pairs had significantly higher odds of receiving diet/nutrition and exercise counseling than female gender concordant pairs [7]. There are major differences between the current study and this previous study that may explain these discrepant findings. The primary difference is that our study is based on patients' direct report of receiving advice, while earlier studies, such as Pickett-Blakely et al.'s study, were based on physicians' reports. Our study reflects patients' perceptions and memories of having received weight-related advice over the last year from any HCP.

4.1.2. Race/ethnicity concordance and weight-related advice—Racial and ethnic disparities in health services are important public health issues in the U.S. [25, 26]. A study based on physicians' reports found that black obese patients were generally less likely to be given weight-related health advice than white obese patients [8]. Our study found that patients in race/ethnicity concordant dyads had lower odds of receiving weight-related advice, except for normal-weight Hispanic patients. This probably resulted from the apparently higher provision of advice by minority race/ethnicity (black, Hispanic or Asian) HCPs to all patients in this study compared to white HCPs, after controlling for patient socioeconomic factors and health insurance status. Previous study using the National Ambulatory Medical Care Survey also suggested that physicians' race/ethnicity, rather than patients and physicians being of the same race, was a predictor of the provision of health care services. Moreover, minority physicians were more likely to prescribe preventive screening tests and counseling than white physicians [27]. Obese or overweight blacks were found to be less likely to report that their providers explained things well or spent enough time with them [28]. It is not clear why patients would have higher odds of recalling being given weight-related advice from minority HCPs than from white HCPs. Further research is needed to understand this phenomenon in order to find strategies to mitigate the racial/ethnic disparity in advice given to black patients; however lack of race concordance does not seem to be the source of the issue in the present study.

4.1.3. Strengths and limitations—In contrast to previous studies, our study is based on adult patients' direct reports about whether they have received weight-related advice, which provides a new perspective for the existing literature. The rate of weight-related advice is more likely to be underestimated based on physician report and medical record reviews compared to statistics based on direct observations of patient visits [29, 30]. Flocke and Gilchrist (2005) and Bleich et al. (2011) also reported this bias in their studies on associations between patient-HCP gender concordance and the use of preventive services or counseling [8, 20]. Previous studies suggested that patients are less likely to underreport the receipt of HCP advice [31, 32]. Thus, the first strength of this study is that the estimated prevalence of weight-related advice based on patients' reports may be closer to the true prevalence than that based on HCPs' reports. Second, patients' perceived weight-related advice is likely more relevant clinically than HCPs' reports. Weight-related advice means little if the patient did not remember the advice [32]. Third, the large sample size provided a good opportunity to explore the association between race/ethnicity concordance and weight-related advice, especially for minority groups like Hispanics. Fourth, previous studies only focused on obese patients. The present study more comprehensively examined the weight-related advice among patients with different weight statuses.

This study also had several limitations. First, the receipt of weight-related advice as well as HCPs' gender and race/ethnicity were patient-reported. Although patients could accurately report the HCP's gender, a patient's perception of their HCP's race/ethnicity may differ from the HCP's own identification. However, it is likely that the patients' perception of their HCPs' race/ethnicity (rather than his or her true race/ethnicity) is what influences their communication with their HCPs and whether they can recall advice received from their HCPs, if given. Second, the study included only patients who had a usual source of care and

who identified their primary HCP as an individual person. Therefore, the results cannot be applied to adults whose primary care provider is an institution or is not a specific person. Third, unobserved patient and HCP characteristics may have affected our findings, including patients' familiarity with their HCPs, visit type, visit time, HCPs' age and body weight, type of clinics, etc. Finally, the patient's weight status was classified based on self-reported weight and height, rather than independent measures. This may result in some misclassifications due to reporting error and bias. Fourth, the HCP that a patient identified as the usual provider may not be the HCP who gave weight-related advice. Therefore, our results cannot be interpreted to mean that the patient-HCP dyad's characteristics enhance the delivery of weight-related advice in every case. On the other hand, the results should be cautiously to suggest that the HCP's characteristics may affect patients' awareness or remembrance of weight-related advice that was given by the same HCP or others.

Fifth, the data for this study was from 2004 - 2007. As clinical guidelines on obesity management were released recently, the procedures would become standard in clinical practices, and the disparity in patients' receipt of weigh-related advice by HCPs' characteristics would become smaller, especially for obese subjects [17].

4.2. Conclusion

Although more than two-thirds of American adults are overweight or obese, only about half of US patients have reported receiving some advice or information on healthy eating and excise from their HCPs. Patient-HCP gender concordance was not associated with patients' recalled receiving weight-related advice from HCPs. Patients with female HCPs were more likely to report receiving advice compared to those with male HCPs. Meanwhile, patients whose HCPs were non-white or had a different race/ethnicity than the patient were more likely to report receiving advice than patients whose HCPs were white or of the same-race/ethnicity. In the era of an obesity epidemic, HCPs should be a good channel for improving patients' health awareness and providing motivation to for a healthier lifestyle. Gender and race/ethnicity differences in HCPs' attitudes toward and practices of preventive medicine in clinical encounters require further study.

4.3 Practice Implications

- Although more than two-thirds of American adults were overweight or obese, only about half of US patients reported receiving some advice or information on healthy eating and excise from their HCPs. Efforts are needed to encourage and empower HCPs to provide their patients with healthy eating and exercise-related advice and information.
- HCPs' personal attributes (as perceived by the patient) may influence patients' ability to recall receiving weight-related advice from HCPs. However, patient-HCP concordance in gender and ethnicity may not be as important as some might have thought previously.
- It is important to provide training and guidance for HCPs to improve their practice of delivering weight management advice and information to their patients; more efforts are especially needed for male and white HCPs.

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Appendix 1

Characteristics of study sample, MEPS 2004-2007^a

Characteristics		All patients (n=9704)	
		n	% or mean $\pm$ SE
Patient Characteristics			
Age, year mean		9,704	52.94 $\pm$ 0.25
Gender,%	Male	3,945	42.3
	Female	5,759	57.7
Race/ethnicity,%	White	6,598	78.5
	Black	1,360	9.3
	Hispanic	1,155	6.8
	Asian	385	3.5
	Others	206	1.8
Language spoken at home,%	English	8,782	94.2
	Spanish	623	3.0
	Another	299	2.8
BMI ^b , %	Under weight	179	1.9
	Normal weight	3,039	33.2
	Over-weight	3,386	35.2
	Obese	3,100	29.7
Number of chronic diseases,%	0	4,209	45.8
	1	2,717	27.0
	2	2,778	27.2
Self-rated health status,%	Excellent/very good	4,072	47.3
	Good	3,299	33.8
	Fair/poor	2,252	18.8
Education,%	< High school	1,847	13.6
	High school	3,006	31.4
	Some college	2,217	24.1
	College graduate	2,583	30.9
Family annual income ^b , %	Poor/near poor	1,639	12.0
	Low income	1,290	11.8
	Middle income	2,858	29.8
	High income	3,917	46.4
Health insurance,%	Private insurance	7,031	78.5

Characteristics		All patients (n=9704)	
		n	% or mean $\pm$ SE
	Public insurance	2,171	17.0
	Uninsured	502	4.6
Clinic visit times, mean		9,704	3.44 $\pm$ 0.02
MSA ^b ,%	non MSA	1,770	16.5
	MSA	7,934	83.5
Census region, %	Northeast	2,031	24.5
	Midwest	2,055	22.0
South		3,845	36.7
West		1,773	16.8
Year of survey, %	2004	2,638	25.6
	2005	2,515	25.5
	2006	2,643	25.2
	2007	1,908	23.8
HCP Characteristics			
Gender, %	Male	7,498	77.7
	Female	2,188	22.3
Race/ethnicity, %	White	6,566	75.3
	Black	429	3.3
	Hispanic	820	5.9
	Asia	1,193	11.4
	Others	407	4.0
Specialty, %	General/family practice	6,684	67.7
	Internal medicine	2,201	24.0
	Other M.D and other	819	8.3
Outcome variables			
To restrict highfat/cholesterol, %	Yes	4,602	45.9
	No	5,021	54.1
To exercise more, %	Yes	4,943	49.3
	No	4,693	50.7

^aStandard errors adjusted for MEPS' complex survey design

^bBMI: Body mass index; family annual income as a percentage of poverty: Poor/negative, near poor: < 125%, low income: 125%~<200%, middle income: 200%~< 400%, high income: 400% of poverty line in year; MSA: Metropolitan statistical area.

References

1. Wang Y, Beydoun MA, Liang L, Caballero B, Kumanyika SK. Will all Americans become overweight or obese? Estimating the progression and cost of the US obesity epidemic. Obesity (Silver Spring). 2008; 16:2323–30. [PubMed: 18719634]
2. Flegal KM, Carroll MD, Ogden CL, Curtin LR. Prevalence and trends in obesity among US adults; 1999-2008. J Amer Med Assoc. 2010; 303:235–41.

3. Galuska DA, Will JC, Serdula MK, Ford ES. Are health care professionals advising obese patients to lose weight? *J Amer Med Assoc.* 1999; 282:1576–8.
4. Mokdad AH, Bowman BA, Ford ES, Vinicor F, Marks JS, Koplan JP. The continuing epidemics of obesity and diabetes in the United States. *J Amer Med Assoc.* 2001; 286:1195–200.
5. Simkin-Silverman LR, Gleason KA, King WC, Weissfeld LA, Buhari A, Boraz MA, et al. Predictors of weight control advice in primary care practices: patient health and psychosocial characteristics. *Prev Med.* 2005; 40:71–82. [PubMed: 15530583]
6. Loureiro ML, Nayga RM Jr. Obesity, weight loss, and physician's advice. *Soc Sci Med.* 2006; 62:2458–68. [PubMed: 16376006]
7. Pickett-Blakely O, Bleich SN, Cooper LA. Patient-physician gender concordance and weight-related counseling of obese patients. *Am J Prev Med.* 2011; 40:616–9. [PubMed: 21565652]
8. Bleich SN, Simon AE, Cooper LA. Impact of patient-doctor race concordance on rates of weight-related counseling in visits by black and white obese individuals. *Obesity (Silver Spring, Md).* 2011; 20:562–70.
9. LaVeist TA, Nuru-Jeter A, Jones KE. The Association of doctor-patient race concordance with health services utilization. *J Public Health Policy.* 2003; 24:312–23. [PubMed: 15015865]
10. Snipes SA, Sellers SL, Tafawa AO, Cooper LA, Fields JC, Bonham VL. Is race medically relevant? A qualitative study of physicians' attitudes about the role of race in treatment decision-making. *BMC Health Services Research.* 2011; 11:183. [PubMed: 21819597]
11. Bertakis KD, Azari R. Patient-centered care: the influence of patient and resident physician gender and gender concordance in primary care. *J Womens Health.* 2012:326–33.
12. Laveist TA, Nuru-Jeter A. Is doctor-patient race concordance associated with greater satisfaction with care? *J Health Soc Behav.* 2002; 43:296–306. [PubMed: 12467254]
13. Cooper LA, Beach MC, Johnson RL, Inui TS. Delving below the surface. Understanding how race and ethnicity influence relationships in health care. *J Gen Intern Med.* 2006; 21(Suppl 1):S21–7.
14. Cooper-Patrick L, Gallo JJ, Gonzales JJ, Vu HT, Powe NR, Nelson C, et al. Race, gender, and partnership in the patient-physician relationship. *J Amer Med Assoc.* 1999; 282:583–9.
15. Sandhu H, Adams A, Singleton L, Clark-Carter D, Kidd J. The impact of gender dyads on doctor-patient communication: a systematic review. *Patient Educ Couns.* 2009; 76:348–55. [PubMed: 19647969]
16. Bertakis KD, Franks P, Azari R. Effects of physician gender on patient satisfaction. *J Am Med Womens Assoc.* 2003; 58:69–75.
17. Anonymous. Executive summary: guidelines (2013) for the management of overweight and obesity in adults. *Obesity (Silver Spring).* 2014; 22(Suppl 2):S5–39. [PubMed: 24961825]
18. Cohen J. Methodology report #1: design and methods of the medical expenditure panel survey household component. Agency for Health Care Policy and Research. 1997. http://www.meps.ahrq.gov/data_files/publications/mr1/mr1.shtml
19. Schieber AC, Delpierre C, Lepage B, Afrite A, Pascal J, Cases C, et al. Do gender differences affect the doctor-patient interaction during consultations in general practice? Results from the INTERMEDE study. *Fam Pract.* 2014; 31:706–13. [PubMed: 25214508]
20. Flocke SA, Gilchrist V. Physician and patient gender concordance and the delivery of comprehensive clinical preventive services. *Med Care.* 2005; 43:486–92. [PubMed: 15838414]
21. Henderson JT, Weisman CS. Physician gender effects on preventive screening and counseling: an analysis of male and female patients' health care experiences. *Med Care.* 2001; 39:1281–92. [PubMed: 11717570]
22. Bertakis KD. The influence of gender on the doctor-patient interaction. *Patient Educ Couns.* 2009; 76:356–60. [PubMed: 19647968]
23. Franks P, Bertakis KD. Physician gender, patient gender, and primary care. *J Womens Health (Larchmt).* 2003; 12:73–80. [PubMed: 12639371]
24. Roter DL, Hall JA, Aoki Y. Physician gender effects in medical communication: a meta-analytic review. *J Amer Med Assoc.* 2002; 288:756–64.
25. Brian D, Smedley AYS, Alan R. Unequal treatment: confronting racial and ethnic disparities in health care. Nelson Edition: Institute of Medicine; 2003. 45

26. Meghani SH, Brooks JM, Gipson-Jones T, Waite R, Whitfield-Harris L, Deatrick JA. Patient-provider race-concordance: does it matter in improving minority patients' health outcomes? *Ethn Health*. 2009; 14:107–30. [PubMed: 19012091]
27. Strumpf EC. Racial/ethnic disparities in primary care: the role of physician-patient concordance. *Med Care*. 2011; 49:496–503. [PubMed: 21430577]
28. Wong MS, Gudzone KA, Bleich SN. Provider communication quality: influence of patients' weight and race. *Patient Educ Couns*. 2015; 98:492–8. [PubMed: 25617907]
29. Gilchrist VJ, Stange KC, Flocke SA, McCord G, Bourguet CC. A comparison of the National Ambulatory Medical Care Survey (NAMCS) measurement approach with direct observation of outpatient visits. *Med Care*. 2004; 42:276–80. [PubMed: 15076827]
30. Stange KC, Zyzanski SJ, Smith TF, Kelly R, Langa DM, Flocke SA, et al. How valid are medical records and patient questionnaires for physician profiling and health services research? A comparison with direct observation of patients visits. *Med Care*. 1998; 36:851–67. [PubMed: 9630127]
31. Silagy C, Muir J, Coulter A, Thorogood M, Yudkin P, Roe L. Lifestyle advice in general practice: rates recalled by patients. *Brit Med J*. 1992; 305:871–4. [PubMed: 1422405]
32. Booth AO, Nowson CA. Patient recall of receiving lifestyle advice for overweight and hypertension from their general practitioner. *BMC Fam Pract*. 2010; 11:8. [PubMed: 20113530]

Highlights

- Only about 50% of US patients reported receiving some advice on healthy eating and exercise from HCPs, although over two-third of American adults are overweight or obese.
- Patients with female HCPs were more likely to receive weight related advice than patients with male HCPs.
- Gender or ethnicity/race concordance between patient and HCP did not affect likelihood of weight-related advice.
- Patients' likelihood to receive the advice differed by their own and their HCP's race/ethnicity. Patients were less likely to receive advice from white HCPs and from HCPs of other race/ethnicity.

Figure 1. Adjusted odds ratios (OR) for US patients' receiving weight-related advice by patient health care professionals (HCPs) gender combination, Medical Expenditure Panel Survey (MEPS) 2004-2007^{a§} (n=9,686)

^a Male patient-male HCP combination was the reference group.

^b CI: Confidence intervals adjusted for the complex survey design of MEPS.

[§] ORs were adjusted for: Patient age, race/ethnicity, language spoken at home, BMI, number of chronic diseases, self-rated health status, clinic visit times, region, MSA, data collection year and HCP race/ethnicity and specialty.

*p<0.05 ** p<0.01

Table 1

Percentage of US patients receiving weight-related advice ^a, by gender and race/ethnicity concordance status between patients and health care professionals (HCPs), Medical Expenditure Panel Survey (MEPS) 2004-2007 ^{b,c}

Patient' gender, race/ethnicity	HCP' gender, race/ethnicity	Number of pairs	To restrict high fat/cholesterol	To exercise more
			% (SE)	% (SE)
Male	Male	3,381	49.1 (1.0)	49.9 (1.0) *
	Female	562	52.4 (2.4)	56.1 (2.5)
Female	Female	1,626	42.5 (1.5)	48.4 (1.4)
	Male	4,117	43.5 (0.9)	48.2 (0.9)
White	White	5,305	44.5 (0.8)	47.0 (0.9) *
	Non-White	883	47.8 (2.2)	52.1 (2.1)
Black	Black	314	50.5 (3.4)	62.0 (3.5)
	Non-Black	885	49.5 (2.1)	55.9 (2.1)
Hispanic	Hispanic	507	51.9 (3.2)	54.3 (3.3)
	Non-Hispanic	571	47.8 (2.7)	55.2 (2.7)
Asian	Asian	231	47.1 (4.6)	53.0 (4.6)
	Non-Asian	129	37.7 (4.2)	49.3 (4.7)

^aWeight-related advice: Patients' recall whether they had received advice to restrict high fat or high-cholesterol foods and to exercise more from the HCPs during the 12 months before the interview.

^bSample size for gender concordance analysis was 9686; sample size for race/ethnicity concordance analysis was 8825. The percentages were estimated with sampling weight.

^cWe used Pearson's Chi-square test to test whether the percentages of receiving advice differed when the patient' HCP had different sex or race/ethnicity.

* p<0.05

Table 2
Adjusted odds ratios (OR) for US patients receiving weight-related advice by patients and HCPs' gender and race/ethnicity concordance status, stratified by BMI status, Medical Expenditure Panel Survey (MEPS) 2004-2007

Outcomes	Model 1		Model 2	
	Gender concordant pairs vs.discordant pairs		Race/ethnicity concordant pairs vs.discordant pairs	
	OR ^b	95% CI ^a	OR ^c	95% CI ^a
All patients		(n=9,686)		(n=8,668)
To restrict high fat/cholesterol	1.07	(0.97, 1.19)	0.92	(0.81, 1.05)
To exercise more	0.93	(0.85, 1.02)	0.82	(0.72, 0.94) **
Normal weight patients		(n=3,029)		(n=2,775)
To restrict high fat/cholesterol	1.03	(0.86, 1.23)	1.08	(0.85, 1.37)
To exercise more	0.85	(0.70, 1.02)	0.72	(0.58, 0.90) **
Overweight patients		(n=3,382)		(n=3,103)
To restrict high fat/cholesterol	1.13	(0.94, 1.36)	0.98	(0.78, 1.22)
To exercise more	0.97	(0.81, 1.15)	0.93	(0.76, 1.14)
Obese patients		(n=3,097)		(n=2,790)
To restrict high fat/cholesterol	0.98	(0.82, 1.18)	0.79	(0.65, 0.98) *
To exercise more	0.88	(0.73, 1.07)	0.82	(0.65, 1.02)

^aCI: Confidence intervals adjusted for the complex survey design of MEPS.

^bORs adjusted for: Patients' age, race/ethnicity, language spoken at home, BMI, number of chronic diseases, self-rated health status, number of clinic visits, education, insurance type, region, MSA, data collection year and HCPs' race/ethnicity and specialty.

^cORs adjusted for: Patients' age, gender, language spoken at home, BMI, number of chronic diseases, self-rated health status, number of clinic visits, education, insurance type, region, MSA, data collection year and HCPs' gender and specialty.

* p<0.05

** p<0.01

Table 3

Adjusted odds ratios (OR) for US patients receiving weight-related advice by patients and HCPs' gender and race/ethnicity concordance^a status, stratified by patient gender, race/ethnicity and BMI status, Medical Expenditure Panel Survey (MEPS) 2004-2007

Gender concordance pairs vs. discordant pairs: stratified by PT's gender			Race/ethnicity concordance pairs vs. discordant pairs: stratified by PT's race/ethnicity									
Model 1			Model 2		Model 3		Model 4		Model 5		Model 6	
Outcomes	OR ^d	Male PT ^b	Female PT ^b	OR ^{§1b}	OR ^e	White PT ^b	Black PT ^b	OR ^{§2}	Hispanic PT ^b	OR ^{§2}	Asian PT ^b	OR ^{§2}
All patients												
To restrict high fat/cholesterol	0.83	(n=3,943) (0.63, 1.08)	(n=5,743) (0.92, 1.26)	1.07	0.89	(n=6,188) (0.74, 1.08)	(n=1,199) (0.61, 1.29)	0.89	(n=1,078) (0.64, 1.38)	1.46	(n=360) (0.73, 2.93)	
To exercise more	0.75	(0.58, 0.96)*	(0.91, 1.21)	1.05	0.80	(0.67, 0.97)*	(0.77, 1.63)	1.12	(0.56, 1.28)	0.81	(0.40, 1.64)	
Normal weight patients												
To restrict high fat/cholesterol	1.09	(n=998) (0.61, 1.96)	(n=2,031) (0.70, 1.18)	0.91	1.19	(n=2,045) (0.86, 1.64)	(n=257) (0.49, 2.42)	1.09	(n=261) (1.28, 7.07)*	0.89	(n=212) (0.31, 2.59)	
To exercise more	1.09	(0.64, 1.84)	(0.65, 1.11)	0.85	0.75	(0.56, 1.01)	(0.79, 3.75)	1.73	(0.75, 3.23)	0.49	(0.21, 1.15)	
Overweight patients												
To restrict high fat/cholesterol	0.81	(n=1,689) (0.53, 1.22)	(n=1,693) (1.00, 1.72)	1.31	0.96	(n=2,236) (0.69, 1.34)	(n=375) (0.53, 1.69)	0.95	(n=388) (0.19, 0.91)*	1.10	(n=104) (0.24, 5.04)	
To exercise more	0.62	(0.43, 0.89)**	(1.10, 1.89)**	1.44	0.89	(0.66, 1.19)	(0.64, 2.01)	1.13	(0.23, 0.98)*	0.69	(0.15, 3.16)	
Obese patients												
To restrict high fat/cholesterol	0.66	(n=1,220) (0.44, 0.98)*	(n=1,877) (0.82, 1.46)	1.10	0.68	(n=1,796) (0.48, 0.97)*	(n=550) (0.47, 1.26)	0.77	(n=414) (0.55, 1.92)	NA ^c		
To exercise more	0.69	(0.43, 1.10)	(0.73, 1.27)	0.96	0.78	(0.56, 1.09)	(0.55, 1.71)	0.97	(0.64, 2.62)			

^aDiscordant patient-HCP gender or race/ethnicity group is the reference group.

^bPT: Patient; CI: Confidence intervals adjusted for the complex survey design of MEPS.

^cNA: Not-estimable because of small sample size of this subgroup.

^dORs adjusted for: patient age, race/ethnicity, language spoken at home, BMI, number of chronic diseases, self-rated health status, number of clinic visits, education, insurance type, region, MSA, data collection year and HCPs' race/ethnicity and specialty.

^eORs adjusted for: patient age, gender, language spoken at home, BMI, number of chronic diseases, self-rated health status, number of clinic visits, education, insurance type, region, MSA, data collection year and HCPs' gender and specialty.

* p<0.05

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Table 4

Adjusted odds ratios (OR) for US patients receiving weight-related advice from HCPs by HCP race/ethnicity^a, stratified by patient race/ethnicity, Medical Expenditure Panel Survey (MEPS) 2004-2007

Outcomes	n	OR ^c	95% CI ^b	OR ^c	95% CI ^b	OR ^c	95% CI ^b	OR ^c	95% CI ^b
White PT^b			White HCP		Black HCP		Hispanic HCP		Asian HCP
To restrict high fat/cholesterol	6,079		1	0.85	(0.48, 1.50)	1.28	(0.90, 1.82)	1.10	(0.88, 1.37)
To exercise more	6,084		1	1.02	(0.56, 1.85)	1.25	(0.87, 1.80)	1.28	(1.02, 1.59)*
Black PT^b			White HCP		Black HCP		Hispanic HCP		Asian HCP
To restrict high fat/cholesterol	1,163	0.93	(0.63, 1.38)		1	1.38	(0.69, 2.76)	1.86	(1.11, 3.14)*
To exercise more	1,169	0.81	(0.53, 1.21)		1	1.08	(0.52, 2.24)	1.13	(0.68, 1.89)
Hispanic PT^b			White HCP		Black HCP		Hispanic HCP		Asian HCP
To restrict high fat/cholesterol	1,052	0.95	(0.62, 1.46)	2.91	(1.04, 8.15)*		1	1.44	(0.78, 2.67)
To exercise more	1,054	1.08	(0.69, 1.68)	5.18	(1.70, 15.75)**		1	1.45	(0.76, 2.77)
Asian PT^b			White HCP		Black HCP		Hispanic HCP		Asian HCP
To restrict high fat/cholesterol	345	0.60	(0.29, 1.25)	4.39	(0.47, 40.80)	8.44	(0.89, 79.54)		1
To exercise more	346	1.14	(0.56, 2.34)	7.01	(0.26, 190.41)	3.92	(0.57, 26.90)		1

^a Patient-HCP same race/ethnicity group is the reference group.

^b PT: Patient; CI: Confidence intervals adjusted for the complex survey design of MEPS.

^c ORs adjusted for: Patient age, gender, language spoken at home, BMI, number of chronic diseases, self-rated health status, number of clinic visits, education, insurance type, region, MSA, data collection year and HCP gender and specialty.

* p<0.05

** p<0.01