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Patient Use of Weight Management Activities: A Comparison of Patient and Physician Assessments

Sara N Bleich¹, Mary Margaret Huizinga^{2,3}, Mary Catherine Beach³, and Lisa A Cooper^{2,3}

¹ Department of Health Policy and Management, Johns Hopkins Bloomberg School of Public Health, Baltimore USA

² Department of Medicine, Division of General Internal Medicine, Johns Hopkins University School of Medicine, Baltimore USA

³ Welch Center for Prevention, Epidemiology, and Clinical Research, Johns Hopkins Medical Institutions, Baltimore USA

Abstract

Objective—Examine concordance between patient and physician assessments of patient self-reported use of weight management activities.

Methods—Analysis of baseline data from a randomized controlled trial of patient and physician interventions to improve patient-physician communication (41 physicians and 274 of their patients).

Results—A majority of patients reported regular exercise (55.6%) and efforts to lose weight, such as eating less (63.1%) while physicians only perceived one-third of patients as engaging in those activities (exercise, 36.6%; weight loss, 33.3%). Kappa scores indicated small agreement between patient and physician assessments of patient self-reported use of exercise, mean kappa 0.28 (range 0.15 to 0.40) and no agreement between patient and physician assessments of patient self-reported efforts to lose weight, mean kappa -0.14 (range -0.26 to -0.01). Obese patients were more likely than non-obese patients to report trying to lose weight or exercising regularly ($p < 0.05$), but physicians were less likely to perceive obese patients as engaging in those activities ($p < 0.05$).

Conclusions—Primary care physicians differed considerably from their patients, especially obese patients, in their assessments of patient use of weight management activities.

Practice Implications—These results highlight the importance of improving patient-provider communication about weight-management activities, particularly among obese patients.

Keywords

Obesity; patient-physician assessments; patient weight management

Corresponding Author: Sara N. Bleich, PhD, Assistant Professor, Department of Health Policy and Management, Bloomberg School of Public Health, Johns Hopkins University, 624 N. Broadway, Room 451, Baltimore, MD USA 21205, Tel: 410.502.6604; Fax: 410.614.9152, sbleich@jhsph.edu.

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1. INTRODUCTION

Sustained weight management and exercise activities are recommended by clinical guidelines and are critical for individuals looking to maintain or lose body weight [1]. Among the obese population and individuals trying to lose weight, inadequate diet and physical activity regimens are closely associated with failure to achieve or maintain weight loss [2].

The patient-provider relationship is an important conduit of behavior change in patients with chronic disease, and patient-provider communication is a critical component of disease management among obese individuals [3–6]. For example, patients who are told by their physician that they are overweight are more likely to lose weight relative to those who are not told [7–8]. Concordance between patients and physicians with regard to beliefs about health and illness, treatment and relationship goals and priorities, and the extent to which they are being followed may be considered an indicator of the quality of the patient-physician relationship [9–11]. To date, only a few studies have assessed patient-physician concordance on patient adherence [12–14], and none have focused specifically on weight management activities. Currently, it is unknown whether physician perceptions of patient use of weight management activities are consistent with patients' own assessments. What is clear is that physicians are often inaccurate when assessing patient health-improvement behaviors [13, 15]. Also well documented is that physician assessments of their patients are known to influence communication, clinical decision-making and patient outcomes [16–17]. In addition, patients report perceiving themselves as weighing less and having less health impact from their body weight than their physicians [18]. Although the reason for this discrepancy is unknown, poor patient-provider communication may be a contributing factor.

Patient and provider agreement about patient use of weight management activities may be associated with race or gender concordance between the patient and the physician. Racial concordance in the patient-physician relationship has been shown to positively impact communication and perceived quality of care [11,19–20]. Studies of the influence of gender concordance on patient reports of care have shown mixed results. Some indicate that gender concordance has a positive impact [21–22], some show no impact [20,23] and some show a negative impact [24]. Patient-provider gender concordance has also been positively associated with physician's perceptions of patients [25].

In light of the current federal priorities to reduce obesity and eliminate health disparities [26–28], there is a need to better understand patient and physician assessments of patient use of weight management activities and the predictors of these factors. Improved knowledge about the patterns and predictors of concordance between patient and physician assessments of weight management activities may facilitate better patient-doctor communication and result in better outcomes.

The primary goal of this study was to examine concordance between patient and physician assessments of patient self-reported use of weight management activities. Our primary hypotheses were that patient and physician assessments of patient use of these activities would be inconsistent and that patient obesity would be positively associated with patient reports of using weight management strategies but negatively associated with physician perceptions of patient use of these strategies. We additionally hypothesized that patient-physician race and gender concordance would be positively associated with both patient reports of engaging in weight management activities and physician perceptions of patient use of those activities

A key contribution of this paper is joint focus on *both* patient and physician assessments of patient engagement in weight management activities as well as our ability to explore the patient and patient-physician relationship characteristics which may predict these assessments and their concordance.

2. METHODS

2.1. Data

Data were obtained from the baseline visit of a randomized controlled trial designed to improve patient-physician communication, adherence and blood pressure control among patients with hypertension. The study took place in 15 primary care practices in Baltimore, Maryland that serve primarily ethnic minority and low income patients. All physicians who delivered primary care to patients at least twenty hours per week were eligible to participate. Patients were eligible for participation if they were aged 18 and older with an ICD-9 diagnosis of hypertension (401.00–401.9), based on one or more claims in the past 12 months. Details of the study design and methods, including recruitment and enrollment of study participants, are presented elsewhere [29]. The sample size for the analysis was 41 primary care physicians and 274 of their patients. The median number of patients per physician was five, ranging from a minimum of one patient per physician to a maximum of fourteen. Questions from the patient baseline survey were completed prior to the patient visit with their doctor. Physicians completed a survey about demographic characteristics (e.g., age, gender, race, specialty) before patient enrollment began and a post-visit questionnaire for each individual patient immediately after the patient's enrollment encounter.

2.2. Measures

2.2.1. Outcome Variables—Four measures were used to create outcome variables in this analysis. Two items measured patient self-reported use of exercise and weight loss activities and two items measured physician perceptions of patients' use of those activities, if they were recommended. Patient assessment of their use of weight loss strategies or exercise was considered positive if they answered "yes" to the survey question "Are you trying to lose weight?" or reported engaging in "regular exercise such as brisk walking, jogging, bicycling etc. long enough to work up a sweat" at least three times per week, based on current federal physical activity recommendations [28]. The weight loss question was adapted from the National Health and Examination Nutrition Survey [30]. The physical activity question is abstracted from the Harvard Alumni physical activity questionnaire [31], which has been validated in several studies [32–34] and shown to predict morbidity and mortality [35–38]. Physician assessment of each patient's self-reported use of weight management activities was considered positive if the physician rated the patient's adherence to weight reduction and exercise activities as "mostly adherent" or "fully adherent" (the full set of response categories included: not at all adherent, mostly non-adherent, mostly adherent, fully adherent, not recommended). In addition, we created two other outcome variables indicating concordance. Patients and physicians were considered to be concordant with regard to their assessment of the patient's use of weight management strategies if they both identified the patient as engaging in efforts to lose weight or exercise or if they both identified the patient as not doing so. They were considered to be discordant with regard to their assessment of the patient's use of weight loss strategies if either if the patient reported use of weight loss strategies while the physician rated the patient non-adherent to these activities or if the patient reported not engaging in weight loss activities, but the physician rated the patient as adherent. Patients could report "no" or "not applicable" to the questions about exercising and weight loss and physicians could respond "not recommended" to the adherence questions. Patients for whom exercise or weight loss was not recommended by their physician were not included in the analysis.

2.2.2. Independent Variables—In all models, patient-level (demographic characteristics, health status: obesity status, blood pressure control, presence of diabetes, self-reported health), physician-level (demographic characteristics) and patient-physician relationship (race concordance, gender concordance) covariates were used. We controlled for additional relationship factors in the patient (whether the patient perceived the physician as respectful)

and physician (physician respect for individual patients and physician perceived influence over individual patient's behavior) models.

Patient race was dichotomized as Black or White, based on self-report. Due to sample size, we excluded non-Black and non-White patients from the analysis (less than two percent of the sample). Patients were characterized as obese if their body mass index (BMI) was greater than or equal to 30 kg/m². They were classified as having blood pressure control if the average of three systolic blood pressure and three diastolic blood pressure measures was less than 140 mmHg and 90 mmHg, respectively. The presence of comorbid diabetes was determined by patient self-report on a checklist of 14 conditions. Patient perceived physician respectfulness was captured by summing the responses of five survey questions obtained from the respect sub-scale of the interpersonal processes of care survey [39]. Response categories ranged from "strongly disagree" to "strongly agree." The inclusion of a measure of patient perceived physician respectfulness in the models is based on evidence suggesting that patients are able to perceive when they are respected by their physicians and that physicians who are more respectful provide more information and express more positive affect in visits with those patients [40].

Physicians were characterized as White or non-White (Black – 26.5%, Hispanic – 2.2%, Asian – 25.8%), based on self-report. Physicians were considered to respect their patient if they responded "more than average" or "much more than average" to the survey question, "how much respect do you have for the patient [40]?" Physicians were considered to view themselves as influential to their patients' behavior if they "agreed" or "strongly agreed" with the statement "I was effective in influencing this patients' behavior [41]." The inclusion of these measures is based on evidence indicating a positive association between physician respect and communication behaviors [40] and evidence suggesting that physicians with greater self-efficacy are more aggressive counselors about patients health behaviors [42].

2.3. Analysis

We examined concordance in patient reports of engaging in exercise and weight management efforts and physicians' perceptions of individual patients' use of those activities using kappa analysis. Of note, because our outcome variables of interest are binary (not ordered scales), it was not necessary to calculate weighted kappas. All identified variables were included in the models based on theoretical considerations and evidence in the literature, regardless of statistical significance. Multiple logistic regression was used to model the outcome variables of interest. For all analyses, data were adjusted to account for the clustering of patients among physicians. Statistical analyses were performed using the STATA, version 9.2 software package (StataCorp LP., College Station, TX).

3. RESULTS

3.1. Characteristics of the sample

Table 1 reports the characteristics of the study sample. Two-thirds of the patient population was Black (62.0%), female (65.9%), less than age 65 (64.2%), or a high school graduate (68.5%). Over half of the patients were obese (59.9%) and did not have controlled hypertension (56.6%), about half reported diabetes (43.4%), and a fifth reported being in very good or excellent health (19.4%). About half of the physician population was non-White (54.5%), female (53.8%) or age 45 or older (50.5%). Roughly half of patient-physician pairs were race (44.8%) and gender concordant (57.7%). Approximately a quarter of patient-physician pairs were concordant with regard to assessments of patient reported use and non-use of exercise; a fifth were concordant with regard to assessments of patient reported use of weight loss activities, and only 9% were concordant with regard to assessments of patient reported non-

use of weight loss activities. The remaining patient-physician pairs were discordant with regard to their assessments of the patient's self-reported use of exercise (~50%) and weight loss activities (~70%). A majority of patients perceived themselves to be engaging in regular exercise (55.6%) and weight loss activities (63.1%), while physicians perceived only a third of patients as engaging in these activities (exercise, 36.6%; weight loss, 33.3%).

3.2. Concordance between patient and physician assessments of patient self-reported use of weight management activities

The kappa scores for concordance between patient and physician assessments of patient self-reported use of weight management strategies indicate small agreement between patient and provider assessments of patient use of exercise, mean kappa 0.28 (range 0.15 to 0.40, $p < 0.001$) and no agreement between patient and provider assessments of patient engagement in weight loss efforts, mean kappa -0.14 (range -0.26 to -0.01, $p = 0.99$).

3.3. Factors associated with patient self-reported use of weight management activities

Table 2 shows the factors associated with patient self-reported use of weight management activities: exercise (first column) and weight loss effort (second column).

The factor most strongly associated with patient use of exercise was self-reported health. Patients in excellent or very good health were more likely to report engaging in exercise activities as compared to patients reporting fair or poor health (OR = 4.25, 95% CI: 2.01, 8.98). Patient age and physician race were also associated with patient reports of exercise. Patients younger than age 65 had almost three times the odds of engaging in regular exercise activities as compared to patients 65 years and older (OR = 2.82, 95% CI: 1.44, 5.53). After controlling for covariates, seeing a White physician was associated with a lower odds of engaging in weight loss activities as compared to seeing a non-White physician (OR = 0.42, 95% CI: 0.24, 0.72). We did run a multinomial logit model using three categories for patient exercise (0 times, 1–2 times, 3+ times per week) to separate patients engaging in no exercise from patients engaging in some (not shown). Those results did not differ significantly, so we report the findings from the more parsimonious logit model.

The factor most strongly associated with patient self-reported use of weight loss activities was body weight. Obese patients were more likely to try to lose weight as compared to non-obese patients (OR = 4.08, 95% CI: 2.12, 7.85). Patient use of weight loss activities was also significantly associated with physician gender and patient-physician race concordance. After controlling for other covariates, patients seeing male physicians had almost twice the odds of trying to lose weight as compared to patients seeing female physicians (OR = 1.70, 95% CI: 1.07, 2.71). Compared to patients who were not the same race as their physician, patients whose race was concordant with their physician were more likely to attempt weight loss (OR = 1.94, 95% CI: 1.15, 3.27).

3.4. Factors associated with physician-perceived patient use of weight management activities

Table 3 shows the factors associated with physician-perceived patient use of recommended weight management activities after adjustment for all measures shown in the table. In both models, the factor most strongly associated with physician-perceived patient use of weight management activities was whether the physician viewed him or herself as influencing the patients' behavior. Patients whose physician agreed or strongly agreed that they could influence the patients' behavior were more likely to be viewed by their physician as adherent as compared to patients whose physicians who did not view themselves as influential (exercise: OR = 3.57, 95% CI: 1.77, 7.20; weight loss: OR = 3.02, 95% CI: 1.24, 7.37). Also in both models, obese patients had lower odds than non-obese patients of being perceived by their physicians as

adherent to weight management activities (exercise: OR = 0.45, 95% CI: 0.23, 0.88; weight loss: OR = 0.19, 95% CI: 0.18, 0.48). In the exercise model, physician gender was also associated with physician-perceived patient use of weight management activities. Male physicians (as compared to female physicians) were significantly less likely to perceive their patients as adherent to regular exercise (OR = 0.39, 95% CI: 0.20, 0.78). We additionally controlled for whether patients engaged in physical activity at least three times per week in the exercise model (not shown) and found that physicians were more likely to perceive patients who exercised more as adherent.

3.5. Factors associated with concordance in patient-physician perceptions of patient use of weight management activities

Table 4 presents the factors associated with concordance in patient and physician perceptions of patient self-reported use of weight management activities after adjustment for all the measures in the table. In the first column, the outcome variable is patient-physician pairs who agreed that the patient was adherent to weight management activities. In the second column, the outcome variable is patient-physician pairs who agreed that the patient was non-adherent to weight management activities. In both models, physician's belief in their ability to influence their patients' behavior was strongly associated with the outcome. In particular, physicians' belief that they could influence their patients' behavior increased the odds of concordance on patient self-reported use of weight management activities (e.g., both the physician and patient agree that the patient is exercising or making efforts to lose weight) by more than four times (OR = 4.13, 95% CI: 1.66, 10.28) and significantly lowered the odds of concordance on patient non-use of weight management activities (OR = 0.20, 95% CI: 0.08, 0.51). Patient obesity (OR = 0.42, 95% CI: 0.19, 0.91) and physician respect for the patient (OR = 1.95, 95% CI: 1.03, 3.69) were also significantly associated with concordance on patient self-reported use of weight management activities.

We additionally examined the prevalence of perceived patient use of management activities for discordant patient-physician pairs. Discordance refers to those instances when the physician perceives the patient as non-adherent to recommended weight management activities while the patient reports engaging in these activities or the physician perceives the patient as adherent but the patient reports not engaging in efforts to lose weight and/or not exercising. We found that, among discordant pairs, patients were significantly more likely than their physician to view themselves as engaging in exercise (58.7% vs. 45.8%) or weight loss efforts (70.0% vs. 45.8%) ($p < 0.05$).

4. DISCUSSION AND CONCLUSION

4.1 Discussion

The goal of this paper was to examine concordance between patient and physician assessments of patient self-reported use of weight management activities. Our findings indicate considerable disagreement between patient and physician perceptions of patient use of weight management activities.

Overall, we found that patients were more likely than their physicians to view themselves as engaging in weight loss activities; therefore, among those patient-physician pairs who disagreed on the patients' use of self-reported weight loss activities, the discordance mostly occurred when the physician perceived the patient as non-adherent to recommended weight loss activities while the patient reported engaging in those activities. We also found several patient, provider and relationship factors that were associated with patient self-reported efforts to lose weight and exercise, physician perceptions of patient use of those activities, and concordance between patient and provider perceptions.

Obese patients, in particular, were significantly more likely to perceive themselves as engaging in weight loss activities, but their physicians were significantly more likely to view them as non-adherent to those activities. It is important for physicians to understand that many obese patients believe themselves to be adherent to weight loss activities, even when the physician does not. Techniques of motivational interviewing, which are perhaps the most effective communication strategy to promote difficult behavior change, support building patient self-efficacy and empowering patients through the physicians' acknowledgement of existing efforts [43]. If physicians are failing to recognize their patients' weight loss efforts, this theoretically could lead to patient disempowerment. On the other hand, perhaps obese patients are not engaging in effective weight loss efforts, even though they believe themselves to be doing so. Previous research suggests that obese patients are more likely than normal-weight patients to overestimate their exercise, for example [44]. Our results also suggest that one of the largest predictors of physician-perceived patient use of weight management activities and concordance in patient-physician perceptions of patient use of weight loss efforts was whether the physician believed himself or herself to be effective at influencing the patient's behavior.

There are both similarities and differences between these findings and previous research. Like previous studies, we observed that patients and physicians have differing perspectives about patients' weight loss efforts [18]. This may contribute to suboptimal weight management of obese patients which has been previously documented in the literature [45–46]. Also similar to prior research, we found that patient body weight affects physician attitudes [47–49] and that physicians' assessments of patient adherence are not accurate [14]. Our findings also align well with previous research exploring the relationship between communication and patient-physician race concordance [11]. Unlike other studies, we observed an interesting male physician effect; male physicians were significantly less likely to perceive patients as adherent to exercise. Perhaps male physicians hold their patients to a more stringent standard with regard to weight management efforts than female physicians. Or maybe male physicians do not ask sufficient questions to fully assess patient engagement in behavior change recommendations; evidence suggests that male physicians engage in significantly less patient-centered communication with their patients than female physicians [50].

There are several limitations to this analysis worth noting. First, it is cross-sectional which limits our ability to make causal inferences. Second, the data rely on physician perceptions and patient self-reports which were not verified by independent assessment. Third, both physicians and patients may be more likely to report higher levels of engagement, influence, or respect due to social desirability bias (e.g., tendency of respondents to reply in a manner viewed favorably by others). This effect should underestimate the strength of the relationships we observed and bias the effect size towards zero. Fourth, patients who report trying to lose weight, but who do not reduce their body weight, may be perceived as not engaging in weight loss activities by their physician – a limitation that likely biases our results towards the null. Fifth, we characterized physician race as non-White or White (rather than omit non-Black physicians and reduce our sample size) and patient race as Black or White. Because Black patients who see Asian physicians may have a different experience than Black patients who see White physicians, we examined the association between race discordant physician-patient relationships and our outcome variables (not shown). Black patients were somewhat more likely to engage in weight management activities with an Asian doctor than a White doctor which suggests that collapsing non-White physicians into one category likely biased our results towards the null. Seventh, data for this study were obtained from a randomized control trial designed to improve patient adherence to anti-hypertensive therapies. While the treatments for hypertension and obesity differ, they both recommend weight loss (for obese hypertensive individuals) and increased exercise [51–52]. In addition, our focus on a hypertensive population may reduce the generalizability of our results to non-hypertensive adults. Finally, our measures

of physician perceptions of patient engagement in weight loss activities are not validated. However, the survey was pilot tested prior to being fielded among the entire sample.

4.2 Conclusion

Primary care physicians differ considerably from their patients, especially their obese patients, in their assessments of patient use of weight management activities. Improved knowledge in this area may help to inform the development of interventions to improve patient-doctor communication about behavior change which may ultimately enhance patient experiences with obesity care, patient self-efficacy for weight or weight maintenance, and health outcomes for patients looking for reduce or maintain their body weight.

4.3 Practice implications

The training of primary care doctors should emphasize tools for improving patient-provider communication related to weight-management activities, particularly among obese patients.

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References

1. North American Association for the Study of Obesity (NAASO) and the National Heart Lung and Blood Institute, Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults. The Evidence Report. National Institutes of Health. *Obes Res* 1998;6(Suppl 2):51S–209S. [PubMed: 9813653]
2. Wing, RR. Behavioral approaches to the treatment of obesity. In: Bray, G.; Bouchard, C., editors. *The Handbook of Obesity*. Marcel Dekker; New York: 2004. p. 147-67.
3. Durant NH, Bartman B, Person SD, Collins F, Austin SB. Patient provider communication about the health effects of obesity. *Patient Educ Couns*. 2008
4. Sciamanna CN, Tate DF, Lang W, Wing RR. Who reports receiving advice to lose weight? Results from a multistate survey. *Arch Intern Med* 2000;160:2334–9. [PubMed: 10927731]
5. 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.
6. Loureiro ML, Nayga RM Jr. Obesity, weight loss, and physician's advice. *Soc Sci Med* 2006;62:2458–68. [PubMed: 16376006]
7. Levy BT, Williamson PS. Patient perceptions and weight loss of obese adults. *J Fam Pract* 1988;27:285–90. [PubMed: 3418302]
8. Kant AK, Miner P. Physician advice about being overweight: association with self-reported weight loss, dietary, and physical activity behaviors of US adolescents in the National Health and Nutrition Examination Survey, 1999–2002. *Pediatrics* 2007;119:e142–7. [PubMed: 17200241]
9. Street RL Jr, O'Malley KJ, Cooper LA, Haidet P. Understanding concordance in patient-physician relationships: personal and ethnic dimensions of shared identity. *Ann Fam Med* 2008;6:198–205. [PubMed: 18474881]
10. Heisler M, Vijan S, Anderson RM, Ubel PA, Bernstein SJ, Hofer TP. When do patients and their physicians agree on diabetes treatment goals and strategies, and what difference does it make? *J Gen Intern Med* 2003;18:893–902. [PubMed: 14687274]
11. Cooper LA, Roter DL, Johnson RL, Ford DE, Steinwachs DM, Powe NR. Patient-centered communication, ratings of care, and concordance of patient and physician race. *Ann Intern Med* 2003;139:907–15. [PubMed: 14644893]
12. Lutfey KE, Ketcham JD. Patient and provider assessments of adherence and the sources of disparities: evidence from diabetes care. *Health Serv Res* 2005;40:1803–17. [PubMed: 16336549]

13. Murri R, Ammassari A, Trotta MP, De Luca A, Melzi S, Minardi C, Zaccarelli M, Rellecati P, Santopadre P, Soscia F, Scasso A, Tozzi V, Ciardi M, Orofino GC, Noto P, Monforte A, Antinori A, Wu AW. Patient-reported and physician-estimated adherence to HAART: social and clinic center-related factors are associated with discordance. *J Gen Intern Med* 2004;19:1104–10. [PubMed: 15566439]
14. Zeller A, Taegtmeier A, Martina B, Battegay E, Tschudi P. Physicians' ability to predict patients' adherence to antihypertensive medication in primary care. *Hypertens Res* 2008;31:1765–71. [PubMed: 18971555]
15. Murri R, Antinori A, Ammassari A, Nappa S, Orofino G, Abrescia N, Mussini C, D'Arminio Monforte A, Wu AW. Physician estimates of adherence and the patient-physician relationship as a setting to improve adherence to antiretroviral therapy. *J Acquir Immune Defic Syndr* 2002;31(Suppl 3):S158–62. [PubMed: 12562042]
16. Stewart MA. Effective physician-patient communication and health outcomes: a review. *Can Med Assoc J* 1995;152:1423–33. [PubMed: 7728691]
17. Heisler M, Bouknight RR, Hayward RA, Smith DM, Kerr EA. The relative importance of physician communication, participatory decision making, and patient understanding in diabetes self-management. *J Gen Intern Med* 2002;17:243–52. [PubMed: 11972720]
18. Befort CA, Greiner KA, Hall S, Pulvers KM, Nollen NL, Charbonneau A, Kaur H, Ahluwalia JS. Weight-related perceptions among patients and physicians: how well do physicians judge patients' motivation to lose weight? *J Gen Intern Med* 2006;21:1086–90. [PubMed: 16970557]
19. Saha S, Komaromy M, Koepsell TD, Bindman AB. Patient-physician racial concordance and the perceived quality and use of health care. *Arch Intern Med* 1999;159:997–1004. [PubMed: 10326942]
20. Cooper-Patrick L, Gallo JJ, Gonzales JJ, Vu HT, Powe NR, Nelson C, Ford DE. Race, gender, and partnership in the patient-physician relationship. *J Amer Med Assoc* 1999;282:583–9.
21. Deroose KP, Hays RD, McCaffrey DF, Baker DW. Does physician gender affect satisfaction of men and women visiting the emergency department? *J Gen Intern Med* 2001;16:218–26. [PubMed: 11318922]
22. Franks P, Bertakis KD. Physician gender, patient gender, and primary care. *J Womens Health (Larchmt)* 2003;12:73–80. [PubMed: 12639371]
23. Schmittiel J, Grumbach K, Selby JV, Quesenberry CP Jr. Effect of physician and patient gender concordance on patient satisfaction and preventive care practices. *J Gen Intern Med* 2000;15:761–9. [PubMed: 11119167]
24. Rathore SS, Chen J, Wang Y, Radford MJ, Vaccarino V, Krumholz HM. Sex differences in cardiac catheterization: the role of physician gender. *J Amer Med Assoc* 2001;286:2849–56.
25. Gross R, McNeill R, Davis P, Lay-Yee R, Jatrana S, Crampton P. The association of gender concordance and primary care physicians' perceptions of their patients. *Women Health* 2008;48:123–44. [PubMed: 19042213]
26. Thomas SB, Fine MJ, Ibrahim SA. Health disparities: the importance of culture and health communication. *Am J Public Health* 2004;94:2050. [PubMed: 15612166]
27. National Center for Health Statistics. Healthy People 2000 Review, 1998–99. Public Health Service; Hyattsville, Maryland: 1999.
28. US Department of Health and Human Services. Healthy People 2010: Understanding and Improving Health. U.S. Government Printing Office; Washington, DC: Nov. 2000
29. Cooper LA, Roter DL, Bone LR, Larson SM, Miller ER 3rd, Barr MS, Carson KA, Levine DM. A randomized controlled trial of interventions to enhance patient-physician partnership, patient adherence and high blood pressure control among ethnic minorities and poor persons: study protocol NCT00123045. *Implement Sci* 2009;4:7. [PubMed: 19228414]
30. Centers for Disease Control and Prevention (CDC). National Center for Health Statistics (NCHS). National Health and Nutrition Examination Survey Data. Hyattsville, MD: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention; 2007. <http://www.cdc.gov/nchs/nhanes.htm>
31. Paffenbarger RS Jr, Wing AL, Hyde RT. Physical activity as an index of heart attack risk in college alumni. *Am J Epidemiol* 1978;108:161–175. [PubMed: 707484]

32. Ainsworth BE, Leon AS, Richardson MT, Jacobs DR, Paffenbarger RS Jr. Accuracy of the College Alumni Physical Activity Questionnaire. *J Clin Epidemiol* 1993;46:1403–11. [PubMed: 8263567]
33. Albanes D, Conway JM, Taylor PR, Moe PW, Judd J. Validation and comparison of eight physical activity questionnaires. *Epidemiology* 1990;1:65–71. [PubMed: 2081242]
34. Washburn RA, Smith KW, Goldfield SR, McKinlay JB. Reliability and physiologic correlates of the Harvard Alumni Activity Survey in a general population. *J Clin Epidemiol* 1991;44:1319–26. [PubMed: 1753263]
35. Helmrigh SP, Ragland DR, Leung RW, Paffenbarger RS Jr. Physical activity and reduced occurrence of non-insulin-dependent diabetes mellitus. *N Engl J Med* 1991;325:147–52. [PubMed: 2052059]
36. Lee IM, Paffenbarger RS Jr, Hsieh C. Physical activity and risk of developing colorectal cancer among college alumni. *J Natl Cancer Inst* 1991;83:1324–9. [PubMed: 1886158]
37. Paffenbarger RS Jr, Hyde RT, Wing AL, Hsieh CC. Physical activity, all-cause mortality, and longevity of college alumni. *N Engl J Med* 1986;314:605–13. [PubMed: 3945246]
38. Paffenbarger RS Jr, Wing AL, Hyde RT, Jung DL. Physical activity and incidence of hypertension in college alumni. *Am J Epidemiol* 1983;117:245–57. [PubMed: 6829553]
39. Stewart AL, Napoles-Springer AM, Gregorich SE, Santoyo-Olsson J. Interpersonal processes of care survey: patient-reported measures for diverse groups. *Health Serv Res* 2007;42:1235–56. [PubMed: 17489912]
40. Beach MC, Roter DL, Wang NY, Duggan PS, Cooper LA. Are physicians' attitudes of respect accurately perceived by patients and associated with more positive communication behaviors? *Patient Educ Couns* 2006;62:347–54. [PubMed: 16859867]
41. Suchman AL, Roter D, Green M, Lipkin M Jr. Physician satisfaction with primary care office visits. Collaborative Study Group of the American Academy on Physician and Patient. *Med Care* 1993;31:1083–92. [PubMed: 8246638]
42. Thompson SC, Schwankovsky L, Pitts J. Counselling Patients to Make Lifestyle Changes: The Role of Physician Self-Efficacy. *Training and Beliefs About Causes Family Practice* 1993;10:70–75.
43. Rollnick, S.; Miller, WR.; Butler, CC. *Motivational Interviewing in Healthcare*. New York: The Guilford Press; 2008.
44. Buchowski MS, Townsend KM, Chen KY, Acra SA, Sun M. Energy expenditure determined by self-reported physical activity is related to body fatness. *Obes Res* 1999;7:23–33. [PubMed: 10023727]
45. Ely AC, Greiner KA, Born W, Hall S, Rhode PC, James AS, Nollen N, Ahluwalia JS. Concordance of patient-physician obesity diagnosis and treatment beliefs in rural practice settings. *J Rural Health* 2006;22:364–6. [PubMed: 17010035]
46. Wadden TA, Anderson DA, Foster GD, Bennett A, Steinberg C, Sarwer DB. Obese women's perceptions of their physicians' weight management attitudes and practices. *Arch Fam Med* 2000;9:854–60. [PubMed: 11031392]
47. Hebl MR, Xu J. Weighing the care: physicians' reactions to the size of a patient. *Int J Obes Relat Metab Disord* 2001;25:1246–52. [PubMed: 11477511]
48. Huizinga MM, Cooper LA, Bleich SN, Clark JM, Beach MC. Physician Respect for Patients with Obesity. *J Gen Intern Med*. 2009
49. Huizinga MM, Bleich SN, Beach MC, Clark JM, CLA. Disparity in Physician Perception of Patients' Adherence to Medications by Obesity Status. *Obesity*. 2009 In press.
50. Roter DL, Hall JA. Physician gender and patient-centered communication: a critical review of empirical research. *Annu Rev Public Health* 2004;25:497–519. [PubMed: 15015932]
51. National Heart Lung and Blood Institute. Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults--The Evidence Report. National Institutes of Health, Obesity Research 1998;6(Suppl 2):51S–209S.
52. Chobanian AV, Bakris GL, Black HR, Cushman WC, Green LA, Izzo JL Jr, Jones DW, Materson BJ, Oparil S, Wright JT Jr, Rocella EJ. D.E.a.T.o.H.B.P. Joint National Committee on Prevention, L.a.B.I. National Heart, and C. National High Blood Pressure Education Program Coordinating. Seventh report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure. *Hypertension* 2007;42:1206–1252. [PubMed: 14656957]

Table 1

Characteristics of the study population

Patient characteristics (N = 274)		%
Sociodemographic	Race	
	White	36.2
	Black	62.0
	Gender	
	Male	34.1
	Female	65.9
	Age	
	< 65	64.2
	≥ 65	35.8
Health status	High school graduate	68.5
	Obese (measured)	59.9
	Blood pressure control (measured)	56.6
	Diabetes (self-reported)	43.4
	Self-reported health	
	Excellent or very good	19.4
	Good	38.4
Physician characteristics (N = 41)	Fair or poor	42.3
	Sociodemographic	
	Race	
	White	45.5
	Non-White	54.5
	Gender	
	Male	46.2
	Female	53.8
	Age	
	Less than 44	47.7
	45 or older	50.5
	Physician-patient concordance	
	Race concordance	44.8
	Sex concordance	57.7
	Perceived use of exercise *	26.5
	Perceived non-use of exercise *	22.9
	Perceived use of weight loss [†]	20.4
	Perceived non-use of weight loss [†]	9.3
Use of weight management activities		
Patient self-reported use	Regular exercise	55.6
	Trying to lose weight	63.1
Physician-perceived patient use	Regular exercise	36.6
	Trying to lose weight	33.3

Note: Analyses account for clustering of patients within physicians.

* The sum of these categories is not 100% because there are two other categories in which patient-physician pairs were discordant with regard to perceived use of exercise: patient- yes, physician-no and patient-no, physician-yes.

† The sum of these categories is not 100% because there are two other categories in which patient-physician pairs were discordant with regard to perceived use of weight loss: patient- yes, physician-no and patient-no, physician-yes.

Table 2

Adjusted association of patient, physician, and relationship factors with patient self-reported use of weight management activities

		Exercise [†]	Trying to lose weight
		OR (95% CI)	OR (95% CI)
Patient sociodemographic characteristics			
Race	Black	1.19 (0.68, 2.09)	1.07 (0.57, 1.99)
	White	1.00 (Reference)	1.00 (Reference)
Gender	Male	1.56 (0.77, 3.17)	1.05 (0.52, 2.10)
	Female	1.00 (Reference)	1.00 (Reference)
Age	< 65	2.82 (1.44, 5.53)	1.83 (0.97, 3.46)
	≥ 65	1.00 (Reference)	1.00 (Reference)
High school graduate	Yes	0.97 (0.55, 1.74)	1.49 (0.85, 2.62)
	No	1.00 (Reference)	1.00 (Reference)
Patient health status			
Obese (measured)		0.72 (0.38, 1.35)	4.08 (2.12, 7.85)
Blood pressure control		0.94 (0.54, 1.63)	0.82 (0.47, 1.43)
Diabetes (self-reported)		0.72 (0.42, 1.23)	0.80 (0.39, 1.64)
Self-reported health			
Excellent or very good		4.25 (2.01, 8.98)	0.67 (0.31, 1.46)
Good		1.27 (0.71, 2.28)	1.39 (0.65, 3.01)
Fair or poor		1.00 (Reference)	1.00 (Reference)
Physician sociodemographic characteristics			
Race	White	0.42 (0.24, 0.72)	1.01 (0.66, 1.55)
	non-White	1.00 (Reference)	1.00 (Reference)
Gender	Male	1.09 (0.59, 2.01)	1.70 (1.07, 2.71)
	Female	1.00 (Reference)	1.00 (Reference)
Age	Less than 44	0.95 (0.56, 1.60)	1.10 (0.74, 1.62)
	45 or older	1.00 (Reference)	1.00 (Reference)
Patient-physician relationship			
Race concordance	Concordant	0.83 (0.45, 1.53)	1.94 (1.15, 3.27)
	Discordant	1.00 (Reference)	1.00 (Reference)
Sex concordance	Concordant	1.16 (0.59, 2.26)	1.11 (0.55, 2.25)
	Discordant	1.00 (Reference)	1.00 (Reference)
Patient-perceived physician respectfulness		1.01 (0.98, 1.04)	0.99 (0.96, 1.02)
N		251	251

CI = Confidence interval

Note: Analyses account for clustering of patients within physicians.

[†]Exercise is defined as three or more times per week.

Table 3

Adjusted associations of patient, physician, and relationship factors with physician-perceived patient use of weight management activities

		Exercise	Trying to lose weight
		OR (95% CI)	OR (95% CI)
Patient sociodemographic characteristics			
Race	Black	0.57 (0.25, 1.30)	1.00 (0.42, 2.35)
	White	1.00 (Reference)	1.00 (Reference)
Gender	Male	1.32 (0.63, 2.77)	1.28 (0.57, 2.87)
	Female	1.00 (Reference)	1.00 (Reference)
Age	< 65	1.00 (0.47, 2.13)	0.46 (0.22, 0.97)
	≥ 65	1.00 (Reference)	1.00 (Reference)
High school graduate	Yes	1.00 (0.46, 2.17)	0.65 (0.28, 1.53)
	No	1.00 (Reference)	1.00 (Reference)
Patient health status			
Obese		0.45 (0.23, 0.88)	0.19 (0.08, 0.48)
Blood pressure control		0.78 (0.39, 1.58)	1.19 (0.70, 2.02)
Diabetes		1.54 (0.80, 2.99)	1.22 (0.52, 2.83)
Self-reported health			
Excellent or very good		1.24 (0.55, 2.79)	0.88 (0.31, 2.47)
Good		1.14 (0.53, 2.42)	0.99 (0.44, 2.25)
Fair or poor		1.00 (Reference)	1.00 (Reference)
Physician sociodemographic characteristics			
Race	White	0.81 (0.43, 1.51)	0.50 (0.23, 1.08)
	non-White	1.00 (Reference)	1.00 (Reference)
Gender	Male	0.39 (0.20, 0.78)	1.05 (0.46, 2.40)
	Female	1.00 (Reference)	1.00 (Reference)
Age	Less than 44	0.55 (0.30, 1.03)	0.67 (0.30, 1.49)
	45 or older	1.00 (Reference)	1.00 (Reference)
Patient-physician relationship			
Race concordance	Concordant	0.91 (0.45, 1.87)	1.06 (0.48, 2.32)
	Discordant	1.00 (Reference)	1.00 (Reference)
Sex concordance	Concordant	1.24 (0.57, 2.70)	1.41 (0.58, 3.44)
	Discordant	1.00 (Reference)	1.00 (Reference)
Respect for patient	Greater than average	1.51 (0.79, 2.91)	2.42 (1.25, 4.67)
	Average or less	1.00 (Reference)	1.00 (Reference)
Influence patient behavior	Strongly agree or agree	3.57 (1.77, 7.20)	3.02 (1.24, 7.37)
	Neutral or disagree	1.00 (Reference)	1.00 (Reference)
N		203	183

CI = Confidence interval

Note: Analyses account for clustering of patients within physicians. For the respect for patient variable, "greater than average" includes: more than average and much more than average and "average or less" includes: average, less than average and much less than average.

Table 4

Adjusted associations of patient, physician, and relationship factors with concordance in patient and physician perceptions of patient use of weight management activities

		Concordance: Patient use	Concordance: Patient non-use
		OR (95% CI)	OR (95% CI)
Patient sociodemographic characteristics			
Race	Black	0.77 (0.29, 2.04)	1.02 (0.32, 3.20)
	White	1.00 (Reference)	1.00 (Reference)
Gender	Male	0.93 (0.47, 1.85)	0.25 (0.10, 0.61)
	Female	1.00 (Reference)	1.00 (Reference)
Age	< 65	0.92 (0.47, 1.82)	0.60 (0.25, 1.45)
	≥ 65	1.00 (Reference)	1.00 (Reference)
High school graduate	Yes	0.67 (0.30, 1.53)	1.73 (0.80, 3.77)
	No	1.00 (Reference)	1.00 (Reference)
Patient health status			
Obese		0.42 (0.19, 0.91)	1.55 (0.69, 3.52)
Blood pressure control		0.87 (0.42, 1.80)	1.57 (0.90, 2.72)
Diabetes		1.19 (0.57, 2.48)	0.99 (0.44, 2.23)
Self-reported health			
Excellent or very good		0.89 (0.32, 2.48)	0.36 (0.09, 1.45)
Good		1.17 (0.51, 2.69)	0.61 (0.26, 1.44)
Fair or poor		1.00 (Reference)	1.00 (Reference)
Physician sociodemographic characteristics			
Race	White	1.13 (0.51, 2.50)	1.98 (0.97, 4.06)
	non-White	1.00 (Reference)	1.00 (Reference)
Gender	Male	0.49 (0.24, 1.00)	1.00 (0.45, 2.24)
	Female	1.00 (Reference)	1.00 (Reference)
Age	Less than 44	0.83 (0.43, 1.60)	1.20 (0.58, 2.50)
	45 or older	1.00 (Reference)	1.00 (Reference)
Patient-physician relationship			
Race concordance	Concordant	1.31 (0.59, 2.89)	1.13 (0.40, 3.23)
	Discordant	1.00 (Reference)	1.00 (Reference)
Sex concordance	Concordant	1.56 (0.71, 3.41)	0.80 (0.39, 1.62)
	Discordant	1.00 (Reference)	1.00 (Reference)
Patient-perceived physician respectfulness		0.99 (0.97, 1.02)	1.03 (0.99, 1.07)
Physician respect for patient	Greater than average	1.95 (1.03, 3.69)	0.86 (0.35, 2.11)
	Average or less	1.00 (Reference)	1.00 (Reference)
Influence patient behavior	Strongly agree or agree	4.13 (1.66, 10.28)	0.20 (0.08, 0.51)
	Neutral or disagree	1.00 (Reference)	1.00 (Reference)
N		175	175

CI = Confidence interval

Note: Analyses account for clustering of patients within physicians. For the respect for patient variable, “greater than average” includes: more than average and much more than average and “average or less” includes: average, less than average and much less than average.