2019

Physician Gender Impact on Obesity Care in the Academic Ambulatory Setting

Peggy R. Cyr MD
*Maine Medical Center*

Christina Holt MD, MSc
*Maine Medical Center*

Amy Haskins PhD
*Maine Medical Center*

Karyn King MD
*University of Pittsburgh Medical Center*

Robert Post MD
*Virtua Family Medicine Residency*

See next page for additional authors

Follow this and additional works at: [https://knowledgeconnection.mainehealth.org/jmmc](https://knowledgeconnection.mainehealth.org/jmmc)

Part of the Medical Education Commons, Nutritional and Metabolic Diseases Commons, Preventive Medicine Commons, and the Primary Care Commons

**Recommended Citation**

Cyr, Peggy R. MD; Holt, Christina MD, MSc; Haskins, Amy PhD; King, Karyn MD; Post, Robert MD; Tarn, Derjung M.; and Mainous, Arch PhD (2019) "Physician Gender Impact on Obesity Care in the Academic Ambulatory Setting," *Journal of Maine Medical Center: Vol. 1 : Iss. 1 , Article 4.*

Available at: [https://knowledgeconnection.mainehealth.org/jmmc/vol1/iss1/4](https://knowledgeconnection.mainehealth.org/jmmc/vol1/iss1/4) https://doi.org/10.46804/2641-2225.1010

The views and thoughts expressed in this manuscript belong solely to the author[s] and do not reflect the opinions of the Journal of Maine Medical Center or MaineHealth.

This Original Research is brought to you for free and open access by Maine Medical Center Department of Medical Education. It has been accepted for inclusion in the Journal of Maine Medical Center by an authorized editor of the MaineHealth Knowledge Connection. For more information, please contact Dina McKelvy mckeld1@mmc.org.
Physician Gender Impact on Obesity Care in the Academic Ambulatory Setting

Acknowledgements
none

Authors
Peggy R. Cyr MD; Christina Holt MD, MSc; Amy Haskins PhD; Karyn King MD; Robert Post MD; Derjung M. Tarn; and Arch Mainous PhD

This original research is available in Journal of Maine Medical Center: https://knowledgeconnection.mainehealth.org/jmmc/vol1/iss1/4
Physician Gender Impacts Obesity Care in the Academic Ambulatory Setting

Peggy R. Cyr MD,1 Christina Holt MD,MSc,1 Amy Haskins PhD,1 Karyn King MD,2 Robert Post MD,3 Derjung M. Tarn,4 Arch Mainous PhD5

1Maine Medical Center, Portland, ME, 2University of Pittsburgh Medical Center, Hermitage, PA, 3Virtua Family Medicine Residency, Voorhees, NJ, 4University of California, Los Angeles, CA 5University of Florida, Gainesville, FL

Introduction: We assessed a nationally representative sample of academic family physicians to determine whether physician characteristics correlate with attitudes towards and care of overweight and/or obese patients.

Methods: Academic family physicians answered a questionnaire assessing their interactions with overweight and obese patients. The questionnaire was a subset of questions from the 2012 Council of Academic Family Medicine Educational Research Alliance (CERA) survey. We compared physicians' self-reported demographics and personal characteristics [e.g., gender and body mass index (BMI)] with their self-reported likelihood of engaging in weight-loss discussions with overweight or obese patients.

Results: Of the 1099 physicians surveyed, 36% were overweight and 14% were obese. We found no differences in the self-reported likelihood of physicians discussing weight-loss strategies with either overweight or obese patients based on BMI. We also found that 77% of female and 64% of male physicians reported being very/extremely likely to discuss weight loss with their obese patients at their most recent visit. More female physicians (79%) reported discussing weight-loss strategies often or at every visit than male physicians (69%). Finally, female physicians self-reported more minutes spent counseling overweight and obese patients.

Conclusions: Female family medicine physicians are more likely than their male counterparts to discuss weight-loss strategies with obese patients and to spend more time on these discussions. Self-reported physician BMI was not associated with these behaviors.

Keywords: gender disparity, obesity care, epidemiology

Approximately 70% of U.S adults are considered overweight or obese, and 36.5% of those adults meet the classification for obesity [body mass index (BMI) > 30].1 Overweight or obese patients are at increased risk for adverse health outcomes, including diabetes mellitus type II, heart disease, hypertension, non-alcoholic fatty liver disease, osteoarthritis, cancer, and stroke.1 Despite these known risks, primary care physicians do a poor job of documenting obesity on patients’ medical problem lists,2 even with evidence that physicians addressing obesity impacts patient awareness and behavior.3

Studies have associated physician characteristics (e.g., BMI, gender, knowledge of weight-management strategies) with the likelihood of self-reporting comfort with addressing issues of overweight and obesity in patients. Bleich et al showed that when U.S. primary care physicians’ perception of the patient’s body weight meets or exceeds their own personal body weight, they have a higher probability of recording an obesity diagnosis or starting a weight-loss conversation. This finding suggests that physicians of normal BMI provide recommended obesity care more often than overweight and obese physicians.4 In a systematic
review, Zhu et al demonstrated physicians and nurses of normal BMI were more confident in their weight-management practices, perceived fewer barriers to weight management, had more positive outcome expectations, and felt more negative attitudes towards obese individuals than physicians and nurses who were overweight or obese. They also found that female physicians and physicians with clinical experience in weight management had a more positive attitude towards overweight and obese patients.

Frank et al surveyed 1,000 U.S. physicians on the frequency with which they reviewed their patients' health behaviors and counseled them about unhealthy behaviors. They found that female family practice physicians are more likely to counsel their patients on unhealthy behaviors than male family practice physicians and female non-primary care physicians. In a separate study of 4,501 respondents to the Women's Physicians' Health Study (a large questionnaire-based study of health behaviors and counseling practices of U.S. female physicians), Frank et al also showed that female physicians report that they regularly perform a higher proportion of nutrition and weight-loss counseling compared to other prevention counseling.

Physician gender affects their approach to delivering medical care. It is also associated with differences in the quality of managing several common medical issues, including diabetes, hypertension, and hyperlipidemia. In a cross-sectional study of over 50,000 outpatients, patients of female physicians were more likely to reach a target hemoglobin A1c (HgBA1c) of < 6.5%, have low-density lipoprotein (LDL) levels < 100, and meet blood pressure goals of < 130 systolic blood pressure when compared to patients of male physicians. Journath et al found that female physicians were more likely to achieve hypertension-management goals (blood pressure < 140/90) in their female patients and better cholesterol management in both male and female patients when compared to male physicians.

Given these findings, we wondered whether the assessment and management of overweight and obese patients in an academic family medicine setting would follow the patterns observed in the literature thus far. Since academic physicians are role models for young physicians, we expected they might remain up-to-date on important guidelines regarding preventive practice and work to curtail their own biases in practice. Thus, we surveyed academic physicians to evaluate a relationship between self-reported physician gender and weight status and perceptions of weight-loss management. Specifically, we assessed a nationally representative sample of academic family medicine physicians to determine whether their personal characteristics were associated with their attitudes and practices in caring for overweight and obese patients.

**METHODS**

This study analyzed a subset of questions addressing physician's interactions with patients (either overweight or obese) that were administered on the 2012 Council of Academic Family Medicine Educational Research Alliance (CERA) survey. CERA is a joint initiative of all four major U.S. organizations for academic family medicine, including the Society of Teachers of Family Medicine, North American Primary Care Research Group, Association of Departments of Family Medicine, and Association of Family Medicine Residency Directors. Further information regarding the survey can be found at: [http://www.stfm.org/Research/CERA](http://www.stfm.org/Research/CERA). The CERA survey data was analyzed using SAS software, version 9.2.

Respondents were asked basic demographic questions, including gender, age, ethnicity, rank, terminal degree, primary academic alignment, and time spent in clinic. They were also asked questions regarding their interactions with overweight and obese patients.

The primary outcome of interest was the association between the self-reported likelihood of engaging in weight-loss discussions with overweight and/or obese patients and the physicians' personal characteristics (gender and BMI category). Secondary outcomes of interest included the frequency or comfort that providers reported in their own clinical activity: discussing weight-loss strategies with their overweight and/or obese patients; addressing weight issues with patients; endorsing beliefs that overweight and/or obese patients are non-adherent to recommendations, or that overweight and/or obese patients care less about their health; and reported time (in minutes) spent addressing weight-loss strategies with overweight and obese patients. The responses were collected using a variable five-point Likert scale. For ease of analysis, the responses were either dichotomized to the top two categories.
(likelihood: very/extremely; frequency: often/every visit) and the bottom three categories (likelihood: not at all/little/somewhat; frequency: never/rarely/sometimes), or they were categorized into three groups (preserving a “neutral” or “sometimes” middle category when sample size allowed). Chi-square analysis was used to test all associations.

RESULTS

The survey respondents included 581/1099 total physicians (response rate: 52.9%). About 58% of the respondents were male, 66% were between the ages of 40 and 59, and 85% self-identified as white or Caucasian. Approximately 36% of physicians reported they were themselves overweight (BMI > 25, with more overweight male physicians) and 14% were obese (BMI > 30) (Table 1).

Overall, 56% and 70% of physicians reported being “very or extremely likely” to discuss weight-loss strategies with their overweight and obese patients, respectively. We categorized physicians by their own BMI and found no significant differences in their self-reported likelihood of discussing weight-loss strategies with either their overweight (p = 0.80) or obese patients (p = 0.28). Based on physician BMI, there was no significant difference in how frequently physicians discussed weight-loss strategies with their overweight (p = 0.22) or obese patients (p = 0.42). Overall, physician BMI was not significantly associated with any of the reported behavior, comfort, perceived barrier, or belief variables with regards to overweight or obese patients (Table 2).

Female physicians reported a significantly greater likelihood of discussing weight loss with their obese patients at their most recent visit when compared to male physicians (very/extremely: females 77%, males 64%; p = 0.002). Female physicians also report discussing weight-loss strategies more frequently with obese patients than male physicians (often/every visit: females 79%, males 69%; p = 0.02). Physician gender was not associated with the likelihood or frequency of weight-loss discussions with overweight patients. While not significant, female physicians were more likely to discuss weight loss and weight-loss strategies with overweight patients. Similarly, female physicians were more comfortable addressing weight loss with overweight patients (very/extremely: females 84%, males 78%; p = 0.08). There was a significant difference in the perception of patient non-adherence as a barrier to care. Indeed, female physicians were less likely to report patient non-adherence as a barrier to weight-loss counseling (often/always: females 31%, males 42%; p = 0.007). However, there were no significant differences between genders in the perception of fear of offending patients as a barrier to care (p = 0.23).

In terms of beliefs, female physicians were more likely to “completely or somewhat disagree” that overweight and obese patients are non-adherent to weight-management recommendations (females 68%, males 57%; p = 0.048). Female physicians were less likely to feel that overweight and obese patients care less about their health (p = 0.01). Finally, female physicians spent significantly more time counseling their overweight and obese patients than male physicians (p = 0.0001) (Table 3).

We conducted a separate, stratified analysis of physician BMI and weight-loss counseling practices among male and female physicians. The results were similar, with no associations between physician BMI and any reported variables among male or female physicians.

DISCUSSION

This study is the first to survey a general cross-section of academic family physicians about their practices related to caring for patients who are overweight or obese. In our sample, there was no significant difference between physician BMI and how they reported their weight-management counseling for overweight or obese patients. However, our analysis did show that female physicians are more likely than male physicians to report discussing weight loss and weight-loss strategies with their obese patients. Although previous studies showed that physicians with normal BMI provide recommended weight-loss counseling more often than overweight and obese physicians, our findings do not support this conclusion.

Our data suggests that female family medicine physicians are more likely to discuss and commit more time to discussing weight-loss strategies with their obese patients. Other studies have shown that female physicians are more likely to practice evidence-based medicine, suggesting that they may take appropriate measures to address weight-loss strategies based on current guidelines and recommendations in the literature. The differences in management of obesity based on physician
gender could also be attributed to differences between female and male practice patterns, including communication styles, variable focus on preventative care, and differences in adherence to evidence-based guidelines. Additionally, the observed difference could be inherent biases that patients have towards both male and female physicians that affect the type of care they expect to receive from their provider.

The fact that there are differences in the way that female and male physicians practice is not novel. Several studies found that female primary care physicians are more likely to counsel their patients on preventive care, especially nutrition and weight management, compared to male primary care physicians. Female physicians also have better outcomes in management of hypertension, diabetes mellitus type II, and hyperlipidemia. However, few studies have shown that the differences in practice patterns between male and female physicians actually produce variable outcomes in patient mortality. One such study comparing hospital mortality and readmission rates between Medicare patients treated by male and female hospitalists found that those treated by female hospitalists had significantly lower hospital mortality and readmission rates. If the differences in the way that male and female physicians deliver care affect the quality of patient outcomes, we urgently need additional research on this topic to address these disparities in care.

Our study had a few notable limitations and strengths. First, we relied on self-reported data from physicians, which may be skewed by reporter bias that under- or overestimates true behavior. Second, the sample population may not be generalizable to medical providers outside of academic family medicine. Third, while we know the physicians’ rank and average time spent performing clinical duties, we do not know the specific patient populations that the physicians served. Although this data was collected in 2012, there have been no notable changes in clinical practice guidelines that would suggest our data is outdated. A larger sample size may better assess potential relationships between physician characteristics and weight-loss management. The strength of this study is that the survey mechanism is a nationally recognized tool for practice research among academic family physicians, with a high rate of response and engagement in completing the survey.

CONCLUSIONS

Using CERA survey data, we found that female family medicine physicians are more likely than their male counterparts to discuss weight-loss strategies with obese patients. We also noted that female family medicine physicians report spending more time discussing weight-loss strategies. However, self-reported physician BMI was not associated with these behaviors. While our study correlated physician gender with differences in how physicians discussed weight-loss strategies with obese patients, future research may delineate whether this finding applies in non-academic and non-primary care settings. Future research may also determine whether the effects of physician gender also associate with differences in weight-management plans and health outcomes for overweight and obese patients.
| Characteristics*          | Male |       | Female |       | p-value |
|--------------------------|------|-------|--------|-------|---------|
| Gender                   |      |       |        |       |         |
| Male                     | 334  | 58.0  | -      | -     | -       |
| Female                   | 242  | 42.0  | -      | -     | -       |
| Age category             |      |       |        |       |         |
| <40                      | 91   | 15.6  | 34     | 10.2  | 57      | 23.6    | <0.0001 |
| 40–49                    | 173  | 29.9  | 87     | 26.1  | 86      | 35.5    |         |
| 50–59                    | 209  | 36.2  | 132    | 39.6  | 75      | 31.0    |         |
| >60                      | 105  | 18.2  | 80     | 24.0  | 24      | 9.9     |         |
| Race/ethnicity           |      |       |        |       |         |
| White                    | 483  | 84.7  | 289    | 87.8  | 191     | 80.3    |         |
| Black                    | 27   | 4.7   | 9      | 2.7   | 18      | 7.6     | 0.030   |
| Hispanic                 | 25   | 4.4   | 12     | 3.7   | 13      | 5.5     |         |
| Asian                    | 35   | 6.1   | 19     | 5.8   | 16      | 6.7     |         |
| Number of half days in clinic | |       |        |       |         |
| <3                       | 301  | 52.2  | 174    | 52.4  | 125     | 51.7    |         |
| 3–6                      | 263  | 45.6  | 151    | 45.5  | 111     | 45.9    | 0.949   |
| >7                       | 13   | 2.3   | 7      | 2.1   | 6       | 2.5     |         |
| Rank                     |      |       |        |       |         |
| Assistant Professor      | 183  | 31.7  | 81     | 24.3  | 102     | 42.5    |         |
| Associate Professor      | 181  | 31.4  | 100    | 29.9  | 81      | 33.8    | <0.0001 |
| Full Professor           | 184  | 31.9  | 136    | 40.7  | 45      | 18.8    |         |
| Other                    | 29   | 5.0   | 17     | 5.1   | 12      | 5.0     |         |
| Degree                   |      |       |        |       |         |
| MD                       | 543  | 94.1  | 313    | 94.0  | 227     | 94.2    |         |
| DO                       | 24   | 4.2   | 16     | 4.8   | 8       | 3.3     | 0.355   |
| Other                    | 10   | 1.7   | 4      | 1.2   | 6       | 2.5     |         |
| Physician BMI            |      |       |        |       |         |
| Normal (18.5–24.9)       | 263  | 50.1  | 135    | 43.8  | 128     | 59.0    |         |
| Overweight (25–29.9)     | 188  | 35.8  | 128    | 41.6  | 60      | 27.7    | 0.002   |
| Obese (30+)              | 74   | 14.1  | 45     | 14.6  | 29      | 13.4    |         |

*N = 581 total; totals may not add to 581 due to missing values as follows:
gender = 5, age category = 3, race/ethnicity = 11, days in clinic = 4, rank = 4, degree = 4, BMI = 53.
Male and female rows do not add to overall totals due to the missing gender for 5 participants.
Table 2. Beliefs and practices reported for overweight or obese patients by physician BMI

| Question | Normal (N = 265) | Overweight (N = 189) | Obese (N = 74) | p-value |
|----------|------------------|----------------------|----------------|---------|
| Q9       |                  |                      |                |         |
| Overweight patient: How likely to discuss WL at most recent visit | | | | |
| Not at all/Little/Somewhat | 111 | 42.4 | 86 | 45.5 | 32 | 43.8 | 0.8 |
| Very/Extremely | 151 | 57.6 | 103 | 54.5 | 41 | 56.1 | |
| Q10      |                  |                      |                |         |
| Overweight patient: How frequently discuss WL strategies | | | | |
| Never/Rare/Sometimes | 82 | 31.4 | 73 | 38.8 | 28 | 38.4 | 0.22 |
| Often/Every Visit | 179 | 68.6 | 115 | 61.2 | 45 | 61.6 | |
| Q12      |                  |                      |                |         |
| Obese patient: How likely to discuss WL at most recent visit | | | | |
| Not at all/Little/Somewhat | 68 | 26.5 | 59 | 31.9 | 24 | 34.8 | 0.276 |
| Very/Extremely | 189 | 73.5 | 126 | 68.1 | 45 | 65.2 | |
| Q13      |                  |                      |                |         |
| Obese patient: How frequently do you discuss WL strategies | | | | |
| Not at all/Rarely/Sometimes | 62 | 23.9 | 53 | 28.3 | 21 | 30.4 | 0.417 |
| Often/Every visit | 197 | 76.1 | 134 | 71.7 | 48 | 69.6 | |
| Q15      |                  |                      |                |         |
| Physician comfort with addressing weight | | | | |
| Little/Somewhat | 51 | 19.4 | 33 | 17.6 | 17 | 23.3 | 0.572 |
| Very/Extremely | 212 | 80.6 | 155 | 82.5 | 56 | 76.7 | |
| Q22      |                  |                      |                |         |
| Barriers to care: Patient non-adherence prevents WL counseling | | | | |
| Rarely/Occasionally | 84 | 32.1 | 57 | 30.2 | 31 | 42.5 | |
| Sometimes | 83 | 31.7 | 54 | 28.6 | 17 | 23.3 | 0.291 |
| Often/Always | 95 | 36.3 | 78 | 41.3 | 25 | 34.3 | |
Table 2. (Continued) Beliefs and practices reported for overweight or obese patients by physician BMI.

| Question                                                                 | Normal (N = 265) | Overweight (N = 189) | Obese (N = 74) | p-value |
|--------------------------------------------------------------------------|------------------|----------------------|----------------|---------|
| Q23 Barriers to care: Fear of offending patient prevents WL counseling  |
| Rarely/Occasionally                                                      | 207 79.3         | 163 86.2             | 55 76.4        | 0.138   |
| Sometimes                                                               | 42   16.1         | 23 12.2              | 12 16.7        |         |
| Often/Always                                                            | 12   4.6          | 3   1.6              | 5  6.9         |         |
| Q24 Feel that overweight/obese patients are nonadherent to recommendations |
| Completely/Somewhat Disagree                                            | 150 57.0         | 122 64.6             | 51 69.9        |         |
| Neutral                                                                 | 82   31.2         | 52 27.5              | 17 23.3        | 0.218   |
| Somewhat/Completely Agree                                               | 31   11.8         | 15  7.9              | 5  6.9         |         |
| Q25-1 Feel that overweight/obese patients care less about their health   |
| Completely/Somewhat Disagree                                            | 190 72.2         | 149 78.8             | 63 86.3        |         |
| Neutral                                                                 | 54   20.5         | 31 16.4              | 8  11.0        | 0.116   |
| Somewhat/Completely Agree                                               | 19   7.2          | 9   4.8              | 2  2.7         |         |
| Q20 Minutes spent addressing WL with overweight/obese patients          |
| 5 or less                                                               | 166 63.9         | 126 67.7             | 47 66.2        |         |
| 6–10 mins                                                               | 72   27.7         | 47 25.3              | 17 23.9        | 0.87    |
| >10 min                                                                 | 22   8.5          | 13   7.0             | 7  9.9         |         |

BMI, body mass index; WL, weight loss.
**Table 3.** Beliefs and practices reported for overweight or obese patients by physician gender.

| Question | Description | Male (N=334) | Female (N=242) | p-value |
|----------|-------------|--------------|----------------|---------|
| Q9 | Overweight patient: How likely discussed WL at most recent visit | | | |
| | Not at all/Little/Somewhat | 151 | 46.8 | 93 | 39.7 | 0.1 |
| | Very/Extremely | 172 | 53.2 | 141 | 60.3 | |
| Q10 | Overweight patient: How frequently discuss WL strategies | | | |
| | Never/Rare/Sometimes | 125 | 38.9 | 73 | 31.3 | 0.07 |
| | Often/Every Visit | 196 | 61.1 | 160 | 68.7 | |
| Q12 | Obese patient: How likely discussed WL at most recent visit | | | |
| | Not at all/Little/Somewhat | 111 | 35.6 | 52 | 22.9 | 0.002 |
| | Very/Extremely | 201 | 64.4 | 175 | 77.1 | |
| Q13 | Obese patient: How frequently do you discuss WL strategies | | | |
| | Never/Rarely/Sometimes | 97 | 30.8 | 49 | 21.5 | 0.016 |
| | Often/Every visit | 218 | 69.2 | 179 | 78.5 | |
| Q15 | Comfort addressing weight | | | |
| | Little/Somewhat | 70 | 21.9 | 37 | 16.0 | 0.082 |
| | Very/Extremely | 250 | 78.1 | 195 | 84.1 | |
| Q22 | Barriers to care: Patient non-adherence prevents WL counseling | | | |
| | Rarely/Occasionally | 102 | 32.5 | 77 | 33.6 | |
| | Sometimes | 79 | 25.2 | 82 | 35.8 | 0.007 |
| | Often/Always | 133 | 42.4 | 70 | 30.6 | |
| Q23 | Barriers to care: Fear of offending patient prevents WL counseling | | | |
| | Rarely/Occasionally | 262 | 83.4 | 177 | 78.0 | |
| | Sometimes | 42 | 13.4 | 38 | 16.7 | 0.232 |
| | Often/Always | 10 | 3.2 | 12 | 5.3 | |
Table 3. (continued) Beliefs and practices reported for overweight or obese patients by physician gender.

| Question | Description | Male (N=334) | Female (N=242) | p-value |
|----------|-------------|--------------|----------------|---------|
| Q24 | Feel that overweight/obese patients are nonadherent to recommendations | | | |
| | Completely/Somewhat Disagree | 180 (57.3%) | 155 (67.7%) | | 0.048 |
| | Neutral | 99 (31.5%) | 56 (24.5%) | | |
| | Somewhat/Completely Agree | 35 (11.2%) | 18 (7.9%) | | |
| Q25-1 | Feel that overweight/obese patients care less about their health | | | |
| | Completely/Somewhat Disagree | 226 (72.0%) | 190 (83.0%) | | 0.011 |
| | Neutral | 66 (21.0%) | 30 (13.1%) | | |
| | Somewhat/Completely Agree | 22 (7.0%) | 9 (3.9%) | | |
| Q20 | Minutes spent addressing WL with overweight/obese patients | | | |
| | 5 or less | 227 (72.8%) | 125 (55.1%) | | |
| | 6–10 mins | 65 (20.8%) | 77 (33.9%) | | 0.0001 |
| | >10 min | 20 (6.4%) | 25 (11.0%) | | |

WL, weight loss.
Conflicts of Interest: None

REFERENCES

1. National Institute of Diabetes and Digestive and Kidney Diseases. Overweight and Obesity Statistics. 2012; https://www.niddk.nih.gov/health-information/health-statistics/Pages/overweight-obesity-statistics.aspx Accessed April 4, 2017.

2. Cyr PR, Haskins AE, Holt C, Hanifi J. Weighty Problems: Predictors of Family Physicians Documenting Overweight and Obesity. Fam Med. 2016;48(3):217–221.

3. Post RE, Mainous AG 3rd, Gregorie SH, Knoll ME, Diaz VA, Saxena SK. The influence of physician acknowledgment of patients’ weight status on patient perceptions of overweight and obesity in the United States. Arch Intern Med. 2011;171(4):316–321.

4. Bleich SN, Bandara S, Bennett WL, Cooper LA, Gudzune KA. Impact of non-physician health professionals’ BMI on obesity care and beliefs. Obesity. 2014;22(12):2476–2480.

5. Zhu DQ, Norman IJ, While AE. The relationship between doctors’ and nurses’ own weight status and their weight management practices: a systematic review. Obes Rev. 2011;12(6):459–469.

6. Frank E, Harvey LK. Prevention advice rates of women and men physicians. Arch Fam Med. 1996;5(4):215–219.

7. Frank E, Kunovich-Frieze T. Physicians’ prevention counseling behaviors: current status and future directions. Prev Med. 1995;24(6):543–545.

8. Frank E, Wright EH, Serdula MK, Elon LK, Baldwin G. Personal and professional nutrition-related practices of US female physicians. Am J Clin Nutr. 2002;75(2):326–332.

9. Berthold HK, Gouni-Berthold I, Bestehorn KP, Böhm M, Krone W. Physician gender is associated with the quality of type 2 diabetes care. J Intern Med. 2008;264(4):340–350.

10. Journath G, Hellénius ML, Manhem K, Kjellgren KI, Nilsson PM, Hyper-Q Study Group Sweden. Association of physician’s sex with risk factor control in treated hypertensive patients from Swedish primary healthcare. J Hypertens. 2008;26(10):2050–2056.

11. Tsugawa Y, Jena AB, Figueroa JF, Orav EJ, Blumenthal DM, Jha AK. Comparison of Hospital Mortality and Readmission Rates for Medicare Patients Treated by Male vs Female Physicians. JAMA Intern Med. 2017;177(2):206–213.