Disparities in Healthcare Utilization Among Adults with Obesity in the United States, Findings from the NHIS: 2006–2015

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Abstract

Few studies of disparities consider logistical hurdles faced by adults with obesity in obtaining needed healthcare. This study compared adults with obesity to adults without obesity on self-reported practical aspects of receiving healthcare including ease of seeing a doctor and wait times for appointments. Serious psychological distress and chronic health conditions are prevalent in adults with obesity. Because serious psychological distress and number of chronic health conditions can act as confounders in any observed differences between the adults with and without obesity in their use of healthcare, we have examined these differences independent of serious psychological distress and chronic health conditions. Adults 18 to 64 years sampled from the 2006–2015 National Health Interview Survey (NHIS) ($n = 74,598$) were examined on five self-reported indicators: does not need a doctor, waited too long in the doctor's office, and to get an appointment, year since having seen a doctor, and saw a doctor ten times or more in the last 12 months. Multivariable models adjusted for serious psychological distress, chronic health conditions, gender, age, race/ethnicity, income, health coverage, and survey year demonstrated that adults with obesity were more likely to wait too long to get an appointment, and in the waiting room. Adults with obesity report not needing doctors despite seeing doctors frequently. Greater attention is needed to understand barriers to health care utilization in adults with obesity.

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Introduction

In 2013, the American Medical Association recognized obesity as a complex, chronic disease requiring medical attention. Despite greater recognition and understanding of obesity by the medical profession, disparities and bias exist against adults who have obesity (Wilson et al. 2017; Carr and Friedman 2005). For instance, the National Institutes of Health (NIH) still does not consider adults with obesity a group that is subject to disparities. Biases in healthcare treatment and discrimination against adults with obesity in the healthcare setting can hinder our nation's efforts to fight the obesity epidemic (Patenburg et al. 2012). Negative attitudes toward obesity are pervasive in the United States, and impact the relationship quality between patients with obesity and their providers, including compromised doctor–patient communication (Patenburg et al. 2012). Adults with obesity have been thought of by some health care providers as lazy, unable to control their eating, and unable to take responsibility for themselves (Fruh et al. 2016; Puhl and Heuer 2009). Studies have found that some health care providers express an overt disgust for adults with obesity including, ironically, some of the most experienced and seasoned health care professionals (Makara-Studzińska et al. 2013). Disrespectful remarks reinforce social isolation in adults with obesity, and discourage them from participating in health promoting activities (Ross et al. 2009).

It is easy to surmise that a compromised relationship with the doctor could translate into limitations in access to the doctor's care in such subtle ways as an inability to contact the doctor by phone and get phone calls returned by doctors. The compromised relationship could also translate into limitations by office employees in access to care such as waiting too long to get an appointment. Evidence of limitations possibly due to a compromised relationship has been found. Women with obesity have reported delays in receiving important preventive health care such as annual pelvic exams (Phelan et al. 2015; Materud and Ulriksen 2011), and guideline treatments for acute coronary syndromes (Graham 2016; Jung et al. 2016). Men with obesity were more likely to receive revascularization when it was not clinically indicated (Hoff and Rosenheck 1998). Yet those few studies have not examined specific logistical barriers to care such as delays while waiting to be seen by doctors and delays in receiving healthcare appointments. The growing numbers of adults with obesity and the potential public health impact of this epidemic mandate an examination of self-reported experiences in health care among adults with obesity using national data (The Stigma 2015; Fruh et al. 2016; Puhl and Heuer 2009).

Based on this literature, we hypothesize that adults with obesity will report greater barriers to health care utilization compared to those without obesity in a national sample, independent of serious psychological distress (SPD) and chronic health conditions. Critical to our analysis is the independent effects of SPD on self-reported barriers to health care utilization in adults with obesity.

Serious psychological distress, a negative emotional state indicative of mental illness, may impact perceptions about the quality of health care (Kessler et al. 2003; Weissman et al. 2015). Serious psychological distress is more prevalent in adults with obesity compared to adults without obesity (Locatelli et al. 2017). Additionally, adults with obesity are at increased risk for multiple chronic health conditions. It is possible that these comorbidities may impact on the frequency and need for health care. Thus, any analysis comparing self-reported healthcare experiences among adults with and without obesity must take into account these health conditions.

Methods

Data Source and Analytic Sample

Data from 2006 to 2015 National Health Interview Survey (NHIS) were used for this analysis. NHIS survey data are collected by the Centers for Disease Control and Prevention (CDC) National Center for Health Statistics (NCHS) and includes information through in-person home-based interviews of a randomly selected consenting adult (Botman et al. 2000). The NHIS yields estimates representative of the civilian non-institutionalized US population (Parsons et al. 2014). IRB approval was not required because the data are de-identified and publicly available. We combined responses across 2006–2015 to ensure ample statistical power (Zeng et al. 2013). Our sample was adults aged 18 to 64 years. Adults aged 65 years and older were excluded because of Medicare, government insurance available to older adults but is not universally available to younger adults.

Obesity, Healthcare Access, and Utilization Indicators

Obesity is defined as having a body mass index (BMI) greater or equal to 30 kg/m^2 of height (meters) (The Stigma 2015). We herein referred to BMI without units. We compared adults without obesity who had a BMI of <30 to those with obesity having a BMI of ≥ 30 . Private insurance was defined as coverage through employer(s), union(s), or purchase. Public insurance was defined as Medicaid insurance plans. Persons without private or public insurance were considered uninsured (Locatelli et al. 2017). Some adults had both private and Medicaid coverage. A variable called Health Coverage Type grouped insurance coverage as Medicaid, Private Insurance, Medicaid and Private Insurance, and No Coverage. We referred to health insurance coverage (health coverage) as an access indicator, distinguished from the following utilization indicators: (1) Does not have a doctor because he/she does not need one; (2) Waited too long in the doctor's office; (3) More than one year since having seen a health care professional; (4) Could not get an appointment soon enough; and (5) Saw a doctor ten times or more in the last 12 months.

We selected the above indicators because they tapped into the potential impact of obesity on the healthcare treatment of adults; and logistical hurdles that may make seeking treatment difficult for adults with obesity (indicators 2–5); and demonstrated possible ambivalence toward seeking health care in the doctor/patient relationship (indicator 1).

Chronic Health Conditions

The number of chronic health conditions (0, 1, and 2 or more) included chronic obstructive pulmonary disease (COPD), diabetes, heart disease, stroke, and cancer (Ward et al. 2014). Respondents were asked if they had been told by a health professional they had coronary heart disease, angina, a heart attack or other heart conditions, diabetes, and stroke. Cancer was based on questions about being told they had a malignancy excluding non-melanoma skin cancer (Buchanan et al. 1992). COPD was based on questions about being told they had emphysema or in the past 12 months, had chronic bronchitis. There were relatively little missing data across indicators of chronic conditions: heart disease ($n=2$), diabetes ($n=13$), COPD ($n=2$), stroke ($n=22$). Records with missing data were excluded in multivariable analyses but retained in the overall study population.

Serious Psychological Distress

Serious psychological distress is determined by a validated scale (Kessler K6), which is used to identify persons with a high likelihood of a diagnosable mental health problem severe enough to cause moderate to serious impairment in social, occupational, or school functioning requiring treatment (Kessler et al. 2003; Weissman et al. 2015). The K6 asks respondents during the PAST 30 DAYS, how often did you feel... So sad that nothing could cheer you up; Nervous; Restless or fidgety; Hopeless; that everything was an effort; and Worthless. The following options are given for describing frequency: ALL of the time; MOST of the time; SOME of the time; A LITTLE of the time; and NONE of the time. We reversed coding so that 'none of the time' was scored as 0 and 'all of the time' was scored as 4, with a total possible score from 0 to 24. A score of 13 or above is a validated cut-point for distinguishing adults with probable serious mental illness, and was used to code those scoring at or above this point as 1 for serious psychological distress; lower scores were coded 0 (Kessler et al. 2003; Weissman et al. 2015).

Demographic Characteristics

Race/ethnicity was categorized as Hispanic, white, black, and all other race/ethnicities. Annual family income was grouped by poverty index ratio (PIR): below 100% of federal poverty level (FPL), 100–199% of FPL, 200–399% of FPL, and 400% or more of FPL (Lofquist et al. 2012; Schenker et al. 2008). Poverty-level percentage was based on imputed family income, the number of children in the family, and the age of the family adults (Lofquist et al. 2012; Schenker et al. 2008). NHIS multiple

imputation files included income levels with missing data (Schenker et al. 2008). Education was not included in final models because of its significant correlation with PIR ($P < 0.0001$) and because income has been found to be a better predictor of disease progression (Herd et al. 2007). Region of respondent's residence at the time of the interview was included as North East, Midwest, South, and West.

Statistical Analysis

Point estimates and 95% confidence intervals were calculated using SUDAAN (SUDAAN (Release 10.0) 2008). Categorical variables were evaluated using Rao Scott χ^2 statistics for weighted surveys; alpha (α) < 0.05 level (two-sided). Multivariable logistic regression models examined associations with each of the five utilization indicators as dependent variables in separate models. All models were adjusted for obesity, serious psychological distress, sex, chronic health conditions, age group, PIR, type of health coverage, and survey year.

Results

The analytic sample included 233,147 sample adults with and without obesity; reflecting a population of 318,234,448 adults nation-wide. The sample included 74,598 adults who had obesity (31.2% CI 30.9–31.5%) of mean age 40.4 years (SD = 13.2 years) (range 18–64 years). The prevalence of serious psychological distress was relatively low (range 1.1 to 2.4%) among Asian Indian, Chinese, Filipinos, Koreans, Vietnamese, Japanese, and other Asian subgroups suggesting that the rates may be unreliable and limiting our ability to analyze them separately. The sample was approximately half female (50.7% CI 50.5–51.0%), and was mostly white (66.0% CI 65.4–66.7%), followed by Hispanic (15.9% CI 15.4–16.4%), and black (12.6% CI 12.2–13.1%). Among adults with obesity aged 45 years and older who reported no need for a doctor, 29.5% (CI 28.9–30.2%) also reported having two or more chronic health conditions and 34.0% (CI 34.1–35.4%) reported at least one chronic health condition, with only 35.6% (CI 34.8–36.3%) reporting no chronic health conditions.

Among adults with obesity, the greatest proportion were white (64.2% CI 63.3–65.0%) (Table 1). About 4.6% (CI 4.3–4.8%) of adults with obesity reported having SPD, a significantly greater proportion than those without obesity (2.9% CI 2.7–3.0%) (Table 1). Among adults with SPD, the majority were in the younger age group (52.3% CI 51.7–52.9%), were white (64.2% CI 63.3–65.0%), visited doctor's offices for medical appointments (72.8% CI 72.0–73.5%), and had private coverage (67.3% CI 66.6–68.0%). The greatest proportion of adults with obesity had some college (32.6% CI 32.1–33.2%), followed by high school graduation (29.4% CI 28.9–29.9%), and were in the highest income group (34.5% CI 33.8–35.2%) (Table 1). We examined interactions between sex, obesity, and each of the utilization indicators. Results from these analyses revealed that females with obesity were more

likely to report no need for a doctor, and to have seen a doctor ten times or more in the last 12 months compared to males with obesity ($P < 0.0001$ for both utilization indicators). Further, men with obesity were more likely to self-report going a year or more since having seen a doctor compared to females with obesity ($P < 0.0001$).

Multivariable regression results (Table 2) indicated that compared to adults without obesity, adults with obesity had greater odds of reporting not needing a doctor, waiting too long in a doctor's office, changing their usual place of care, not getting an appointment soon enough, and seeing a doctor 10 or more times in the last 12 months. However, the measures of effect were slightly over significance ($P < 0.05$) (Table 2). Adults with obesity also had lower odds of reporting waiting more than a year since seeing a doctor compared to adults without obesity ($P < 0.0001$) (Table 2). Also as shown in Table 2, women had greater odds than men of self-reporting waiting too long in a doctor's office, changing their usual place of care, not getting an appointment soon enough, and seeing a doctor 10 or more times in the last 12 months. However, women had lower odds than men of waiting a year or more to see the doctor.

Discussion

The major findings of our study were that adults with obesity compared to adults without obesity reported waiting too long in a doctor's office and not getting a doctor's appointment soon enough. These findings suggest that adults with obesity compared to adults without obesity may be experiencing more hurdles toward receiving health care. Our analysis also took account of SPD, which has been shown to be related to both health care disparities and obesity. By accounting for SPD, we demonstrated that self-reported barriers to healthcare among adults with obesity were not fully explained by poor mental health alone (Hilbert et al. 2014). Moreover, the hurdles reported by adults with obesity were independent of sociodemographic characteristics, as adults with obesity were predominantly white and affluent group and tended to have access to medical care through private insurance (Manuel 2017). Typically, white affluent patients with private health care do not have the degree of logistical hurdles to care faced by other disparate groups (Manuel 2017; Chen et al. 2016). Adults with obesity are more likely than adults without obesity to be poor, black, or Hispanic (Ogden et al. 2015).

Paradoxically, a subgroup of adults with obesity was more likely to have seen a doctor 10 or more times in the last 12 months and less likely to have gone a year without seeing a doctor compared to adults without obesity. However, adults with obesity were significantly more likely to report that they did not see a doctor because they did not need a doctor. Ambivalence toward health care providers and the providers' relationship may be expressed by their self-reporting that they do not need a doctor. Our finding that well over half of older obese adults who reported no need for a doctor nonetheless had one or two or more chronic health conditions, suggests that their actual health status is contrary to their stated view. Recent research has shown that adults with obesity can lose confidence in their providers if the provider is ambivalent about treating adults with obesity (Henderson 2015; Sutcliffe et al. 2018). Our study validates findings that when adults with obesity lose confidence in their provider they can have a growing sense of futility (Henderson 2015; Sutcliffe

et al. 2018). Although we are unable to measure the feelings about providers among adults with obesity, future research may seek to explore these social interactions using primary collected data.

Women with obesity were less likely to express that they did not need a doctor, yet were also less likely to have seen a doctor in a year compared to men with obesity. Our study validates earlier reports that women experienced greater difficulties in receiving care compared to men. A study gauging the perceptions of women concluded that an increase in BMI is associated with an increase in the delay and avoidance of healthcare (Drury et al. 2002). Women have historically faced greater disparities in receiving care compared to men including decreased health care access and greater delays in care (Kent et al. 2012).

We caution that our findings are preliminary. Future research may want to investigate self-reported beliefs and views of obesity among health care providers and staff, to determine if their views are associated directly with the logistical hurdles experienced by adults with obesity. Cross-sectional survey data prohibit making any causal inferences. Our study was also limited in that we had to rely on BMI, based on survey data, and did not have other measure of obesity such as girth size or sum of skin folds. Qualitative data from adults with obesity and providers about utilization would also have furthered this analysis to understand beliefs, but was unavailable. Study strength is the use of SPD and other chronic health conditions as controls, and the NHIS survey, which provided a broad population-based sample, necessary to update national access and utilization patterns in adults with obesity.

Conclusion

Our study highlights the novel finding that adults with obesity may face logistical hurdles when seeking health care compared to adults without obesity. These logistical hurdles may occur due to hurdles to access providers or hurdles in place from providers' staff in accessing providers. Future research can inform as to how these hurdles occur and the best means to educate against these hurdles.

Author Contributions All authors provided (1) substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data for the article; (2) drafting of the article or reviewing it and revising it critically for important intellectual content; and (3) final approval of the version to be published.

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Compliance with Ethical Standards

Conflict of interest No authors had a conflict of interest in the production of this manuscript.

Appendix

See Tables 1 and 2, Figs. 1, 2, and 3.

Table 1 Sociodemographic variables, type of health coverage, survey year, and utilization indicators in adults with obesity aged 18 to 64 years in the United States, NHIS: 2006–2015

Characteristic	Less than 30 Body Mass Index (Weighted percent) (Confidence interval)	Greater than or equal to 30 Body Mass Index	Rao Scott χ^2 P value
Overall	31.2% (30.9–31.5)	68.7% (68.4–69.0%)	
Serious psychological distress	4.6% (4.3–4.8%)	2.9% (2.7–3.0%)	<0.0001
Age group in years			
18–44	52.3% (51.7–52.9%)	60.8% (60.3–61.3%)	<0.0001
45–64	47.6% (47.0–48.2%)	39.1% (38.6–39.6%)	
Race/ethnicity			
Hispanic	17.2% (16.5–17.9%)	15.3% (14.8–15.7%)	<0.0001
White	64.2% (63.3–65.0%)	66.9% (66.2–67.5%)	
Black	16.4% (15.8–17.1%)	10.9% (10.5–11.3%)	
Education level			
No high school diploma	14.6% (14.1–15.0%)	11.7% (11.4–12.1%)	<0.0001
High school graduate	29.4% (28.9–29.9%)	23.8% (23.4–24.3%)	
Some college	32.6% (32.1–33.2%)	28.7% (28.2–29.1%)	
College degree and more	23.2% (22.7–23.8%)	35.6% (34.9–36.2%)	
Chronic health conditions			
Heart disease	10.1% (9.8–10.4%)	6.3% (6.2–6.5%)	<0.0001
Diabetes	12.6% (12.3–12.9%)	3.6% (3.4–3.7%)	<0.0001
Cancer	4.3% (4.1–4.5%)	3.2% (3.1–3.4%)	
COPD	6.2% (5.9–6.4%)	3.3% (3.2–3.5%)	
Stroke	2.0% (1.9–2.1%)	1.1% (1.1–1.2%)	<0.0001
Poverty Index Ratio*			
Less than 100% of the Federal Poverty Line	15.1% (14.7–15.5%)	13.2% (12.7–13.6%)	<0.0001
100 to 199% of the Federal Poverty Line	19.6% (19.2–20.1%)	16.8% (16.5–17.1%)	

Table 1 (continued)

Characteristic	Less than 30 Body Mass Index (Weighted percent) (Confidence interval)	Greater than or equal to 30 Body Mass Index	Rao Scott χ^2 <i>P</i> value
200 to 399% of the Federal Poverty Line	30.5% (30.1–31.0%)	28.6% (28.2–29.0%)	
400% or More of the Federal Poverty Line	34.5% (33.8–35.2%)	41.3% (40.5–42.0%)	
Place of healthcare			
Clinic	22.3% (21.6–23.0%)	21.1% (20.5–21.6%)	<0.0001
Doctor's office	72.8% (72.0–73.5%)	73.9% (73.3–74.4%)	
Emergency room	1.5% (1.4–1.6%)	1.3% (1.3–1.4%)	
Outpatient department	1.4% (1.3–1.6%)	1.3% (1.2–1.4%)	
Some other place	0.93% (84–1.0%)	1.1% (1.0–1.2%)	
Doesn't go to one place most often	0.91% (79–1.0%)	1.0% (1.0–1.1%)	
Healthcare type			
No coverage	20.6% (20.1–21.1%)	20.3% (19.9–20.7%)	<0.0001
Medicaid	11.6% (11.2–12.1%)	7.8% (7.5–8.1%)	
Private insurance	67.3% (66.6–68.0%)	71.5% (70.9–72.0%)	
Medicaid and private insurance	0.35% (0.29–0.40%)		
Health care utilization indicators			
A year since having seen a doctor	18.5% (18.1–18.9%)	20.5% (20.5–20.8%)	<0.0001
Does not have a doctor—does not need one	84.8% (84.4–85.2%)	81.1% (80.7–81.5%)	<0.0001
Could not get an appointment soon enough	6.7% (6.5–7.0%)	5.6% (5.4–5.7%)	<0.0001
Waited too long in the doctor's office	5.2% (5.0–5.4%)	4.2% (4.0–4.3%)	<0.0001
Saw a doctor ten times or more in the last 12 months	14.1% (13.7–14.4%)	9.1% (8.9–9.3%)	<0.0001

Table 2 Associations from five multivariate models the health care utilization indicators: does not have a doctor, does not need one, waited too long the doctor's office, a year since having seen a doctor, could not get an appointment soon enough, saw a doctor 10 times in the last 12 months and obesity adjusting for chronic health conditions and sociodemographic characteristics among adults age 18 to 64 years of age: NHIS 2006–2015

	Does not have a doctor— does not need one	Waited too long in the doctor's office	A year since having seen a doctor	Could not get an appoint- ment soon enough	Saw a doctor 10 times in the last 12 months
Obesity	1.2 (1.1–1.2)***	1.0 (1.0–1.1)*	0.94 (0.91–0.97)**	1.0 (1.0–1.1)*	1.2 (1.2–1.3)***
Serious psychological distress	0.94 (0.86–1.0)	2.6 (2.3–2.8)***	0.67 (0.61–.74)***	2.8 (2.5–3.1)***	3.2 (3.0–3.5)***
Female (reference: male)	2.0 (1.9–2.1)***	1.2 (1.0–1.3)***	0.41 (.39–.42)***	1.5 (1.4–1.6)***	1.7 (1.6–1.8)***
Hispanic (reference: white)	0.82 (0.78–.86)***	1.8 (1.7–2.0)***	1.2 (1.1–1.2)***	1.1 (0.95–1.3)	0.66 (0.62–0.70)***
Black	1.1 (1.0–1.2)***	1.4 (1.3–1.5)***	0.93 (0.89–.97)**	1.0 (0.96–1.1)	0.74 (0.70–0.78)***
45 to 64 years (reference: 18–44 years)	1.8 (1.7–1.8)***	1.0 (0.98–1.1)	0.82 (0.79–.85)***	0.87 (0.83–0.91)	1.1 (1.1–1.1)***
PIR < 100% (reference: 400% or more of the Federal Poverty Line)	0.53 (0.50–0.56)***	1.2 (1.1–1.3)***	1.5 (1.4–1.6)***	0.98 (0.90–1.0)	1.0 (1.0–1.1)*
100–199% of the Federal Poverty Line	0.59 (0.56–0.62)***	1.1 (1.0–1.2)**	1.5 (1.4–1.6)***	0.92 (0.85–1.0)	1.0 (0.96–1.0)
200–399% of The Federal Poverty Line	0.72 (.69–0.75)***	1.0 (0.98–1.1)	1.3 (1.3–1.4)***	0.91 (0.86–0.97)	0.98 (0.93–1.0)
No health coverage	0.14 (0.13–0.15)***	1.1 (1.1–1.2)***	3.4 (3.3–3.5)***	0.77 (0.72–0.83)***	0.51 (0.48–0.55)***
Medicaid (reference: private insurance)	1.1 (1.0–1.2)***	1.4 (1.3–1.6)***	0.77 (0.72–0.82)***	1.3 (0.96–2.0)***	2.0 (1.9–2.2)***
Private insurance and Medicaid	2.0 (1.1–3.4)**	1.5 (1.0–2.2)**	0.49 (0.32–0.74)***	0.99 (0.98–1.0)	2.9 (2.2–3.9)***
Heart disease	1.3 (1.2–1.5)***	1.4 (1.3–1.6)***	0.53 (0.49–0.57)***	1.7 (1.5–1.8)***	2.1 (2.0–2.3)
Diabetes	2.4 (2.2–2.7)***	1.8 (1.6–2.0)*	0.25 (0.23–0.27)***	1.2 (1.1–1.3)***	2.2 (2.1–2.4)
Cancer	1.3 (1.2–1.5)***	1.4 (1.2–1.3)***	0.49 (0.44–0.56)***	1.2 (1.0–1.3)***	2.8 (2.6–3.0)
Chronic obstructive pulmonary Disease	1.4 (1.2–1.5)***	1.8 (1.6–2.0)***	0.45 (0.39–0.51)***	1.8 (1.6–2.0)*	2.0 (1–2.1)
Stroke	1.5 (1.3–1.9)***	1.2 (1.0–1.4)*	0.55 (0.46–0.67)***	1.1 (0.95–1.3)	2.0 (1.8–2.1)
Survey Year (reference: 2006)	0.99 (0.98–1.0)*	0.95 (.94–0.96)***	0.99 (0.99–1.0)	0.99 (0.98–0.99)*	0.98 (0.97–0.99)***

*The reference level for obesity and the utilization indicators was their absence

^bIndependent variables included obesity, chronic health conditions, serious psychological distress, sex, race/ethnicity, poverty index ratio, and survey year

* $P \leq 0.05$

** $P < 0.001$

*** $P < 0.0001$

Fig. 1 Percent of adults by sex and obesity who self-report no need to see a doctor. *Significant difference between men and women obese and not obese ($P < 0.0001$)

Fig. 2 Percent of adults by sex and obesity who self-report having seen a doctor 10 times or more in the last 12 months. *Significant difference between men and women obese and not obese ($P < 0.0001$)

Fig. 3 Percent of adults by sex and obesity who self-report a year since seeing a doctor. *Significant difference between men and women obese and not obese ($P < 0.0001$)

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