Contraception

Original research article

Weight and body mass index among female contraceptive clients

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Abstract

Objectives: As obesity may affect the efficacy of some contraceptives, we examined weight, body mass index (BMI) and prevalence of obesity among female contraceptive clients at 231 U.S. health centers. A secondary aim was to analyze differences in contraceptive method use by obesity status.

Study design: Cross-sectional study using de-identified electronic health record data from family planning centers. We analyzed contraceptive visits made by 147,336 females aged 15–44 years in 2013.

Results: A total of 46.1% of clients had BMI ≥ 25. Mean body weight was 154.4 lb (S.D.=41.9); mean BMI was 26.1 (S.D.=6.6). A total of 40% had BMI ≥ 26, when levonorgestrel emergency contraception may become less effective. Obese clients had higher odds of using a tier 1 or tier 3 contraceptive method and had lower odds of using a tier 2 or hormonal method than non-obese clients.

Conclusions: About half of contraceptive clients would be categorized as overweight or obese. Contraceptive method choices differed by obesity status.

Implications: About half of contraceptive clients in this study population were overweight or obese. Contraceptive method choices differed by obesity status. All women — regardless of body size — should receive unbiased, evidence-based counseling on the full range of contraceptive options so that they can make informed choices.

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1. Introduction

Concerns have developed about the relationship of body weight and body mass index (BMI) to contraceptive efficacy given the high national rates of obesity and results of contraceptive clinical trials [1,2]. These concerns have been heightened by new evidence related to weight and emergency contraception [3–5]. National survey data demonstrate that 58.5% of U.S. women ages 20–39 years are overweight or obese [6]. Little is known about weight and BMI among contraceptive-seeking women outside of clinical trials, yet it is important that providers deliver contraceptive counseling that incorporates the best available evidence. The objective of this study was to examine weight, BMI and prevalence of obesity among female contraceptive clients at 231 U.S. health centers.

A secondary aim was to analyze differences in contraceptive method use by obesity status.

2. Materials and methods

We analyzed de-identified, electronic health record (EHR) data from a subset of Planned Parenthood affiliates using a common customized system — the Voxent EHR Framework™. Individual health centers varied in the length of time they had been using the system; some had been fully live on EHR for 3 or more years while others had implemented the system recently in 2013. The analysis was restricted to encounters in 2013 for nonpregnant females ages 15–44 years with a primary *International Classification of Diseases, Ninth Revision* diagnostic code for contraceptive counseling or services (i.e., V25.xx). Variables included age, weight, height, BMI, race/ethnicity and ending birth control method.

Data for weight and BMI were analyzed as entered in the EHR. The system is designed to autocalculate BMI from weight and height fields; however, some users could override

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these fields to enter a BMI manually without entering a height and/or weight value. Individual health centers vary in their reliance on self-reported weight and height values. While some clinical encounters may include height and weight measurements, others document client self-reported weight and height.

There were a number of missing and improbable values for weight and BMI. Of 188,023 initial extracted encounters, a total of 1071 had no value for weight and 14,505 had no value for BMI. Given the distribution of our study population, we removed outliers such that values accounting for less than 1% of the population at either tail were set to missing, including erroneous weights such as 24 or 999 lb. This resulted in a possible range of 75–400 lb and removal of 3262 weight values prior to analysis. Similar restrictions were applied to BMI, resulting in a possible BMI range of 15–59 and removal of 4651 BMI values.

These restrictions afforded us increased confidence in the accuracy of the final analytic dataset and did not substantially alter the study population means. Finally, the dataset was transformed to represent unique patients. If a woman made multiple visits during the year, only her first encounter was included in the analytic dataset, and any remaining encounters were dropped to avoid overrepresenting patients with multiple visits.

We used the World Health Organization obesity classification for adults [7]. Standard descriptive statistics and crude prevalence estimates were calculated. To assess the associations between demographic factors and weight and BMI, we constructed bivariate and multivariable regression models for four outcomes: weight (continuous), BMI (continuous), overweight (dichotomous) and obese (dichotomous). Last, we constructed bivariate and multivariable logistic regression models to assess the associations between obesity status and contraceptive method, including contraceptive method type

and tier of effectiveness. We adjusted for race/ethnicity and age in all multivariable models. All analyses were conducted using SPSS 21.0 (IBM, Armonk, NY). The research was approved by Chesapeake Institutional Review Board.

3. Results

Data on 147,336 contraceptive visits from 2013 were available for analysis, representing 147,336 females ages 15–44 years. This included encounters from 18 Planned Parenthood affiliates, including 231 health centers spanning 21 states. Approximately half were Title X centers.

The mean age was 24.9 years (median=24.0; S.D.=6.3). Body weight ranged from 75 to 400 lb with a mean of 154.4 (median=145.0; S.D.=41.9). BMI ranged from 15 to 59 with a mean of 26.1 (median=24.3; S.D.=6.6). Mean body weight and BMI are presented by selected demographics in Table 1. Weight and BMI increased with age, such that older women had higher body weight and BMI, on average. Non-Hispanic black women had the highest mean weight and BMI and Asian/Pacific Islanders had the lowest. Weight and BMI were highest at health centers located in the South and Midwest and were lowest in the Northeast (Table 1). These patterns remained similar in linear (weight and BMI) and logistic (overweight and obesity) regression analyses adjusting for age, race/ethnicity and health center region (data not shown).

Crude estimates of overweight and obesity prevalence for the study population are also presented in Table 1. Overall, 46.1% of the population would be categorized as overweight (23.9%) or obese (22.2%). Removing adolescents (ages 15–19 years) from the analysis slightly increased the mean weight and BMI (157.3 and 26.5, respectively) and the percent who would be categorized as overweight or obese (49.2%) (data not shown).

Table 1
Weight, BMI and crude prevalence estimates by demographics (*N*=147,336 clients)

	Percent	*N* (clients)	Weight (lb), mean (S.D.)	BMI, mean (S.D.)	Percent BMI 25–29.9	Percent BMI ≥30
Total sample	100.0	147,336	154.4 (41.9)	26.1 (6.6)	23.9	22.2
Age						
15–19 years	21.4	31,599	143.6 (35.6)	24.5 (5.6)	20.8	14.5
20–24 years	31.9	46,954	151.7 (40.1)	25.7 (6.3)	23.3	20.1
25–29 years	24.9	36,650	157.4 (42.8)	26.5 (6.7)	24.8	23.9
30–34 years	12.7	18,784	163.6 (45.4)	27.5 (7.1)	26.5	29.4
35–39 years	5.9	8638	167.9 (47.1)	28.3 (7.3)	27.6	33.8
40–44 years	3.2	4711	169.1 (46.7)	28.5 (7.1)	29.1	34.8
Race/ethnicity						
Asian/Pacific Islander	3.8	3836	131.6 (29.2)	23.4 (4.7)	17.9	9.2
Black	9.6	9706	164.5 (47.8)	27.7 (7.4)	26.2	31.2
Hispanic	21.9	22,003	153.1 (39.8)	27.0 (6.5)	28.5	26.8
White	55.5	55,894	153.6 (40.1)	25.6 (6.3)	22.4	19.6
Multiracial/other	9.2	9230	155.6 (43.4)	26.4 (6.8)	23.9	24.0
Region						
Northeast	5.9	8696	151.9 (40.8)	25.8 (6.4)	22.7	20.1
Midwest	39.5	58,187	155.5 (42.5)	26.2 (6.6)	24.0	22.9
South	14.0	20,593	155.5 (42.8)	26.6 (6.8)	25.1	24.9
West	40.6	59,860	153.3 (41.2)	25.9 (6.4)	23.6	21.0

Note: While BMI for children and teens is calculated the same way as for adults, the categories are interpreted slightly differently.