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Differences in pelvic floor symptoms during pregnancy between Hispanic and non-Hispanic Caucasian women

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Abstract

Objectives—To describe and compare pelvic floor symptoms and symptom burden between nulliparous Hispanic and non-Hispanic Caucasian women in the third trimester of pregnancy and to determine, in women with stress urinary incontinence (SUI), whether bother differs between groups, adjusted for urinary incontinence severity.

Methods—In this cross-sectional analysis, participants completed the Epidemiology of Prolapse and Incontinence (EPIQ) and Incontinence Severity Index (ISI) questionnaires. We compared differences in symptom domains between groups using logistic regression and tested the effect of ethnicity on bother in women with SUI using linear regression.

Results—The sample comprised 418 non-Hispanic Caucasian and 154 Hispanic women. Prevalence rates of symptom domains ranged from 5.0% and 7.1% for pelvic organ prolapse to 95.2%and 94.2% for overactive bladder in non-Hispanic Caucasian and Hispanic women, respectively. After adjusting age, height, weight, education, physical activity, and gestational age, non-Hispanic Caucasians had 2.37-fold increased odds (95% CI 1.44, 3.92) for defecatory

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CONFLICTS OF INTEREST
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dysfunction and had non-significant increases in other symptom domains. Non-Hispanic Caucasians were more likely to endorse symptoms in ≥ 3 domains than Hispanic women (58.9% vs 40.3%, respectively; p = 0.0001). Given the same UI severity (ISI), Hispanic women with SUI reported 7.5 points greater bother (EPIQ) than non-Hispanic Caucasian women (p=0.07).

Conclusions—After adjustment, we found few differences in the prevalence of pelvic floor symptom domains between Hispanic and non-Hispanic Caucasian women, apart from defecatory dysfunction. If differences by ethnicity in other pelvic floor symptoms exist, they do not appear to originate during the first pregnancy.

IN BRIEF

Non-Hispanic Caucasian nulliparas had higher adjusted odds of endorsing defecation dysfunction, and non-significantly higher odds of symptoms in other pelvic floor domains than Hispanic nulliparas.

Keywords

Pelvic organ prolapse; pelvic floor disorders; urinary incontinence; ethnicity; health disparities

Introduction

Ethnic disparities related to pelvic floor disorders have not been thoroughly investigated. Some data suggests that Hispanic women are at greater risk for urinary incontinence[1,2,3] and overactive bladder[4]; more likely to report symptomatic prolapse[3,5,6], and more likely to report greater bother, given the same stage (II) of prolapse[7]. However, other studies have found fecal incontinence, bladder symptoms and bother to be similar among ethnic groups[8,9,10], while some studies have found that Hispanic women have a lower prevalence of urinary incontinence than Caucasian women[11–13] and increased odds of stress incontinence remission[14]. Nonetheless, after adjusting for potential confounders, Latinas experienced higher barriers to seeking care for urinary incontinence than did white or black women[15], as well as barriers to understanding information about pelvic floor disorders[16].

Many nulliparous women first notice pelvic floor symptoms during pregnancy. In a study of first-time mothers with postpartum anal incontinence, most developed the condition during pregnancy and not after delivery[17]. Urinary incontinence during pregnancy increases the risk of postpartum urinary incontinence, which increases the risk of urinary incontinence later in life[18,19]. The prevalence of lower urinary tract symptoms increases over the course of pregnancy[20], with the pathophysiology of stress urinary incontinence and pelvic floor symptoms related to both anatomical and hormonal changes induced by pregnancy[21,22]. Few studies have investigated the full scope of pelvic floor symptoms during pregnancy and most focus on only one type of symptom, generally urinary incontinence. Durnea et. al.[23] found that 58% of nulliparous women reported at least one pelvic floor symptom at 15 weeks gestation, while Rogers et al found that two-thirds of nulliparous women reported urinary incontinence and anal incontinence in the third trimester[24].

Given that the first pregnancy may play an important role in future pelvic floor health, and given that Hispanic women may be at greater risk for pelvic floor disorders, understanding

whether this disparity begins in the first pregnancy can inform focused prevention efforts. This study addresses that gap with 4 key aims that describe and compare symptoms among nulliparous Hispanic and non-Hispanic Caucasian women in the third trimester of pregnancy: 1) To describe prevalence rates during pregnancy of pelvic floor symptoms and symptom bother in the two groups; 2) To compare differences in symptomatic domains between groups, and to determine whether differences (if found) remain after adjustment for imbalances of other demographics between the study groups; 3) To determine, in women with stress urinary incontinence whether degree of bother differs between groups, adjusted for urinary incontinence severity; and 4) To compare symptom burden, reflected by number of affected symptom domains, between groups.

Methods

Participants for this analysis were drawn from the ongoing cohort study, “Bridging physical and cultural determinants of postpartum pelvic floor support and symptoms following vaginal delivery Bridging physical and cultural determinants of postpartum pelvic floor support and symptoms following vaginal delivery”. Methods for the overall study have been reported[25]. This parent study enrolls nulliparous English- or Spanish-speaking women in the third trimester and follows those that deliver vaginally for one year postpartum. Women were excluded from the parent study if they were unable to walk independently before pregnancy without aids, had major medical problems precluding physical activity, had connective tissue disorders such as Marfan Syndrome, or were treated surgically for pelvic floor disorders before pregnancy. Women in the current analysis were enrolled at one of six sites in the Salt Lake Valley (3 university-affiliated clinics, 1 private practice, and 2 community health centers). The study was approved by the relevant IRBs and all participants completed informed consent.

We drew participants for the current cross-sectional study from the first 673 women enrolled in the parent study (between 9/1/15 to 7/25/17). Participants were asked to identify their race and ethnicity, using U.S. Census Bureau categories. Consistent with the U.S. Census Bureau, we grouped Hispanic women of all races together. From those that self-identified as non-Hispanic, we excluded women that were not Caucasian because of previous data suggesting differences between races in pelvic floor disorders[2,26,27] and because most of our non-Hispanic population was Caucasian, precluding further subgroup analyses by racial groups. We also excluded women that completed the third trimester enrollment questionnaire after delivery.

During the enrollment visit, height and weight were assessed without shoes by medical scale and wall stadiometer. Women completed a questionnaire using RedCAP[28] that elicited the following information pertinent to the current study: 1) pelvic floor symptoms, assessed using the Epidemiology of Prolapse and Incontinence Questionnaire (EPIQ)[29,30]; 2) urinary incontinence severity, assessed with the Incontinence Severity Index[31,32]; 3) physical activity category, assessed using the Rapid Assessment of Physical Activity (RAPA) questionnaire[33], 4) current work and 5) demographic information. The EPIQ (Spanish version available from the authors), Incontinence Severity Index[34] and RAPA[35] were previously validated in Spanish as well as English.

The EPIQ assesses symptoms in six domains. For each symptom endorsed, women reported bother from the symptom on a visual analogue scale ranging from 0 to 100 (with 100 being the greatest bother). We defined symptom burden according to the number of EPIQ domains in which women endorsed at least one symptom; thus, symptom burden ranged from 0 to 6 domains. The Incontinence Severity Index scoring system ranges from 0 to 12; scores of 3 or greater are consistent with moderate to severe UI based on pad testing and voiding diaries[31,32,36]. For the purposes of analyzing the association between symptom bother and symptom severity, we categorized women as having stress urinary incontinence (SUI) who had an Incontinence Severity Index score of > 0 and who responded 'yes' to the EPIQ SUI question, "Do you experience urine leakage related to activity, coughing, or sneezing?" That is, women needed to endorse incontinence both according to the Incontinence Severity Index to assess severity and according to the EPIQ to assess bother. The RAPA contains seven categories of physical activity ranging from rare or absent activity to 20 minutes or more per day of vigorous activity 3 or more days per week.

In considering our sample size calculation, we assumed that 80% of the population would be non-Hispanic Caucasian and 20% would be Hispanic. We considered six outcomes (each of the EPIQ domains): stress urinary incontinence (SUI), overactive bladder (OAB), anal incontinence (AI), vaginal bulge (POP), defecation dysfunction (DD) and voiding dysfunction/pelvic pain (PVD). Anticipating sparse cells for OAB (almost everyone would have it) and POP (only 5-10% would have it), we planned the study to detect an OR of 2, with alpha 0.0151 (using the Tukey-Ciminera-Heyse (TCH) method with Sankoh's correction[37], anticipating four correlated domains/endpoints with r=0.7.) We required beta of 0.2 and assumed 20-30% prevalence of symptoms in a given domain in non-Hispanic Caucasian women. Hence, we required a total sample of 550 (440 Caucasians and 110 Hispanic women.) This study would therefore not be powered to compare the prevalence of POP and OAB domains between groups. Additionally, given that the 6 domains together contain 14 symptoms, we *a priori* decided to provide descriptive statistics but not to conduct formal statistical tests comparing each of the symptoms between groups, to avoid drawing erroneous conclusions related to multiple comparisons. We used the conventional 5% significance levels to compare demographics between the two groups, and a 1.51% significance level (alpha 0.0151) for comparisons of symptom domains.

We analyzed continuous variables using independent samples t-tests, categorical variables using chi-square or Fisher's exact tests as appropriate, and differences in ISI scores using the Wilcoxon-Mann-Whitney test. We compared differences in symptom domains between groups using logistic regression, however, we did not test two domains: pelvic organ prolapse, because the number of women reporting this symptom was too small, and overactive bladder, because the number of women reporting at least one symptom in this domain was too large. In logistic regression models, we examined logit-linearity of continuous covariates by plotting coefficients of analysis using quartiles or quintiles and comparing models using the AIC[38]. To address potential imbalances between the two ethnic groups in other variables that might affect symptoms, we adjusted each model for age (continuous), weight (continuous for all models except SUI and categorized in quartiles for SUI because of non-linearity between weight and this outcome), height (continuous), estimated gestational age at time of questionnaire completion (continuous), education

(dichotomized as completed high school or less vs some college or more) and physical activity (dichotomized as sedentary plus underactive vs active). We chose not to use body mass index in the models because of the unclear meaning of this construct in pregnant women. We considered whether height modifies the association of weight with the outcomes by including a statistical interaction term; as the interaction between height and weight was not significant in any of the four models, we excluded it from the final models. We tested the effect of ethnicity on bother in women with SUI using linear regression. Sample size calculations were performed in PASS 11.0.8. Statistical analyses were conducted using SAS 9.4. All reported p-values are two-sided.

Results

661 of 673 consented participants completed the third trimester questionnaire, with 159 self-identifying as Hispanic and 502 as non-Hispanic. Of non-Hispanics, 425 identified as Caucasian only. Others were subsequently excluded (3 American Indian or Alaska Native, 33 Asian, 10 Black or African American, 8 Native Hawaiian or Pacific Islander, 4 who did not identify, and 19 who identified with more than 1 race). Twelve additional women were excluded because they completed the questionnaire on or after the date of delivery. The analytic sample thus comprised 572 women: 418 non-Hispanic Caucasian and 154 Hispanic. The mean gestational age at the time of questionnaire completion was 35.5 (SD 2.4) weeks and 34.1 (SD 2.4) weeks for Hispanic and non-Hispanic Caucasian women, respectively. The Hispanic and non-Hispanic Caucasian groups differed in several demographic factors, summarized in Table 1, including age, height, education, and work status, among other factors.

Table 2 summarizes, for descriptive purposes, prevalence estimates and median bother of individual pelvic floor symptoms in the third trimester, by ethnicity. Symptoms of overactive bladder, stress urinary incontinence, and defecation dysfunction were the most common symptoms in both groups. In general, women with particular symptoms characterized their bother for each individual symptom as around 50 (on scale of 100). In unadjusted analyses (Table 3), non-Hispanic Caucasian women were more likely to endorse symptoms in the anal incontinence and defecatory dysfunction domains. There were no significant differences between groups in the 4 other domains. After adjusting for age, height, weight, education, physical activity, and gestational age, non-Hispanic Caucasian women had 2.4 times increased odds (95% CI 1.4, 3.9) for defecation dysfunction. After adjustment, there were no statistically significant differences in the odds for SUI, pain and voiding dysfunction, or anal incontinence between groups (Table 3). We did not detect a statistical interaction between height and weight in any of the models, suggesting that the association of weight with stress urinary incontinence does not depend on height (therefore, both height and weight are included in each model).

In the four adjusted models, other than ethnicity, gestational age (OR 1.1 per week; 95% CI 1.02, 1.2) was significantly associated with pain/voiding dysfunction (but not the other domains). For example, for a 5-week difference in gestational age, the OR rises to 1.6. In the SUI model, women in the third quartile for weight had 1.7-fold (95% CI 1.01, 3.0) increased odds compared to women in the first quartile but odds were not significantly increased for

women in the second and fourth quartiles. Weight increased odds of the outcome non-significantly for the other domains.

More non-Hispanic Caucasian than Hispanic women reported stress urinary incontinence (189 of 414, 45.7% vs 48 of 153, 31.4%; p=0.002). Symptom severity was greater in the Hispanic group (mean ISI score 3.4 ± 2.26 vs 2.4 ± 1.44, p=0.007). Symptom bother according to the EPIQ visual analogue scale was also greater in the Hispanic group (67.1 ± 25.11 vs 52.7 ± 27.34; p=0.001). Given the same severity level, Hispanic women had a non-significant increase of about 7.5 points greater bother than non-Hispanic Caucasian women (p=0.07).

Almost all women reported experiencing pelvic floor symptoms, with only 1.6% of women reporting no symptom in any domain (Table 4). Approximately half of the women reported symptoms in 1 or 2 domains. Non-Hispanic Caucasian women were more likely to endorse symptoms in 3 or more domains compared to Hispanic women (58.9% vs 40.3%, respectively; p = 0.0001).

Discussion

Almost all women in our population reported at least one pelvic floor symptom during pregnancy. Bother associated with symptoms was also high, with about half of women reporting a bother score of at least 50 on a 0-100 scale for any given symptom. After adjusting for imbalances of other demographic factors in the two ethnic groups, only defecatory dysfunction differed significantly between Hispanic and non-Hispanic Caucasian women. The greater risk of pelvic floor disorders reported in some studies of middle-aged Hispanic women[1–7] was not apparent in our population of nulliparous pregnant women. In contrast, Hispanic women in our study were less likely to endorse symptoms in each of the tested domains (though statistically significant only for defecatory dysfunction) and were statistically significantly less likely to endorse symptoms in three or more domains compared to non-Hispanic Caucasian women.

Furthermore, Hispanic women in our population were not significantly more likely to report greater bother given the same severity of SUI, in contrast with Dunivan et al[7], who found that Hispanic women were more likely to report greater bother, given stage II pelvic organ prolapse.

Despite the near-ubiquity of pelvic floor symptoms during pregnancy, pregnant women often have limited knowledge about pelvic floor dysfunction, which calls for improved prenatal patient education[39]. Racial/ethnic disparities have been found in women's knowledge regarding risk factors and treatment for pelvic organ prolapse and urinary incontinence[40,41], and qualitative research suggests that Spanish-speaking women with low health literacy may face difficulty understanding pelvic floor disorders[16]. Socioeconomic status may affect not only health literacy, but also providers' willingness to discuss pelvic floor symptoms: a large observational cohort of women with at least weekly incontinence found that lower income was associated with decreased rates of patient-provider discussion[42]. Improving prenatal education about what to expect with pelvic floor dysfunction during pregnancy may improve

patients' experiences of their symptoms by decreasing anxiety about symptoms and thus potentially decreasing symptom bother.

It is possible that there is an anatomic reason underlying the difference in defecatory dysfunction associated with ethnicity that remained after adjusting for study group imbalances. For example, studies comparing black and white women have found pelvic floor physiological and anatomical differences, such as urethral closure pressures, associated with race [43,44], and it is possible that anatomic differences also underlie the difference we found between Hispanic and non-Hispanic Caucasian women. However, it is also possible that there are confounders influencing defecatory dysfunction not accounted for by our models, such as differences in diets. Furthermore, perhaps one group in our study under-endorsed symptoms for reasons other than the symptoms themselves, such as cultural differences, embarrassment, or lack of financial means to seek care for symptoms. Qualitative data suggests that Hispanic women may be more likely than others to keep symptoms of urinary incontinence a secret in public and expressed more enthusiasm for speaking with a Spanish-speaking clinician than with an English-speaking one through an interpreter[45]. However, a prior study suggests that bladder symptoms, bother, and willingness to report symptoms are similar among reproductive age women of different ethnicities in a community setting;[9] and with pelvic organ prolapse, both English-speaking and Spanish-speaking women can feel ashamed and uncomfortable speaking with clinicians about it[46].

Strengths of our study include using a validated questionnaire, reaching a high questionnaire completion rate, and collecting data that provide a well-rounded picture of pelvic floor symptoms across 6 symptomatic domains (rather than only urinary incontinence). Limitations of this study include the cross-sectional design, with its corresponding lack of prospective information about pelvic floor symptoms prior to pregnancy, and the lack of power to compare differences in each individual symptom's prevalence or to create models for pelvic organ prolapse and overactive bladder. While we adjusted for key demographic differences between groups, given the cross-sectional nature of the study, we did not adjust for all characteristics that differed; in particular, non-Hispanic Caucasian women were more likely to report performing pelvic floor muscle exercises (58% versus 37% in Hispanic women) but we could not ascertain whether this was done in an attempt to prevent symptoms or to treat symptoms. In addition, the symptom questionnaire reflects participants' subjective perceptions of their symptoms rather than objective measures of assessing symptoms; however, focusing on patients' perspectives enabled us to gain clinically important insights into how women experience their symptoms. We were able to assess the interaction between severity and bother only for SUI, as we did not collect validated severity indices for the other symptom domains.

Another key limitation is our recruitment of Hispanic and non-Hispanic Caucasian from different clinic settings, with most Hispanic participants recruited in community health clinics and most non-Hispanic Caucasian participants recruited in the university hospital setting. This discrepancy potentially introduces other study group imbalances not accounted for in our model; however, it represents what clinicians see in each type of clinical practice, as well as what patients in those practice types experience. Partly in response to this discrepancy, we included adjusted and unadjusted results in this paper, because while

adjusted results give insight into potential etiologic (such as anatomic) differences between our study groups, unadjusted results may better represent the burden of disease in our community and thus what patients and clinicians experience. A final, though unavoidable, limitation is that given the wide variety in ethnic backgrounds among populations in the United States, ethnic categories (including “Hispanic” and “non-Hispanic Caucasian”) are inherently oversimplified and do not describe the diversity they contain.

While symptoms of overactive bladder are a well-recognized hallmark of normal pregnancy, our study demonstrates that pregnant women also commonly experience and feel bothered by pelvic floor symptoms more broadly than overactive bladder, suggesting that a range of pelvic floor symptoms are also part of normal pregnancy. During prenatal care, we recommend that clinicians counsel their patients about pelvic floor symptoms, including symptoms their patients are already experiencing and those which they may encounter as their pregnancy progresses. These discussions will equip women to better anticipate and understand their symptoms, which may mitigate anxiety and symptom bother.

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Table 1

Participant characteristics

Characteristics	Hispanic (N=154)*	Non-Hispanic Caucasian (N=418)*	P-value
Age at questionnaire completion, years,			<.0001
Mean (SD)	24.24 (5.32)	29.25 (5.17)	
BMI, Mean (SD)	30.21 (5.33)	28.85 (5.38)	0.0075
Weight, pounds, Mean (SD)	170.34 (32.63)	175.73 (33.56)	0.0875
Height, inches, Mean (SD)	62.95 (2.94)	65.45 (2.67)	<.0001
Estimated gestational age at questionnaire completion, weeks, Mean (SD)	35.49 (2.37)	34.08 (2.41)	<.0001
Education, n(%)			<.0001
Less than 12th grade	14 (9.21)	6 (1.44)	
Completed high school or equivalent	54 (35.53)	28 (6.70)	
Some college/associate degree	39 (25.66)	86 (20.57)	
Completed 4 years of college	26 (17.11)	160 (38.28)	
Graduate or professional degree	19 (12.50)	138 (33.01)	
Missing	2	0	
Insurance type, n (%)			<.0001
None	66 (43.14)	7 (1.68)	
Medicaid/Medicare	31 (20.26)	40 (9.59)	
Private	56 (36.60)	366 (87.77)	
Other	0 (0)	4 (0.96)	
Missing	1	1	
Work Status, n (%)			<.0001
Working full-time (at least 30 hours per week)	47 (30.52)	303 (72.49)	
Working part-time (less than 30 hours per week)	19 (12.34)	43 (10.29)	
Other	88 (57.14)	72 (17.22)	
Heavy lifting or heavy work (total), n (%)	28 (18.18)	132 (31.58)	0.1154
Heavy lifting, pushing/pulling at work	7 (4.55)	54 (12.92)	
Heavy lifting, pushing/pulling not at work	26 (16.88)	119 (28.47)	
Urinary Incontinence before pregnancy, n (%)			0.3983
No (ISI score =0)	127 (83.01)	333 (79.86)	
Yes (ISI score ≥ 1)	26 (16.99)	84 (20.14)	
Missing	1	1	
ISI** score before pregnancy in women with UI, n (% of women with UI)			0.0104
1	12 (46.15)	56 (66.67)	
2	5 (19.23)	23 (27.38)	
3+	9 (34.62)	5 (5.95)	
Urinary Incontinence during pregnancy, n (%)			0.0252

Characteristics	Hispanic (N=154)*	Non-Hispanic Caucasian (N=418)*	P-value
No (ISI score =0)	77 (50.33)	165 (39.86)	
Yes (ISI score ≥ 1)	76 (49.67)	249 (60.14)	
Missing	1	4	
ISI** score during pregnancy in women with UI, n (% of women with UI)			0.0028
1	19 (25.00)	96 (38.55)	
2	18 (23.68)	74 (29.72)	
3+	39 (51.32)	79 (31.73)	
Physical activity (per RAPA**)			<.0001
Sedentary	5 (3.36)	0 (0)	
Under Active	79 (53.02)	166 (39.90)	
Active	65 (43.62)	250 (60.10)	
Missing	5	2	
Do pelvic floor muscle exercises, n (%)			<.0001
No	97 (62.99)	174 (41.63)	
Yes	57 (37.01)	244 (58.37)	
Urinary Tract Infection (UTI) during pregnancy, n (%)			0.0876
No	122 (79.74)	358 (85.65)	
Yes	31 (20.26)	60 (14.35)	
Missing	1	0	
Recurrent UTI before pregnancy, n (%)			0.8776
No	141 (91.56)	381 (91.15)	
Yes	13 (8.44)	37 (8.85)	
Diabetes (total), n (%)	11 (7.14)	12 (2.87)	0.0294
Diabetes: pre-existing	3	4	
Diabetes: gestational	8	8	
Lung disease/asthma, n (%)			0.0703
No	151 (98.05)	395 (94.50)	
Yes	3 (1.95)	23 (5.50)	
High blood pressure (total), n (%)	6 (3.92)	3 (0.72)	0.0136
High blood pressure: pre-existing	0 (0)	0 (0)	
High blood pressure: gestational	6 (100)	3 (100)	
Smoking, n (%)			0.0426
No	154 (100)	405 (97.12)	
Yes	0	12 (2.88)	
Missing	0	1	
Chronic cough, n(%)			0.9786
No	150 (97.40)	406 (97.36)	
Yes	4 (2.60)	11 (2.64)	

Characteristics	Hispanic (N=154)*	Non-Hispanic Caucasian (N=418)*	P-value
Missing	0	1	

*Missing values are not included in the denominator for the column percentages. If not specified, missing = 0.

**ISI=Incontinence Severity Index; RAPA=Rapid Assessment of Physical Activity

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Table 2

Prevalence rates of pelvic floor symptoms

EPIQ* Domain		Hispanic (N=154)		Non-Hispanic Caucasian (N=418)	
		N (%)	Median Bother (IQR) of those with symptom	N (%)	Median Bother (IQR) of those with symptom
Pelvic organ prolapse					
	Vaginal bulge	11 (7.14)	55 (33, 69)	21 (5.04)	38 (29, 55)
Stress urinary incontinence					
	UI**, cough stress	63 (40.91)	69.50 (49, 80)	213 (51.08)	55 (27, 71)
	UI, drops	72 (46.75)	55 (34, 71)	223 (53.48)	54 (25, 70)
Overactive bladder					
	Rush to bathroom	38 (24.68)	52 (33, 80)	62 (14.87)	49 (25, 69)
	Nocturia	134 (87.01)	57 (32, 78)	377 (90.19)	55 (24, 71.50)
	Urinary frequency	115 (74.68)	57 (30, 74)	270 (64.90)	51 (28, 65)
	Urgency UI	27 (17.53)	69.50 (53, 87)	36 (8.70)	64.50 (50, 80)
Pain/voiding dysfunction					
	Voiding Difficulty	13 (8.44)	60 (18, 75)	36 (8.63)	60 (32, 68)
	Pelvic/genital pain	40 (25.97)	65 (47, 72)	134 (32.13)	57 (29, 71)
Anal incontinence					
	Leakage of gas	23 (15.13)	61 (31, 80)	102 (24.52)	54 (29.50, 70)
	Leakage of loose stool	2 (1.32)	45.50 (25, 66)	11 (2.64)	81.50 (39, 90)
	Leakage of solid stool	1 (0.66)		0 (0)	
Defecating dysfunction					
	Difficulty with bowel movement	43 (27.92)	65.50 (39, 89)	230 (55.42)	51.50 (30, 65)
	Need to splint	17 (11.11)	65 (51, 80)	51 (12.26)	59.50 (27.50, 70)

*EPIQ=Epidemiology of Prolapse and Incontinence Questionnaire

**UI= Urinary incontinence

Table 3

Differences in symptom domains between groups

EPIQ* Domain	Hispanic, n (%)	Non-Hispanic Caucasian, n (%)	Unadjusted OR (95% CI) Hispanic = reference group	Adjusted OR (95% CI) Hispanic = reference group
Pelvic organ prolapse	11 (7.14)	21 (5.04)	0.69 (0.32, 1.47) p=0.3337	N/A p=NA
Stress urinary incontinence	85 (55.19)	261 (62.59)	1.36 (0.93, 1.98) p=0.1091	1.60 (0.98, 2.63) p=0.0630
Overactive bladder	145 (94.16)	398 (95.22)	1.24 (0.55, 2.78) p=0.6089	N/A
Pain/voiding dysfunction	48 (31.17)	152 (36.45)	1.27 (0.85, 1.88) p=0.2408	1.44 (0.86, 2.39) p=0.1660
Anal incontinence	25 (16.34)	110 (26.38)	1.84 (1.13, 2.97) p=0.0134	1.61 (0.88, 2.95) p=0.1234
Defecating dysfunction	49 (31.82)	242 (58.03)	2.96 (2.00, 4.38) p<0.0001	2.37 (1.44, 3.92) p=0.0008

*EPIQ=Epidemiology of Prolapse and Incontinence Questionnaire

**Adjusted for age, weight, height, estimated gestational age at time of questionnaire completion, education, and physical activity

Table 4

Symptom burden, reflected by number of affected EPIQ* domains

Number of EPIQ domains affected	Hispanic (N=154)	Non-Hispanic Caucasian (N=418)
0	4 (2.60)	5 (1.20)
1	26 (16.88)	49 (11.72)
2	62 (40.26)	118 (28.23)
3	40 (25.97)	125 (29.90)
4	17 (11.04)	88 (21.05)
5	5 (3.25)	26 (6.22)
6	0 (0)	7 (1.67)

* Epidemiology of Prolapse and Incontinence Questionnaire