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Racial disparities in knowledge of pelvic floor disorders among community-dwelling women

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Abstract

Objective—To evaluate racial and ethnic differences in knowledge about preventative and curative treatments for pelvic floor disorders (PFD).

Methods—The is a secondary analysis of responses from 416 community-dwelling women, aged 19-98 years, living in New Haven County, Connecticut, who completed the Prolapse and Incontinence Knowledge Questionnaire. Associations between race/ethnicity (categorized as White, African American, and Other Women of Color [OWOC, combined group of Hispanic, Asian or 'Other' women] and knowledge proficiency about modifiable risk factors and treatments for PFD were evaluated. Associations were adjusted for age, marital status, socioeconomic status, education, working in a medical field, and PFD history.

Results—Compared to White women, African American women were significantly less likely to recognize childbirth as a risk factor for UI and POP, to know that exercises can help control leakage, and to recognize pessaries as a treatment option for POP. OWOC were also significantly less likely to know about risk factors, preventative strategies and curative treatment options for POP and UI; however, these findings may not be generalizable given the heterogeneity and small size of this group.

Conclusions—Significant racial disparities exist in women's baseline knowledge regarding risk factors and treatment options for POP and UI. Targeted, culturally-sensitive educational interventions are essential to enhancing success in reducing the personal and economic burden of PFD, which have proven negative effects on women's quality of life.

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Keywords

urinary incontinence; pelvic organ prolapse; pelvic floor disorders; disparities; knowledge

Introduction

Approximately 25% of women aged 20 years or older in the United States suffer from at least one of the three most prevalent pelvic floor disorders (PFD): urinary incontinence (UI), fecal incontinence, or pelvic organ prolapse (POP) (1). Despite their high prevalence, and known negative effects on women's quality of life (2), PFD are undertreated owing to many symptomatic women failing to seek care for their problems (3-7). There is a growing body of evidence suggesting that inadequate knowledge about the conditions and available treatment options plays a major role in the limited care seeking behaviors of women with PFD (3, 5).

We previously reported that significant gaps in knowledge about UI and POP exist among a broad population of community-dwelling women. (8) Consistent with other authors (9), we found more pronounced overall knowledge deficits among non-White women as compared to White women (8). The U.S. population continues to become increasingly more racially and ethnically diverse. In 2013, approximately 37 percent of the population considered themselves as a racial and/or ethnic minority (10). Identifying race/ethnicity-specific knowledge deficits in UI and POP may serve to provide effective, culturally-sensitive targets in educational outreach. The purpose of the current study was to compare PFD knowledge among women of different racial/ethnic groups, focusing on aspects of knowledge that are more likely to influence patient behavior, including PFD risk factors and treatment options.

Materials and Methods

Study population and design

This is a secondary analysis of data collected for an original cross-sectional study assessing knowledge proficiency of UI and POP in a diverse population of community-dwelling women (8). Details of the study design, sampling strategy and results have been previously reported (8). Briefly, 431 women attending events that were open to the public in New Haven County, Connecticut were invited to complete the Prolapse and Incontinence Knowledge Questionnaire (PIKQ) (11) as well as a brief demographic survey. All women who were 18 years or older and reported not having previously completed the questionnaire were eligible for participation. The research protocol was exempted by the Yale University Human Subjects Committee.

In the present study, participants were only included if they had completed data for race/ethnicity, thus resulting in a total inclusion of 416 of the originally enrolled 431 subjects. Race/ethnicity was categorized as White (N=266), African American (AA; N=93), and Other Women of Color (OWOC; N=57, which included Hispanic [N=26], Asian [N=13], and 'Other' women [N=18]). The OWOC category was created due to the small number of subjects in the individual contributing subgroups. The PIKQ is a 24-item questionnaire that

includes 12 questions focused on UI knowledge (UI scale) and 12 questions focused on POP knowledge (POP scale) (11). Each question has three possible responses: “yes”, “no”, and “I don't know”. Consistent with the original scoring methods, one point was given for each correct response and no points were given for incorrect responses, blank responses or for the response of “I don't know” (11). Of the 416 subjects, one (0.2%) did not answer any questions on the UI scale, while 13 subjects (3.1%) did not answer any questions on the POP scale. These subjects were excluded from the UI or POP analyses respectively.

Statistical Analysis

Bivariate analyses to assess differences in subject demographics across the different race/ethnicity groups were tested using an ANOVA test (for age considered as a continuous variable) or using Chi-square tests (for all other variables).

Questions asked on the PIKQ were categorized by knowledge type (etiology, diagnosis, or treatment), for the UI and POP PIKQ scales. Proficiency was defined as answering at least 50% of the relevant questions correctly for each category (for example, for proficiency in UI etiology, a subject would have to correctly answer 3 or more of the 5 questions related to this knowledge category). For our original manuscript (8), we used scores 80% and 50% to define UI and POP knowledge proficiency, respectively which was consistent with the definitions used by the original PIKQ authors (11). In the present study, we modified the UI proficiency level to 50% in order to more easily assess relative differences in proficiency within the different knowledge type categories.

Questions were also evaluated individually to assess for specific gaps in knowledge proficiency about modifiable risk factors (UI: questions 7 and 11; POP: questions 2, 8, 12) and treatment options, (UI: questions 3, 6, 10, 12; POP: questions 4, 9, 11). ORs were calculated for the odds of lacking proficiency in each knowledge category or incorrectly answering individual questions. Models were constructed using logistic regression, with race/ethnicity (AA, OWOC, White) included as the primary independent variable of interest. For the adjusted ORs, multivariate models were constructed and included the following covariates: age, household income, education, working in a medical field, marital status, a reported history of problematic urine leakage, and a reported history of POP. Calculations were performed using SAS 9.3 (SAS Institute; Cary, NC). Statistical significance was defined as $P < 0.05$.

Results

Table 1 provides demographic data stratified by race/ethnicity, for the 416 women included in the study. There were significant differences between groups for age, marital status, menstrual status, working in a medical field, household income, education, and history of problematic urine leakage. African American subjects reported higher parity and had lower rates of being married, working in a medical field, having graduate-level education, and having a history of urine leakage, compared to other groups. OWOC were younger, and had higher rates of being premenopausal and working in a medical field, compared to other groups.

Racial/ethnic disparities related to types of UI or POP knowledge

Compared with White women, AA and OWOC were significantly more likely to lack knowledge proficiency about UI and POP etiology and POP treatment, both before and after adjustment for model covariates (Table 2). In addition, OWOC were significantly more likely to lack knowledge proficiency on questions about UI treatment when compared to White women. There were no significant proficiency differences for UI or POP diagnosis between the groups. Among the other covariates in the multivariate models, high school education was significantly associated with increased odds of lack of proficiency for UI etiology questions (compared to grad school education), working in a medical field was significantly associated with reduced odds of lack of proficiency (i.e., better knowledge) for all question types except UI etiology, and history of POP was significantly associated with reduced odds of lack of proficiency for POP treatment questions. The remaining covariates were non-significant in the multivariate models.

Racial/ethnic knowledge inequalities concerning risk factors and treatment options for UI and POP

Responses to individual PIKQ questions were analyzed, focusing on those addressing modifiable risk factors and treatment options. Unadjusted and adjusted odds ratios of incorrectly answering these questions are provided in Tables 3A and 3B. OWOC had the most pronounced knowledge disparities, as they displayed gaps in knowledge for the majority of questions addressing modifiable risk factors and treatment options for UI and POP.

Discussion

Our sub-analysis of community-dwelling women found considerable racial/ethnic disparities in knowledge proficiency about modifiable risk factors and treatment options for UI and POP. OWOC demonstrated the greatest knowledge disparities and showed a lack of proficiency regarding any effective treatment options for both UI and POP.

Dunbar et al reported that 71% of women were unaware that vaginal delivery increases a woman's future risk of PFD (12). Our study corroborated the finding that many women are unaware of the effect of childbirth on pelvic floor health. Correspondingly, we also found that AA and OWOC were nearly three times more likely to lack knowledge about the well-established detrimental effects of vaginal delivery on pelvic floor support and continence. This is particularly concerning since childbirth has been identified as the most influential risk factor affecting the development of both of these disorders among women (13, 14). Furthermore, the Centers for Disease Control statistics show that Hispanic and non-Hispanic black populations tend to have children earlier and have higher fertility rates than other groups (15)

Berger et al found that the biggest hindrance to care-seeking among women with UI was a belief that nothing could be done about their symptoms (5). This group did not find racial differences among the 94% of women who maintained this belief. Our data suggest that AA

women and OWOC are significantly more likely to lack knowledge about the array of therapeutic options available to them.

Pelvic floor muscle exercises provide an inexpensive and efficacious way to reduce UI (16) and slow the progression of POP (17), and are an ideal tool that can easily be implemented by patients to improve their quality of life (18). Several studies also provide evidence for the efficacious role of pelvic floor muscle exercises during and after pregnancy in reducing the incidence of UI during pregnancy and postpartum and increasing pelvic floor strength (19, 20). Unfortunately, evidence suggests that nearly 50% of women receive no information about pelvic floor muscle exercises or UI during the antenatal and postpartum periods (21) and over 40% of postpartum women have never heard of pelvic floor muscle exercises. (12). Our study was not designed to study peripartum education or knowledge about pelvic floor exercises; however, among our predominantly parous population, AA women and OWOC were less likely to demonstrate knowledge about the benefits of pelvic floor muscle exercises as a way to treat UI, and OWOC were unaware of their benefit in preventing progression of POP, when compared to White women.

OWOC were more likely to assume that surgery is the only treatment option for both UI and POP, a misbelief that may increase patients' apprehension about care-seeking and the perceived risk incurred. Ensuring that all women are provided with literacy-level information about effective, low-cost, preventative strategies and conservative therapeutic options to treat UI and POP could help to improve the quality of life of many women lacking this information and reduce the increasing financial burdens from PFD.

Our study is limited by the small numbers of Asian and Hispanic participants, precluding our ability to separately analyze these groups using formal statistical tests. However, we noted that the directions of effect were consistent between the OWOC group considered as a whole and all of its contributing subgroups considered separately (Hispanic, Asian, and Other) (except for one analysis -- the "giving birth many times may lead to POP" question; data not shown). Still, these findings may not be generalizable to all, non-African-American minority women, given the heterogeneity within this subset, the inclusion of only English-speaking minority women, the notably younger age as well as other possible unmeasured baseline characteristics of the OWOC group compared to the other populations studied. The study population was also restricted to New Haven County and thus may not be generalizable to other regions. Strengths of the study include the use of a validated questionnaire to assess knowledge about PFD and the community-based approach, which enabled us to sample a large group of women from various racial, ethnic and socioeconomic strata. This allowed us to adjust for the impact of socioeconomic variables traditionally shown to affect knowledge.

Despite the widespread prevalence of PFD among women of all racial and ethnic groups, our study suggests that AA women and OWOC have significant deficiencies in knowledge about preventative and treatment strategies for PFD compared to White women. Poor knowledge about treatment options serves as a major barrier to care-seeking for women with PFD (5-7). Preventative and treatment strategies cannot be successfully implemented without adequate information to direct decision-making. Effort should be directed to

examining effective educational media, information sharing and education strategies for different ethnic/racial groups that may be useful in effecting widespread change in knowledge and care seeking among women.

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Table 1

Subject demographics by race/ethnicity (total N=416).

	African-American (N=93; 22.4%)	OWOC (N=57; 13.7%)	White (N=266; 63.9%)	P-value
Age in years, mean $\pm$ SD	52.5 $\pm$ 18.0	38.3 $\pm$ 15.2	50.2 $\pm$ 17.5	< 0.001
Age, N (%)				< 0.001
19-29	11 (12.0)	21 (37.5)	29 (11.1)	
30-39	12 (13.0)	11 (19.6)	49 (18.7)	
40-49	18 (19.6)	11 (19.6)	53 (20.2)	
50-59	20 (21.7)	8 (14.3)	60 (22.9)	
60-69	10 (10.9)	2 (3.6)	33 (12.6)	
70-79	14 (15.2)	2 (3.6)	16 (6.1)	
> 79	7 (7.6)	1 (18)	22 (8.4)	
Marital Status, N (%)				0.001
Not currently married	65 (69.9)	31 (54.4)	126 (47.6)	
Currently married	28 (30.1)	26 (45.6)	139 (52.5)	
Parity, N (%)				0.093
0	24 (26.4)	21 (37.5)	105 (39.8)	
1	18 (19.8)	11 (19.6)	42 (15.9)	
2	18 (19.8)	13 (23.2)	68 (25.8)	
3	16 (17.6)	6 (10.7)	30 (11.4)	
>3	15 (16.5)	5 (8.9)	19 (7.2)	
Menstrual status, N (%)				<0.001
Still having periods	34 (40.0)	36 (64.3)	131 (50.6)	
Near menopausal	12 (14.1)	10 (17.9)	15 (5.8)	
Menopausal	39 (45.9)	10 (17.9)	113 (43.6)	
Work in a medical field, N (%)				0.008
No	75 (83.3)	34 (60.7)	185 (70.1)	
Yes	15 (16.7)	22 (39.3)	79 (29.9)	
Household income, N (%)				<0.001
< \$10,000	10 (11.9)	6 (12.0)	16 (6.6)	
\$10,000 - \$49,999	35 (41.7)	20 (40.0)	45 (18.7)	
\$50,000 - \$100,000	30 (35.7)	18 (36.0)	107 (44.4)	
> \$100,000	9 (10.7)	6 (12.0)	73 (30.3)	
Education, N (%)				0.013
8 th grade or less	1 (11)	3 (5.4)	4 (1.5)	
High school	29 (31.2)	7 (12.5)	45 (17.1)	
College	41 (44.1)	28 (50.0)	120 (45.5)	
Graduate school	22 (23.7)	18 (32.1)	95 (36.0)	

	African-American (N=93; 22.4%)	OWOC (N=57; 13.7%)	White (N=266; 63.9%)	P-value
Ever had a problem with urine leakage, N (%)				
No	71 (77.2)	40 (71.4)	167 (63.3)	0.039
Yes	21 (22.8)	16 (28.6)	97 (36.7)	
Ever been treated for urine leakage, N (%)				
No	87 (93.6)	54 (94.7)	253 (96.6)	0.372
Yes	6 (6.5)	3 (5.3)	9 (3.4)	
Ever had a problem with POP, N (%)				
No	85 (93.4)	54 (96.4)	246 (93.5)	0.696
Yes	6 (6.6)	2 (3.6)	17 (6.5)	
Ever been treated for POP, N (%)				
No	86 (92.5)	54 (96.4)	247 (97.4)	0.088
Yes	7 (7.5)	2 (3.6)	7 (2.7)	

AA-African American; OWOC-combined group of Hispanic, Asian and subjects identifying themselves as "other". P-values are for tests of differences in the distributions of demographic variables across the three race/ethnicity groups, and were obtained from an ANOVA test (for age as continuous variable) or from Chi-square or Fisher's exact tests (categorical variables; exact tests were used for "ever been treated for urine leakage" and "ever been treated for POP"). Totals do not sum to N=416 due to missing data.

Table 2

Unadjusted and adjusted associations between lack of knowledge proficiency and race/ethnicity, by question type

Question type	# of Questions	Race/Ethnicity	Median % of questions answered incorrectly	% Subjects not passing	Unadjusted		Adjusted	
					OR	95% CI	OR	95% CI
UI Etiology	5	AA	60.0	57.0	3.12	1.92, 5.08 *	3.05	1.70, 5.47 *
		OWOC	60.0	54.4	2.81	1.57, 5.03 *	3.59	1.78, 7.21 *
		White	40.0	29.8	Ref		Ref	
UI diagnosis	2	AA	50.0	28.0	1.06	0.63, 1.80	1.01	0.53, 1.93
		OWOC	50.0	29.8	1.16	0.62, 2.18	1.84	0.85, 3.99
		White	50.0	26.8	Ref		Ref	
UI treatment	5	AA	40.0	46.2	1.47	0.91, 2.36	1.19	0.66, 2.14
		OWOC	60.0	54.4	2.03	1.14, 3.62 *	2.38	1.19, 4.75 *
		White	20.0	37.0	Ref		Ref	
POP Etiology	6	AA	66.7	52.8	1.70	1.04, 2.75 *	2.15	1.18, 3.91 *
		OWOC	66.7	59.7	2.24	1.25, 4.02 *	3.19	1.53, 6.64 *
		White	50.0	39.8	Ref		Ref	
POP diagnosis	2	AA	50.0	25.8	0.96	0.55, 1.66	1.05	0.54, 2.04
		OWOC	50.0	28.1	1.08	0.57, 2.04	1.25	0.57, 2.73
		White	50.0	26.6	Ref		Ref	
POP treatment	4	AA	75.0	58.4	2.35	1.44, 3.84 *	2.56	1.39, 4.73 *
		OWOC	75.0	61.4	2.66	1.47, 4.79 *	3.30	1.58, 6.88 *
		White	50.0	37.5	Ref		Ref	

UI-urinary incontinence; POP-pelvic organ prolapse; AA-African American; OWOC-combined group of Hispanic, Asian and subjects identifying themselves as "other"; #-number; OR-odds ratio. Ref-referent stratum.

The models were constructed to estimate the odds ratios of not passing, where a pass was defined as correctly answering at least 50% of the total # of questions per question type (rounded up to the nearest whole number of questions). Adjusted analyses included the following covariates: age, household income, education, working in a medical field, marital status, ever had a problem with urine leakage, and ever had a problem with POP. The analysis included N=362 (for the adjusted models related to UI) or N=355 (for the adjusted models related to POP) subjects who had complete information on all covariates.

* P < 0.05.

Table 3A

Multivariate analysis of the association between race/ethnicity and an incorrect response to individual PIKQ UI scale questions

Question	Race/Ethnicity	% Incorrect	Unadjusted OR (odds of incorrect response)	Adjusted OR (odds of incorrect response)
Other than pads and diapers, not much can be done to treat leakage of urine	AA	49.5	1.28 (0.80, 2.05)	1.06 (0.60, 1.89)
	OWOC	54.4	1.56 (0.88, 2.76)	1.96 (0.99, 3.88)
	White	43.5	Ref	Ref
Certain exercises can be done to help control urine leakage	AA	34.4	1.61 (0.97, 2.69)	1.97 (1.06, 3.66) *
	OWOC	52.6	3.42 (1.89, 6.17) *	4.27 (2.07, 8.81) *
	White	24.5	Ref	Ref
Some medications may cause urinary leakage	AA	76.3	1.80 (1.05, 3.09) *	1.72 (0.91, 3.24)
	OWOC	70.2	1.32 (0.71, 2.45)	2.09 (1.00, 4.35)
	White	64.2	Ref	Ref
Surgery is the only treatment for urine leakage	AA	52.7	1.45 (0.90, 2.33)	1.45 (0.82, 2.58)
	OWOC	64.9	2.41 (1.33, 4.38) *	2.69 (1.32, 5.50) *
	White	57.2	Ref	Ref
Giving birth many times may lead to urine leakage	AA	66.7	3.46 (2.10, 5.70) *	3.10 (1.72, 5.60) *
	OWOC	59.7	2.56 (1.43, 4.60) *	2.97 (1.45, 6.07) *
	White	36.6	Ref	
Most people who leak urine can be cured with some kind of treatment	AA	48.4	1.60 (0.99, 2.57)	1.45 (0.82, 2.58)
	OWOC	54.4	2.03 (1.14, 3.62) *	2.61 (1.32, 5.18) *
	White	37.0	Ref	Ref

Table 3B. Multivariate analysis of the association between race/ethnicity and an incorrect response to individual PIKQ POP scale questions

Giving birth many times may lead to POP	AA	60.7	2.66 (1.62, 4.37) *	2.60 (1.44, 4.71) *
	OWOC	56.1	2.21 (1.24, 3.95) *	2.83 (1.41, 5.68) *
	White	43.2	Ref	
Certain exercises can help to stop POP from getting worse	AA	59.6	1.33 (0.82, 2.17)	1.28 (0.70, 2.33)
	OWOC	61.4	1.44 (0.80, 2.59)	2.22 (1.08, 4.59) *
	White	52.5	Ref	Ref
Heavy lifting on a daily basis can lead to POP	AA	69.7	1.05 (0.62, 1.76)	1.57 (0.81, 3.02)
	OWOC	84.2	2.43 (1.14, 5.18) *	3.34 (1.38, 8.10) *
	White	68.7	Ref	Ref
Surgery is one type of treatment for POP	AA	51.7	1.50 (0.92, 2.43)	1.29 (0.71, 2.35)

Question	Race/Ethnicity	% Incorrect	Unadjusted OR (odds of incorrect response)	Adjusted OR (odds of incorrect response)
	OWOC	63.2	2.40 (1.33, 4.33) *	2.79 (1.33, 5.83) *
	White	41.7	Ref	Ref
A rubber ring called a pessary can be used to treat symptoms of POP	AA	71.9	1.80 (1.07, 3.04) *	2.07 (1.07, 3.99) *
	OWOC	77.2	2.38 (1.22, 4.64) *	2.31 (1.05, 5.06) *
	White	58.7	Ref	Ref
People who are obese are less likely to get POP	AA	79.8	1.96 (1.10, 3.50) *	1.74 (0.85, 3.53)
	OWOC	79.0	1.86 (0.94, 3.71)	1.92 (0.85, 4.35)
	White	66.8	Ref	Ref

UI-urinary incontinence; POP-pelvic organ prolapse; AA-African American; OWOC-combined group of Hispanic, Asian and subjects identifying themselves as "other"; #-number; OR-odds ratio. Ref-referent stratum.

"% Incorrect" is the percentage of subjects within each race/ethnicity group not answering the respective question correctly. The models were constructed to estimate the odds ratios of incorrectly answering the respective question (erroneous responses, blank responses, and responses of "don't know" were all considered to be incorrect). Adjusted analyses included the following covariates: age, household income, education, working in a medical field, marital status, ever had a problem with urine leakage, and ever had a problem with POP. The analysis included N=362 (for the adjusted models related to UI) or N=355 (for the adjusted models related to POP) subjects who had complete information on all covariates.

* P < 0.05.