



Published in final edited form as:

NeuroUrol Urodyn. 2024 January ; 43(1): 69–80. doi:10.1002/nau.25297.

Job Strain and Type of Occupation: Potential Determinants of Bladder Health

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Conflicts of Interest:

Sonya S. Brady: None

Andrés Arguedas: None

Jared D. Huling: None

Gerhard Hellemann: None

Cora E. Lewis: None

Cynthia S. Fok: None

Stephen K. Van Den Eeden: None

Alayne D. Markland: None

Conflict of Interest Disclosure: The authors have no conflicts of interest to report.

Ethics of Approval Statement: The IRB at each center approved study protocols.

Patient Consent Statement: Written informed consent was obtained at each exam.

Permission to Reproduce Material from Other Sources: Not applicable

IRB approval obtained from the following institutions:

Kaiser Permanente

Northwestern University

University of Minnesota

University of Alabama at Birmingham

Authorship Credit/Contribution Statement (CRediT format)

Sonya S. Brady, PhD, LP: conceptualization, writing – original draft, writing – review and editing, project administration; funding acquisition

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Cynthia S. Fok, MD, MPH: writing – review and editing

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Abstract

Objectives: Lower urinary tract symptoms (LUTS) are common among employed women. An underexplored topic is whether characteristics of women's occupations may influence LUTS. The present study examined whether job strain and its individual components (psychological demands, decision latitude) were associated with greater LUTS and their impact and whether, compared to managerial and professional occupations, occupations characterized by manual labor, sales, service, nursing, and teaching were associated with greater LUTS and their impact.

Methods: Coronary Artery Risk Development in Young Adults cohort study data were analyzed. Job strain and occupation were assessed in 1987-88 and 1995-96. In 2012-13, LUTS and their impact were assessed. LUTS/impact category (a composite variable ranging from bladder health to mild, moderate, and severe LUTS/impact) was regressed on job strain and occupation in separate analyses, adjusting for age, race, parity, education, and financial hardship (n=1,006).

Results: Job strain and its individual components were not associated with LUTS/impact. In comparison to managerial and professional occupations, service occupations in 1987-88 and 1995-96 were both associated with greater odds of LUTS/impact in proportional odds logistic regression analyses. Employment as a nurse, health assistant, or health aide in 1995-96 was associated with greater odds of any LUTS/impact versus bladder health. Support positions in 1987-88 and sales positions in 1995-96 were associated with greater odds of moderate or severe LUTS/impact versus bladder health or mild LUTS/impact.

Conclusions: Future research should examine characteristics of workplaces that may promote or constrain bladder health (e.g., time and autonomy to void when desired, infrastructure to void).

Keywords

lower urinary tract symptoms; bladder health; job strain; job demands; decision latitude; occupation; job

Job Strain, Occupation, and Bladder Health among Women

Lower urinary tract symptoms (LUTS) are common among employed women. In a National Family Opinion survey panel, 37% of employed women reported having urinary incontinence (UI) in the past month.¹ In EpiLUTS, a population-based study, 18.5% and 39.9% of employed women in the United States aged 40-65 years reported at least sometimes experiencing overactive bladder (OAB) with and without continence, respectively.² Among women, LUTS may cause worry, constrain career opportunities, and disrupt career trajectories.² LUTS are also associated with work productivity loss³ and unemployment⁴ among women.

Job Strain and Type of Occupation: Potential Determinants of Bladder Health

An underexplored topic is whether different characteristics of women's occupations may influence their bladder health. Job strain has been defined as low decision latitude in combination with high psychological demands.⁵ Job strain, like other stressors that are chronic in nature, may cause cumulative damage to biological systems through psychological stress responses.⁶ In samples of women or men and women combined, job strain or its individual components are associated with poorer cardiovascular outcomes,⁷ musculoskeletal symptoms,⁸ irritable bowel syndrome,⁹ poorer mental health,¹⁰ health risk behaviors,¹¹ obesity,¹² diabetes,¹³ and upper respiratory tract infections.¹⁴ A literature search yielded no studies that have examined job strain in relation to bladder health.

A small literature suggests that type of occupation may influence bladder health. In comparison to other types of occupations, occupations with higher manual labor demands and occupations classified as service or retail increase the likelihood that women will experience UI.^{15–17} Women with manual occupations may have more physical work demands (e.g., heavy lifting, strenuous activity), which may precipitate stress UI, or have limited access to toilets in the workplace due to time or environmental constraints.¹⁸ Women in service and retail occupations may not have adequate time for toileting.¹⁸ Some scholars have posited that specific occupations – most notably nursing and teaching – place individuals at risk for LUTS due to limited time to void.¹⁸ In support of this idea, delayed voiding and straining to void (e.g., pushing down to make the bladder empty faster) mediated an association between occupational stress and OAB in a sample of 400 operating room nurses, 84% of whom were women.¹⁹ Low job control was associated with UI in a sample of over 400 female elementary school teachers.²⁰

The Present Study

The Coronary Artery Risk Development in Young Adults (CARDIA) study provides a unique opportunity to examine whether characteristics of women's occupations, measured at ages 20–42 years, are associated with LUTS and their impact, a composite variable measured at ages 45–57 years. The present study examines two questions: (1) Is job strain associated with greater LUTS/impact among women? (2) Compared to managerial and professional occupations, are occupations characterized by manual labor, sales, service, nursing, and teaching associated with greater LUTS/impact among women?

Method

Procedure

CARDIA is a prospective cohort study of the development of cardiovascular disease that recruited 5,115 Black and White women and men aged 18–30 years at baseline (1985–86; Year 0) from the populations of four U.S. cities (Birmingham, AL; Minneapolis, MN; Chicago, IL; Oakland, CA). Details on study design have been previously reported.²¹ In-person follow-up examinations were conducted 2, 5, 7, 10, 15, 20, and 25 years after baseline with response rates of 91%, 86%, 81%, 79%, 74%, 72%, and 72% of the surviving cohort, respectively. Written informed consent was obtained at each exam. The IRB at each center approved study protocols.

At Years 2 and 10, job strain and occupation were both measured. Following the Year 25 (2010-11) examination, an IRB-approved ancillary study about benign (non-cancerous) genitourinary conditions collected data on LUTS and their impact among CARDIA participants.²² Data were collected via questionnaire mailings between March, 2012 and February, 2013. Out of the 1,981 surviving CARDIA women available at the Year 25 examination, LUTS and impact questionnaires were completed by 1,465 women (74.0%).

Measures

LUTS/Impact Cluster Category.—The outcome variable was developed through a cluster analysis of four constructs: UI severity, UI impact, other LUTS severity, and other LUTS impact.²² UI severity was calculated by multiplying responses to questions that assessed frequency and amount of urine leakage.²³ UI impact on well-being was assessed using the Incontinence Impact Questionnaire (IIQ).²⁴ Presence and severity of other LUTS were assessed with the American Urologic Association Symptom Index (AUASI) score, a composite of 7 LUTS (urgency, frequency, nocturia, incomplete emptying, hesitancy, intermittency, weak stream).^{25,26} Impact of this LUTS composite on quality of life was assessed with an additional AUASI question. Missing data rates for questionnaires were 2.1% for UI severity, 2.2% for UI impact, 4.8% for other LUTS severity, and 3.7% for other LUTS impact. The cluster analysis yielded four LUTS/impact cluster categories: women who reported no or very mild symptoms of UI and other LUTS along with no impact (defined as bladder health) versus mild, moderate, or severe symptoms and impact. Among women with complete LUTS/impact data (n=1,302), 44% (n=569) were classified into the bladder health cluster compared to those classified into mild (31%, n=407), moderate (20%, n=259), and severe (5%, n=67) symptoms/impact clusters.²² “Greater LUTS/impact” was defined as membership in a more symptomatic LUTS cluster category with greater impact.

Job Strain.—Different components of job strain were measured at Years 2 and 10 with the 14-item Job Content Questionnaire.²⁷ Response options for all items were “strongly disagree” (coded 1), “disagree” (coded 2), “agree” (coded 3), and “strongly agree” (coded 4). A psychological job demands score was created by averaging across 5 items (working fast, working hard, excessive work, insufficient time to work, conflicting demands). A decision latitude score was created by averaging across 9 items (task variety, little repetition, learning new things, developing abilities, creativity, high skill, having a say about what happens on the job, and autonomy to make decisions on one’s own and decide how work is accomplished). Year 2 and Year 10 data were combined to create scores that suggested consistently low or high levels of job strain during young adulthood. First, Year 2 and Year 10 data were averaged to create separate job demands and decision latitude composite variables. Second, a composite job strain ratio was created by dividing averaged job demands by averaged decision latitude.

Occupation.—At Years 2 and 10, women were asked several questions about their current or most recent job activity. Responses were used to code women’s current or most recent job to the following U.S. census categories: managerial/professional, technical/sales/support, service, farming/forestry/fishing, precision/craft/repair, and operators/fabricators/laborers.^{28,29} The latter three categories were considered to be manual jobs. For the present

research, technical, sales, and support categories were examined separately. In addition, two new occupation categories were created to correspond to professions that have been linked to LUTS in the literature: nurses/health assistants/health aides and K-12 teachers/assistants/child care workers (see Table 2 footnote). Codes corresponding to these occupations were removed from managerial/professional, technical/sales/support, and service categories and instead grouped into the new occupation categories. Year 2 and Year 10 occupations were examined in separate analyses to determine the consistency of associations between different types of occupations and LUTS/impact.

Covariates.—Covariates included age, race, parity by Year 25, the CARDIA assessment just before LUTS/impact was assessed, and two job-related variables: education and financial hardship. The latter variables were taken from the assessments at which job characteristics were also assessed. Highest level of education was categorized into high school or less, some college, and college graduate. Women were given a financial hardship score of 1 (versus 0) if they reported that it was hard to pay for the very basics like food, medical care, or heating.

Analytic Approach

The analytic sample was comprised of women with complete data for predictor and outcome variables (n=1,006). Preliminary analyses examined sociodemographic characteristics of the analytic sample. Distributions of job strain and occupation variables were examined within the total analytic sample and by LUTS/impact cluster category. Preliminary analyses also examined whether the distribution of study variables differed by race using standardized mean differences (SMDs).³⁰

To test research questions, LUTS/impact was regressed on different job strain and occupation variables. For job strain analyses, separate regression analyses examined (1) main effects of averaged job strain components (psychological job demands and decision latitude), (2) the interaction between averaged job strain components, and (3) job strain as a ratio of averaged job strain components. For occupation analyses, managerial and professional occupations was the reference group.

The LUTS/impact outcome variable was modeled in three different ways. First, proportional odds ordinal logistic regression analyses were conducted to examine the odds of having greater LUTS/impact for each unit change in a job strain variable or comparison between occupation categories. The proportional odds assumption was tested and not violated for these analyses. Second, logistic regression analyses were conducted with the LUTS/impact outcome variable dichotomized to compare a combined bladder health and mild LUTS/impact category to a combined moderate and severe LUTS/impact category. Third, logistic regression analyses were conducted with the LUTS/impact outcome variable dichotomized to compare the bladder health category to a combined mild, moderate, and severe LUTS/impact category.

All regression analyses adjusted for age, race, and parity by Year 25. For statistically significant associations of job strain or occupation variables with LUTS/impact, an additional set of regression analyses added education and financial hardship as covariates;

these variables were taken from the year at which occupation was last assessed for a given analysis. These analyses addressed whether job characteristics are associated with LUTS/impact over and above education and financial hardship, which may constrain one's employment in specific occupations and result from one's employment in specific occupations, respectively.

Results

Preliminary Analyses

Table 1 contains sociodemographic characteristics of the analytic sample. Distributions of psychological job demands, decision latitude, and job strain were similar across LUTS/impact cluster categories (see Table 2). In contrast, marked differences in some occupations (e.g., managerial/professional, service) were observed across LUTS/impact cluster categories. For example, among women categorized into the bladder health cluster in 2012-13, 26.0% and 33.0% held managerial/professional occupations in 1987-88 and 1995-96, respectively. In contrast, only 14.9% of women categorized into the severe LUTS/impact cluster in 2012-13 previously held managerial/professional positions; this percentage was observed in both 1987-88 and 1995-96.

LUTS/impact cluster category membership did not vary between Black and White women (see Table 3). In comparison to White women, Black women tended to be employed in jobs that were less psychologically demanding and had less decision latitude. In 1987-88 (Year 2 assessment), 12.6% of Black women compared to nearly 33.9% of White women were employed in managerial/professional positions. By 1995-96 (Year 10 assessment), 17.0% of Black women compared to 43.4% of White women were employed in managerial/professional positions. Compared to White women, greater percentages of Black women were employed in support and service positions in 1987-88 and 1995-96.

Regression Analyses Examining Associations between Job Characteristics and LUTS/Impact

Main Analyses.—Table 4 contains associations between job characteristics and 2012-13 LUTS/impact cluster category, adjusting for age, race, and parity. Job strain and its individual components were not associated with LUTS/impact. Several associations were observed between 2012-13 LUTS/impact cluster category and the occupations women held in 1987-88 (Year 2 assessment) and 1995-96 (Year 10 assessment). Compared to women in managerial/professional positions, women employed in sales or as an operator/fabricator/laborer in 1987-88 or 1995-96 had roughly twice the odds of being categorized into the moderate or severe LUTS/impact cluster category versus the bladder health or mild LUTS/impact cluster category in 2012-13. Compared to women in managerial/professional positions, women employed in service positions in 1987-88 or 1995-96 were more likely to have greater LUTS/impact in 2012-13. This was true for the proportional odds ordinal logistic regression analyses as well as logistic regression analyses. The strongest associations were found for employment in a service position in 1987-88 (OR=2.97, 95% CI=1.66, 5.30) or 1995-96 (OR=4.80, 95% CI=2.68, 8.60) and the odds of experiencing

moderate or severe LUTS/impact versus bladder health or mild LUTS/impact in 2012-13, relative to women in managerial/professional positions.

Other associations were observed for one of the two assessments at which occupation was assessed. Compared to women in managerial/professional positions in 1987-88 (Year 2 assessment), women employed in support positions were more likely to later be categorized into the moderate or severe LUTS/impact cluster category versus the bladder health or mild LUTS/impact cluster category in 2012-13 (OR=1.85, 95% CI=1.20, 2.86). Compared to women in managerial/professional positions in 1995-96 (Year 10 assessment), women who were employed as nurses, health assistants, or health aides were more likely to have greater LUTS/impact in 2012-13. This was true for the proportional odds ordinal logistic regression analyses (OR=1.49, 95% CI=1.13, 1.97), as well as logistic regression analyses in which the LUTS/impact outcome variable was dichotomized to compare a combined bladder health and mild LUTS/impact category to a combined moderate and severe LUTS/impact category (OR=1.83, 95% CI=1.03, 3.24), and the bladder health category to a combined mild, moderate, and severe LUTS/impact category (OR=2.16, 95% CI=1.26, 3.70).

Some occupations did not differ from managerial/professional positions with respect to LUTS/impact cluster category membership. These occupations included technical positions; K-12 teachers, assistants, and child care workers; and precision/craft/repair positions.

Additional Adjustment for Education and Financial Hardship.—For some occupations, associations with LUTS/impact became non-significant after adjustment for education and financial hardship (see Table 4, footnotes “c” and “d”). In total, adjustment for education and financial hardship attenuated 6 of 17 associations between occupation and LUTS/impact.

Discussion

Among CARDIA women, managerial and professional positions in early adulthood were associated with bladder health up to 25 years later. In contrast, specific positions – employment in sales or service positions at either assessment of occupation, employment in support positions at the earlier assessment, and employment in nursing positions at the later assessment – were associated with greater LUTS/impact. While some observed associations were attenuated by adjustment for education and financial hardship, the majority of the associations remained significant. This suggests that features of the workplace for women in sales, service, support, and nursing positions were associated with LUTS/impact over and above socioeconomic position in the present sample. Such features may include time, autonomy, and infrastructure to void.¹⁸ Employment in teaching and precision/craft/repair positions were not associated with LUTS/impact in the present study. Some manual labor positions (operators/fabricators/laborers) were associated with greater odds of experiencing more severe LUTS with greater impact. These associations became non-significant after adjustment for education and financial hardship, suggesting that manual labor did not increase risk for LUTS/impact over and above socioeconomic position among CARDIA women.

Contrary to research on other health outcomes, job strain and its individual components (psychological demands, decision latitude) were not associated with LUTS and their impact. The evidence base is perhaps too small to conclude that job strain does not influence bladder health, however.

Future Research Directions.

Additional research is needed to determine workplace characteristics that may mediate associations between specific occupation types and LUTS/impact. This research may inform structural-level interventions to promote the bladder health of employees (e.g., expanding the reach of U.S. Occupational Safety and Health Administration guidelines to a greater number of occupations; flexible approaches to work breaks that allow adequate time for voiding; enhanced infrastructure for voiding). Research is also needed to identify behavioral mechanisms that may mediate associations between work environments in early adulthood and LUTS/impact later in life, such as toileting behaviors, including delaying voiding (i.e., ignoring urge), straining in order to void more quickly, and restricting fluid intake. Such toileting behaviors, if they become habits over decades, may increase risk for greater LUTS/impact. If supported by the evidence base, prevention efforts could attempt to modify individual behaviors as well as workplace barriers to timely voiding.

Although bladder health did not differ between Black and White women in the present study, Black women had less decision latitude and were less likely to be employed in managerial and professional occupations in comparison to White women. They also were more likely to be employed in support and service positions. Research is needed on health promotion interventions that address structural and interpersonal racism in relation to Black women's opportunities for education, employment in different occupations, and experiences at work.

Study Limitations and Strengths.

LUTS and impact were not assessed during the first 25 years of the CARDIA cohort study. It is conceivable that some women in the CARDIA cohort experienced LUTS earlier in their lives, changed occupations, and then maintained or experienced a worsening of LUTS. In this scenario, some of the variance in LUTS/impact attributed to specific occupations could instead be attributed to earlier, unmeasured LUTS/impact. An additional limitation is that this study did not examine data on individual LUTS, instead examining women whose symptoms and impact could be classified into clusters based on validated symptom severity scales to enhance clinical relevance of findings. Findings did not take into account adaptive behaviors to accommodate bladder symptoms (e.g., fluid restriction, urge suppression, voiding without urgency, use of absorbent products), which may affect perceived symptom impact. This study did not account for prior or current treatment for LUTS.

Sample size may have been too low to test with adequate power whether some occupation types were associated with LUTS/impact, especially manual occupations. Job strain and occupation were only mutually assessed twice, preventing the creation of variables that accounted for women's job strain and occupation across their work history. In addition, findings may not generalize to older adults and all racial and ethnic groups. Strengths of this study include assessment of UI, other LUTS, and impact among a community-based sample.

The present study examined early occupation characteristics in relation to LUTS/impact up to 25 years later.

Conclusions.

Job strain and its individual components (psychological demands, decision latitude) were not associated with LUTS and their impact in the present study. In contrast, several associations were observed between sales, service, support, and nursing occupations and LUTS/impact. Future research should examine different characteristics of workplaces and occupations that may promote or constrain bladder health. Studied characteristics should include factors that may lead to adaptive or maladaptive patterns of voiding (e.g., time, autonomy, and infrastructure to void when desired). This research is needed to inform prevention interventions designed to promote the current and future bladder health of diverse employees.

Acknowledgments and Funding Statement

The Coronary Artery Risk Development in Young Adults Study (CARDIA) is conducted and supported by the National Heart, Lung, and Blood Institute (NHLBI) in collaboration with the University of Alabama at Birmingham (HHSN268201800005I & HHSN268201800007I), Northwestern University (HHSN268201800003I), University of Minnesota (HHSN268201800006I), and Kaiser Foundation Research Institute (HHSN268201800004I). Data about benign genitourinary conditions were collected through the Adult Life Predictors of Genitourinary Disorders CARDIA ancillary study (DK084997/115-9107-01-M1; PI: Van Den Eeden). Writing of this manuscript was supported by the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) through R01 DK125274 (MPIs: Brady and Markland) and the National Institute on Aging (NIA) through K24 AG073586 (PI: Markland). This manuscript has been reviewed by CARDIA for scientific content.

Data Availability Statement:

CARDIA provides National Heart, Lung, and Blood Institute Data Repository datasets for exams and follow-up contacts for which data collection has been completed for at least five years, as well as adjudicated morbid and mortal events.

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Table 1.

Sociodemographic characteristics of the analytic sample (n=1,006).

	Mean (SD) or Percentage of Analytic Sample
Age at Year 25 (2010-11)	50.4 (3.6)
Race	
Black	41.4%
White	58.6%
Parity by Year 25 (2010-11)	
0 children	29.2%
1 or more children	70.8%
Highest Education by Year 2 (1987-88)	
High school or less	24.2%
Some college	34.1%
College graduate	41.6%
Highest Education by Year 10 (1995-96)	
High school or less	18.0%
Some college	31.5%
College graduate	50.5%
Financial Hardship, Year 2 (1987-88)	28.5%
Financial Hardship, Year 10 (1995-96)	35.0%

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Table 2.

Distributions of job strain and occupation variables within total sample and by 2012-13 LUTS/impact cluster categories among CARDIA women (n=1,006).

	2012-13 LUTS/Impact Cluster Categories				
	Total Sample n=1,006	Bladder Health n=434	Mild LUTS/Impact n=327	Moderate LUTS/Impact n=198	Severe LUTS/Impact n=47
	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)
Psychological Job Demands (Y2 and I0 average) ^a	2.64 (0.43)	2.62(0.43)	2.67 (0.43)	2.63 (0.45)	2.63 (0.42)
Decision Latitude (Y2 and Y10 average) ^a	3.02 (0.43)	3.04 (0.45)	3.02 (0.42)	2.98 (0.44)	2.97 (0.40)
Job Strain Ratio (ratio of averaged demands to latitude)	0.89 (0.19)	0.88 (0.19)	0.90 (0.19)	0.89 (0.20)	0.90 (0.17)
	n (%)	n (%)	n (%)	n (%)	n (%)
Year 2 (1987-88) Occupation ^b					
Managerial/Professional	244 (24.25)	113 (26.04)	90 (27.52)	34 (17.17)	7 (14.89)
Technical/Sales/Support					
Technical	52 (5.17)	22 (5.07)	21 (6.42)	7 (3.54)	2 (4.26)
Sales	116 (11.53)	57 (13.13)	26 (7.95)	24 (12.12)	9 (19.15)
Support	318 (31.61)	138 (31.80)	96 (29.36)	68 (34.34)	16 (34.04)
Nurses, Health Assistants, and Health Aides	69 (6.86)	27 (6.22)	26 (7.95)	14 (7.07)	2 (4.26)
K-12 Teachers, Assistants, and Child Care Workers	37 (3.68)	16 (3.69)	12 (3.67)	8 (4.04)	1 (2.13)
Service	82 (8.15)	24 (5.53)	28 (8.56)	22 (11.11)	8 (17.02)
Farming/Forestry/Fishing	5 (0.50)	4 (0.92)	1 (0.31)	0 (0.00)	0 (0.00)
Precision/Craft/Repair	19 (1.89)	8 (1.84)	8 (2.45)	3 (1.52)	0 (0.00)
Operators/Fabricators/Laborers	38 (3.78)	15 (3.46)	11 (3.36)	11 (5.56)	1 (2.13)
Unemployed/Other					
Homemaker, not in labor force	12 (1.19)	3 (0.69)	4 (1.22)	5 (2.53)	0 (0.00)
Never worked	13 (1.29)	7 (1.61)	3 (0.92)	2 (1.01)	1 (2.13)
No information that could be coded, or no answer	1 (0.10)	0 (0.00)	1 (0.31)	0 (0.00)	0 (0.00)
Year 10 (1995-96) Occupation ^b					
Managerial/Professional	304 (30.22)	143 (32.95)	108 (33.03)	46 (23.23)	7 (14.89)
Technical/Sales/Support					

	2012-13 LUTS/Impact Cluster Categories				
	Total Sample <i>n</i> =1,006	Bladder Health <i>n</i> =434	Mild LUTS/Impact <i>n</i> =327	Moderate LUTS/Impact <i>n</i> =198	Severe LUTS/Impact <i>n</i> =47
	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)
Technical	46 (4.57)	21 (4.84)	18 (5.50)	7 (3.54)	0 (0.00)
Sales	84 (8.35)	38 (8.76)	20 (6.12)	20 (10.10)	6 (12.77)
Support	241 (23.96)	109 (25.12)	78 (23.85)	43 (21.72)	11 (23.4)
Nurses, Health Assistants, and Health Aides	80 (7.95)	23 (5.30)	34 (10.40)	19 (9.60)	4 (8.51)
K-12 Teachers, Assistants, and Child Care Workers	59 (5.86)	30 (6.91)	15 (4.59)	12 (6.06)	2 (4.26)
Service	65 (6.46)	19 (4.38)	13 (3.98)	26 (13.13)	7 (14.89)
Farming/Forestry/Fishing	7 (0.70)	5 (1.15)	2 (0.61)	0 (0.00)	0 (0.00)
Precision/Craft/Repair	20 (1.99)	5 (1.15)	10 (3.06)	4 (2.02)	1 (2.13)
Operators/Fabricators/Laborers	44 (4.37)	14 (3.23)	16 (4.89)	13 (6.57)	1 (2.13)
Unemployed/Other					
Homemaker, not in labor force	36 (3.58)	18 (4.15)	8 (2.45)	4 (2.02)	6 (12.77)
Never worked	4 (0.40)	3 (0.69)	0 (0.00)	1 (0.51)	0 (0.00)
No information that could be coded, or no answer	16 (1.59)	6 (1.38)	5 (1.53)	3 (1.52)	2 (4.26)

^aPsychological job demand scores ranged from 1.20 to 3.90, while decision latitude scores ranged from 1.39 to 4.

^bSelected codes were removed from the “Managerial/Professional,” “Technical/Sales/Support,” and “Service” categories to create combined occupational groups. Nurses, Health Assistants, and Health Aides combine the following codes: Registered Nurses (095), Physicians’ Assistants (106), Dental Hygienists (204), Licensed Practical Nurse (207), Dental Assistants (445), Health Aides, Except Nursing (446), Nursing Aides, Orderlies, and Attendants (447), K-12 Teachers, Assistants, and Child Care Workers combine the following codes: Prekindergarten and Kindergarten (155), Elementary School (156), Secondary School (157), Special Education (158), Teachers, Not Elsewhere Classified (159), Early Childhood Teachers’ Assistants (467, Year 10 only), Child Care Workers, Except Private Household (468).

Table 3.

Distributions of study variables by race among CARDIA women (n=1,006).

	Race		p-value	Standardized Mean Difference ^a
	Black (N=417) n (%)	White (n=589) n (%)		
2012-13 LUTS/Impact Cluster Category				
Bladder Health	190 (45.56)	244 (41.43)		
Mild LUTS/Impact	123 (29.50)	204 (34.63)		
Moderate LUTS/Impact	82 (19.66)	116 (19.69)		
Severe LUTS/Impact	22 (5.28)	25 (4.24)	0.32	0.12
Job Strain Composite Variables				
Psychological Job Demands (Y2 and 10 average)	2.56 (0.43)	2.70 (0.42)	<0.001	0.32
Decision Latitude (Y2 and 10 average)	2.90 (0.42)	3.10 (0.42)	<0.001	0.46
Job Strain Ratio (ratio of averaged demands to latitude)	0.90 (0.22)	0.88 (0.17)	0.09	0.11
Year 2 (1987-88) Occupation^b				
Managerial/Professional	51 (12.56)	193 (33.92)		
Technical/Sales/Support				
Technical	16 (3.94)	36 (6.33)		
Sales	46 (11.33)	70 (12.30)		
Support	178 (43.84)	140 (24.60)		
Nurses, Health Assistants, and Health Aides	29 (7.14)	40 (7.03)		
K-12 Teachers, Assistants, and Child Care Workers	12 (2.96)	25 (4.39)		
Service	49 (12.07)	33 (5.80)		
Precision/Craft/Repair	5 (1.23)	14 (2.46)		
Operators/Fabricators/Laborers	20 (4.93)	18 (3.16)	<0.001	0.65
Year 10 (1995-96) Occupation^b				
Managerial/Professional	68 (17.04)	236 (43.38)		
Technical/Sales/Support				
Technical	22 (5.51)	24 (4.41)		
Sales	39 (9.77)	45 (8.27)		
Support	150 (37.59)	91 (16.73)		
Nurses, Health Assistants, and Health Aides	34 (8.52)	46 (8.46)		

	Race			p-value	Standardized Mean Difference ^a
	Black (N=417)	White (n=589)			
K-12 Teachers, Assistants, and Child Care Workers	23 (5.76)	36 (6.62)			
Service	37 (9.27)	28 (5.15)			
Precision/Craft/Repair	6 (1.50)	14 (2.57)			
Operators/Fabricators/Laborers	20 (5.01)	24 (4.41)		<0.001	0.69

^aThe standardized mean difference is the difference in means between Black and White women, scaled by the standard deviation of the difference in means. Values of 0.1 and above are considered meaningful.³⁰

^bDue to small numbers, participants whose occupations corresponded to the category, "Farming/Forestry/Fishing," were not included. Sample size is 975 for Year 2 (1987-88) and 943 for Year 10 (1995-96).

Table 4.

Associations between job variables and 2012-13 LUTS/impact cluster category membership among CARDIA women, adjusting for age, race, and parity (n=1,006).^a

	Proportional Odds		Moderate/Severe LUTS versus BH/Mild LUTS		LUTS (Mild, Moderate, Severe) versus BH	
	OR	95% CI	OR	95% CI	OR	95% CI
<i>Main Effects of Job Variables (entered simultaneously)</i>						
Psychological Job Demands	1.05	(0.89, 1.24)	0.96	(0.68, 1.35)	1.20	(0.89, 1.62)
Decision Latitude	0.85	(0.72, 1.00)	0.76	(0.54, 1.07)	0.75	(0.56, 1.02)
<i>Job Strain Examined as an Interaction (entered simultaneously)</i>						
Psychological Job Demands	0.60	(0.20, 1.81)	0.19	(0.02, 1.84)	0.75	(0.10, 5.57)
Decision Latitude	0.52	(0.20, 1.37)	0.18	(0.02, 1.35)	0.50	(0.09, 2.89)
Psychological Job Demands x Decision Latitude	1.20	(0.84, 1.72)	1.71	(0.81, 3.59)	1.17	(0.61, 2.24)
<i>Job Strain Examined as an Averaged Ratio</i>						
Psychological Job Demands / Decision Latitude	1.29	(0.90, 1.86)	1.30	(0.61, 2.77)	1.78	(0.91, 3.47)
<i>Year 2 Occupation (reference group is Managerial/Professional)^b</i>						
Technical/Sales/Support						
Technical	1.12	(0.79, 1.59)	1.12	(0.51, 2.46)	1.25	(0.68, 2.30)
Sales	1.22	(0.94, 1.58)	1.97	(1.16, 3.36)	0.93	(0.59, 1.47)
Support	1.27 ^c	(1.03, 1.55)	1.85	(1.20, 2.86)	1.24	(0.87, 1.77)
Nurses, Health Assistants, and Health Aides	1.22	(0.90, 1.65)	1.53	(0.80, 2.94)	1.39	(0.80, 2.42)
K-12 Teachers, Assistants, and Child Care Workers	1.18	(0.80, 1.76)	1.66	(0.73, 3.77)	1.18	(0.58, 2.38)
Service	1.78	(1.34, 2.36)	2.97	(1.66, 5.30)	2.32	(1.33, 4.04)
Precision/Craft/Repair	1.09	(0.63, 1.90)	1.13	(0.33, 3.88)	1.29	(0.50, 3.35)
Operators/Fabricators/Laborers	1.34	(0.92, 1.97)	2.34 ^c	(1.09, 5.05)	1.38	(0.68, 2.79)
<i>Year 10 Occupation (reference group is Managerial/Professional)^b</i>						
Technical/Sales/Support						
Technical	0.97	(0.66, 1.43)	0.88	(0.38, 2.06)	1.11	(0.59, 2.10)
Sales	1.33 ^d	(1.00, 1.75)	2.11	(1.21, 3.68)	1.12	(0.68, 1.84)
Support	1.15	(0.93, 1.42)	1.34	(0.86, 2.09)	1.15	(0.80, 1.65)
Nurses, Health Assistants, and Health Aides	1.49	(1.13, 1.97)	1.83 ^d	(1.03, 3.24)	2.16	(1.26, 3.70)

	Proportional Odds		Moderate/Severe LUTS versus BH/Mild LUTS		LUTS (Mild, Moderate, Severe) versus BH	
	OR	95% CI	OR	95% CI	OR	95% CI
K-12 Teachers, Assistants, and Child Care Workers	1.05	(0.75, 1.47)	1.45	(0.74, 2.84)	0.88	(0.50, 1.54)
Service	2.10	(1.56, 2.84)	4.80	(2.68, 8.60)	2.27	(1.26, 4.11)
Precision/Craft/Repair	1.60	(0.97, 2.63)	1.77	(0.62, 5.05)	2.68	(0.96, 7.49)
Operators/Fabricators/Laborers	1.49 <i>d</i>	(1.05, 2.13)	2.24 <i>d</i>	(1.11, 4.53)	1.96	(0.99, 3.86)

^aFor all analyses, covariates include age, race (Black versus White), and parity by Year 25 (1 or more versus 0).

^bDue to small numbers, participants whose occupations corresponded to the category, "Farming/Forestry/Fishing," were not included. Sample size is 975 for Year 2 and 943 for Year 10.

^cThis effect was non-significant when additionally adjusting for highest education by Year 2 and Year 2 financial hardship.

^dThis effect was non-significant when additionally adjusting for highest education by Year 10 and Year 10 financial hardship.