Prevalence and risk factors for urinary incontinence up to two-years postpartum: a cross-sectional population-based study

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Background

- Impacts of urinary incontinence (UI) include: diminished quality of life, sexual dysfunction, time off work, direct monetary costs, increased healthcare resource use and healthcare costs [1-3].
- Estimates of UI in the early postpartum period are approximately 29-45% in the first 3-6 months [4-6].
- Significant variation in the literature regarding trends in UI in the later postpartum period (decreasing vs increasing vs stable prevalence) [7-9].
- Identified risk factors for postpartum UI include: age and parity [10], vaginal vs cesarean delivery [8], higher body mass index (BMI) [7], UI before or during pregnancy [11], higher birthweight of baby [11], breastfeeding [10], diabetes [12], and smoking [13].

Aims

- Estimate prevalence of UI across the 24 months after delivery in a nationally representative, contemporary population of postpartum individuals.
- Identify risk factors for UI in the first 24 months postpartum.

Methods

- Cross-sectional, population-based nationally representative sample.
- National Health and Nutrition Examination Survey (NHANES) data from 2011-2018.
  - Combination of interview and physical exam in a mobile exam center for ~5000 persons each year in USA.

Inclusion criteria: parous individuals 20 years and older, vaginal or cesarean delivery within the past 24 months, not currently pregnant.

Data analysis:

- NHANES weighting used to produce estimates that would have been obtained if the entire US population had been sampled.
- Bivariable analysis of the population by incontinence status to evaluate differences in baseline characteristics between postpartum women with and without UI.
- Bivariable linear regression to assess relationship between months since delivery and presence of UI symptoms.
- Multivariable logistic regression model to estimate the association between UI and various risk factors.

Results

- 560 women at 24 months or fewer postpartum met inclusion criteria
  - 90 primiparous and 470 multiparous
  - Mean number of months since delivery = 11.1
- 229 (**43.5 ±2.4%, weighted prevalence**) reported any UI
  - Prevalence of UI 40.5 ±6.0% for primiparas vs 44.1 ±2.7% for multiparas (p=0.59)
- Stress UI was the most common subtype (63.3% of UI)
- 82.8 ±4.8% reported mild incontinence
- No correlation between number of months postpartum and prevalence of UI symptoms (R^2=0.004, p=0.20)

Results Continued

Table 1: Baseline characteristics of women 24 months or fewer postpartum in the NHANES cohort 2011-2018, stratified by urinary incontinence status.

Characteristic	Incontinence (n=229)	No Incontinence (n=331)	p-value
Age in years, mean (SEM)	30.3 (0.5)	28.8 (0.5)	0.04*
BMI, mean (SEM)	31.1 (0.6)	28.9 (0.6)	0.009*
Prior Vaginal Delivery, n (% ±SE)[a]	189 (82.7 ±2.6)	238 (70.6 ±3.3)	0.006*
Prior Cesarean Delivery, n (% ±SE)[a]	175 (74.7 ±0.3)	249 (76.5 ±2.7)	0.66
Delivery of Baby Weighing 9lbs or more, n (% ±SE)[a]	28 (16.2 ±2.9)	27 (7.0 ±1.6)	0.004*
Current Asthma, n (% ±SE)[a]	27 (14.8 ±3.1)	30 (11.3 ±2.7)	0.38
Current smoker, n (% ±SE)[a]	50 (23.5 ±3.2)	51 (17.7 ±2.3)	0.09
Physical Activity, n (% ±SE)[a]	8 (4.3 ±1.6)	18 (5.2 ±1.8)	0.72
Gestational Diabetes, n (% ±SE)[a]	39 (16.3 ±3.0)	39 (11.7 ±2.0)	0.21
Current Breastfeeding, n (% ±SE)[a]	60 (24.8 ±3.8)	79 (22.5 ±2.7)	0.60

Table 2: Univariable and multivariable analysis of risk factors for UI.

Risk Factors	Unadjusted Odds Ratio (95% CI)	Unadjusted p-value	Adjusted Odds Ratio (95% CI)[b]	Adjusted p-value
Age	1.0 (1.0-1.1)	0.047	1.0 (0.99-1.1)	0.052
BMI ≥ 30	1.4 (0.98-2.1)	0.062	1.4 (0.9-2.0)	0.102
Prior Vaginal Delivery	2.0 (1.2-3.2)	0.006	2.0 (1.3-3.3)	0.004*
Delivery of Baby Weighing 9lbs or More	2.5 (1.4-4.8)	0.004	2.5 (1.3-4.8)	0.005*
Current Smoking	1.4 (0.9-2.2)	0.090	1.5 (1.0-2.3)	0.048*
Current Breastfeeding	1.1 (0.7-1.8)	0.600	1.2 (0.7-1.9)	0.544

* p<0.05.
[a] Percentages are weighted using survey procedure to reflect national estimates.
[b] aOR were estimated from a multivariable model with all predictors listed in the table included as covariates in addition to asthma and physical activity (>75 vs <75 minutes per week).

Discussion

- Given the NHANES design and weighting procedures our cohort of 560 can be extrapolated to represent 6,556,142 women in the U.S. population between 2011-2018 [14].
- Risk factors for postpartum UI in this study are consistent with prior studies.
- Higher prevalence of UI in our study compared to others may be due to:
  - Higher BMI in our sample compared to others [7, 9, 10].
  - Some studies were restricted to primiparous [5, 7].
- The persistently high prevalence of UI contrasts with reports of reduction of UI symptoms over the months following delivery.
- Counseling could address smoking as a modifiable risk factor for postpartum UI.

Conclusions

- Urinary incontinence is prevalent during the first two years postpartum.
- The high and enduring prevalence of UI highlights the importance of screening for incontinence during standard postpartum visits, as well as longitudinally beyond the postpartum period to promote patient education, support, and treatment.

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