

IS URINARY INCONTINENCE DURING AND AFTER PREGNANCY RELATED TO FAMILY HISTORY? (MOTHERFIT PROJECT)

Hypothesis / aims of study

There is growing interest in hereditary factors and pelvic floor disorders.[1] We hypothesize that a family history of urinary incontinence (UI) is associated with UI during pregnancy and shortly after delivery.

Study design, materials and methods

In 2010, Dutch adult postpartum women who gave birth after 37 weeks gestation were approached within three months after delivery by their midwife, gynaecologist, general practitioner or physiotherapist. They filled in a web-based questionnaire asking about demographics, UI and risk factors maternal age, body mass index (BMI), parity, caesarean section, prolapse (POP), physically heavy work and UI family history. Results were analyzed with Chi-square and logistic regression analyses.

Results

Results of 162 questionnaires of women aged 18-45 years (response rate 61%) show 76 (47%) women reporting UI before and/or during and/or after pregnancy. Twenty-four (34%) women also report a UI family history while 52 did not or were not aware of UI family history, whereas 16 (21%) out of 68 women without UI reported a UI family history ($p = 0.05$). BMI is significantly associated with UI during pregnancy ($p = 0.035$), but the association disappears when family history is added. Women who reported not to know their UI family history had a higher risk for UI shortly after pregnancy.

Interpretation of results

Results of our study point at a significant role of family history as a determinant for UI during pregnancy, as reported earlier.[2] The relationship between family history and UI shortly after pregnancy is less clear.

In our study, 53 women were unaware of UI family history, which supports earlier statements that patients are hardly aware of their family history.[3] However, family history may provide interesting information for early detection of populations at risk. Surely, the rather large 'I don't know'- group contained both women with and without a family history of UI, and this group had a significantly higher risk for UI after pregnancy. The number of women who did know their family history may have been too small to show a statistically significant relationship with UI after pregnancy.

The study population of 162 postpartum women with an acceptable response rate of 62%, is comparable to the average Dutch population as regards the number of sectio's, the average parity and maternal age.

We included one question to measure family history to assess the influence of the family history via the mother's (grand)mother, but fathers as well as grandfathers can also experience UI. Therefore, including the father's history might increase the strength of the relationship between UI and family history, which may now be underestimated. Adding more questions about family history can increase validity and reliability.

Concluding message

Awareness of relevant family history among researchers, health care providers and the population is needed. As in most Western countries, Dutch pregnant and postpartum women are monitored mainly by midwives and obstetricians. More research is needed whether adding family history questions on UI in pre partum consultations improves timely prevention.

Table 1. Comparison of women with and without UI during pregnancy and post partum on risk factors

Risk factors		Total N=162	UI during pregnancy N (%)			UI post partum N(%)		
			Yes N=65 (40)	No N=97 (60)	p- value	Yes N=52 (32)	No N=110 (68)	p- value
Maternal age	mean (SD)	28.9 (3.5)	29.1 (3.8)	28.7 (3.2)	n.s.	28.8 (3.8)	29.0 (3.4)	n.s.
BMI (4 missing)	mean (SD)	24.3 (4.8)	25.3 (6.1)	23.6 (3.6)	n.s.	24.9 (6.3)	24.1 (4.0)	n.s.
Parity	1	76 (46.9)	25 (38.5)	51 (52.6)	n.s.	23 (44.2)	53 (48.2)	n.s.
n (%)	2	51 (31.5)	13 (33.8)	29 (29.9)		15 (28.8)	36 (32.7)	
	3 or more	35 (21.6)	18 (27.7)	17 (17.5)		14 (26.9)	21 (19.1)	
CS	No	136 (84.0)	53 (81.5)	83 (85.6)	n.s.	43 (82.7)	93 (84.5)	n.s.
n (%)	Yes	26 (16.0)	12 (18.5)	14 (14.4)		9 (17.3)	17 (15.5)	
POP	No	147 (90.7)	57 (87.7)	90 (92.8)	n.s.	44 (84.6)	103 (93.6)	n.s.
n (%)	Yes	15 (9.3)	8 (12.3)	7 (7.2)		8 (15.4)	7 (6.4)	
Physically heavy work	No	115 (71.0)	46 (70.8)	69 (71.7)	n.s.	35 (67.3)	80 (72.7)	n.s.
n (%)	0-5 years	17 (10.5)	4 (6.2)	13 (13.4)		5 (9.6)	12 (10.9)	
	> 6 years	30 (18.5)	15 (23.1)	15 (15.5)		12 (23.1)	18 (16.4)	
FH	No	69 (42.6)	22 (33.8)	47 (48.5)	0.03	15 (28.8)	54 (49.1)	0.04
n (%)	Yes	40 (24.7)	23 (35.4)	17 (17.5)		17 (32.7)	23 (20.9)	
	I don't know	53 (32.7)	20 (30.8)	32 (33.0)		20 (38.5)	32 (29.0)	
UI during pregnancy	No	97 (59.9)				9 (17.3)	88 (80.0)	n.s.
n (%)	Yes	65 (40.1)				43 (82.7)	22 (20.0)	

BMI = Body Mass Index. Four women did not fill in their weight. Therefore their BMI could not be calculated.

CS = Caesarean section; POP = Pelvic organ Prolapse = POP; FH = Family History; UI = Urinary Incontinence; n.s.= not significant, p>0.05.

Table 2. Logistic regressions for the association between risk factors and UI.

Block	UI during pregnancy				UI postpartum			
	OR	CI of 95%		P	OR	CI of 95%		P
		lower	upper			lower	upper	
Maternal age BMI	1.067	0.965	1.179	0.205	1.004	0.907	1.112	0.941
Parity	1.082	1.006	1.164	0.033	1.035	0.963	1.113	0.347
Caesarean section	1.447	0.965	2.170	0.074	1.190	0.785	1.804	0.412
POP	1.034	0.414	2.584	0.942	0.861	0.328	2.258	0.761
R ²	1.754	0.561	5.489	0.334	2.631	0.872	7.943	0.086
	0.086				0.043			
Maternal age BMI	1.027	0.922	1.145	0.626	0.989	0.884	1.106	0.843
Parity	1.083	1.005	1.167	0.035	1.032	0.959	1.110	0.398
Caesarean section	1.388	0.919	2.095	0.119	1.163	0.764	1.770	0.483
POP	1.114	0.437	2.841	0.822	0.878	0.332	2.324	0.793
Physical work	1.778	0.556	5.684	0.332	2.619	0.863	7.942	0.089
No physical work ref.								
In years: 0-5								
> 6								
R ²	0.368	0.096	1.416	0.146	0.776	0.220	2.741	0.694
	1.445	0.598	3.494	0.414	1.434	0.586	3.510	0.430
	0.113				0.051			
Maternal age BMI	1.034	0.926	1.155	0.553	0.983	0.876	1.102	0.768
Parity	1.079	0.999	1.165	0.053	1.027	0.953	1.107	0.484
Caesarean section	1.230	0.797	1.899	0.349	1.071	0.686	1.673	0.762
POP	1.282	0.485	3.390	0.616	1.140	0.414	3.138	0.800
Physical work	1.541	0.468	5.070	0.477	2.423	0.777	7.555	0.127
No physical work ref.								
In years: 0-5	0.400	0.101	1.584	0.192	0.880	0.243	3.186	0.846
> 6	1.447	0.588	3.562	0.421	1.483	0.592	3.714	0.400
Family history								
No FH is ref.								
Yes	2.641	1.069	6.523	0.035*	2.399	0.935	6.157	0.069
I don't know	1.332	0.596	2.975	0.485	2.578	1.101	6.038	0.029*
R ²	0.149				0.100			

* statistically significant: p < 0.05. UI = Urinary Incontinence; OR = Odds Ratio; CI = Confidence Interval; BMI = Body Mass Index; POP = Pelvic Organ Prolapse; For POP and caesarean section: 0= No (ref.) and 1=Yes.

References

1. DeLancey JOL, Kane Low L, Miller JM, Patel DA, Tumbarello JA (2008) Graphic integration of causal factors of pelvic floor disorders: an integrated life span model. *Am J Obstet Gynecol* 199(6):610.e1-.e5. doi: 10.1016/j.ajog.2008.04.001.
2. Söderberg MW, Byström B, Hammarström M, Malmström A, Ekman-Ordeberg G (2010) Decreased gene expression of fibrillin-1 in stress urinary incontinence. *Neurourol Urodyn* 29(3):476-81. doi: 10.1002/nau.20735.
3. Ertunc D, Tok EC, Pata O, Dilek U, Ozdemir G, Dilek S (2004) Is stress urinary incontinence a familial condition? *Acta Obstet Gynecol Scand*. 83(10):912-6. doi 10.1111/j.001-6349.2004.00333.

Disclosures

Funding: NA **Clinical Trial:** No **Subjects:** HUMAN **Ethics not Req'd:** Upon consultation, the Medical Ethics Committee of the region Maastricht, stated that ethical approval was not needed given the non-invasive character of the survey. However, all participating women gave their informed consent to the health professionals that approached them for the survey. **Helsinki:** Yes
Informed Consent: Yes