

HOW DOES WEIGHT GAIN DURING PREGNANCY AFFECT RISK OF URINARY INCONTINENCE?

Hypothesis / aims of study

Urinary incontinence is a common condition among pregnant women [1]. Overweight [2] and weight gain [3] are general risk factors for urinary incontinence. The correlation between weight gain and urinary incontinence during pregnancy and post partum has, however, not been systematically investigated. We do not know of any prospective urinary incontinence studies with data on the effect of weight gain during different time periods of pregnancy.

Our aims were

- 1) to investigate how weight gain in 1st and 2nd trimester affect urinary incontinence in week 30 of pregnancy.
- 2) to investigate how weight gain in 1st and 2nd trimester, total weight gain during pregnancy and weight gain from before pregnancy to 6 months after pregnancy affect urinary incontinence 6 months post partum.

Study design, materials and methods

Data was collected as part of the Norwegian Mother and Child Cohort Study conducted by the Norwegian Institute of Public Health. This is a large demographic survey with cohort design, aiming at recruiting 100.000 pregnant women. From the available dataset consisting of 42.502 women we defined a cohort of 12.679 primiparous women who were continent before pregnancy. The women were contacted by mail in week 15 of pregnancy with information about the study and a questionnaire. If they accepted to participate in study, they received additional questionnaires in week 30 of pregnancy and 6 months post partum. We present questionnaire data on urinary incontinence and weight change. The women reported weight before pregnancy, at week 15 and 30 of pregnancy, at the end of pregnancy and 6 months post partum. We present data on weight gain in each trimester, total weight gain during pregnancy and total weight gain from pre-pregnancy weight to 6 months post partum. We had data on urinary incontinence at week 15 and 30 of pregnancy and 6 months post partum. We investigated the effect of weight gain during pregnancy on urinary incontinence in week 30, and the effect of weight gain during pregnancy and weight gain from before pregnancy to post partum on urinary incontinence 6 months post partum. We categorised weight gain based on prevalence data. Women not gaining weight during the set time periods during pregnancy were excluded from the analyses. We adjusted for BMI before pregnancy and age when analyzing on urinary incontinence during pregnancy. We adjusted for BMI, urinary incontinence during pregnancy, age and delivery type in analyses of urinary incontinence post partum. Statistical significance was accepted when $p < 0.05$

Results

During 1st trimester mean weight gain was 3.3 kg (95% CI 3.3 – 3.4). At week 30 of pregnancy weight gain during 1st trimester was associated with increased risk of urinary incontinence for all levels of weight gain (Table 1). The associations were statistically significant. Mean weight gain during 2nd trimester was 7.0 kg (95% CI 6.9 – 7.0). At week 30 of pregnancy there were no statistically significant associations between weight gain in 2nd trimester and urinary incontinence. At 6 months post partum, there were no statistically significant associations between urinary incontinence and weight gain in 1st trimester, 2nd trimester or during the whole pregnancy (Table 1). However, there was a statistically significant association between weight gain > 8 kg in 3rd trimester and increased risk of urinary incontinence (Table 1). The mean weight gain from before pregnancy to 6 months post partum was 1.2 kg (95% CI 1.1 – 1.3). At 6 months post partum, there were statistically significant associations between the risk of urinary incontinence and all levels of weight gain from before pregnancy to 6 months post partum (Table 1).

Table 1. The associations between weight gain and urinary incontinence in week 30 of pregnancy and 6 months post partum.

Time period	Weight gain (kg)	% UI week 30	Adj. OR ¹	CI	% UI 6 months pp	Adj. OR ²	CI
1 st trimester	0 – 3	38.2	Ref		32.0	Ref	
	4 – 6	42.4	1.2	1.1 – 1.3*	31.0	0.9	0.8 – 1.0
	> 7	54.3	1.3	1.2 – 1.5*	32.1	0.9	0.8 – 1.1
2 nd trimester	< 3.5	43.3	Ref		30.8	Ref	
	3.5 – 6.9	39.6	0.9	0.8 – 1.0	31.5	1.0	0.9 – 1.1
	7 – 10.5	40.5	1.0	0.8 – 1.1	31.6	1.0	0.9 – 1.2
	> 10.5	39.6	1.0	0.8 – 1.1	31.7	1.1	0.9 – 1.3
3 rd trimester	0 – 3.9	NA			32.0	Ref	
	4 – 5.9	NA			31.5	1.1	1.0 – 1.2
	6 – 7.9	NA			31.8	1.1	1.0 – 1.3
	> 8	NA			32.8	1.2	1.1 – 1.4*
From before pregnancy to birth	< 9.9	NA			32.0	Ref	
	10 – 14.9	NA			31.8	1.0	0.9 – 1.2
	15 – 19.9	NA			32.2	1.1	1.0 – 1.3
	> 20	NA			30.8	1.1	0.9 – 1.2
From before pregnancy to 6 months post partum	< 0	NA			28.8	Ref	
	0 – 3.9	NA			31.9	1.2	1.1 – 1.3*
	4 – 7.9	NA			34.8	1.4	1.2 – 1.5*
	> 8	NA			36.9	1.6	1.3 – 1.8*

* statistically significant, $p < 0.05$

UI = urinary incontinence; CI = 95 % confidence interval; pp = post partum. Adj. OR = adjusted odds ratio

¹ = Adjusted odds ratio for age and BMI before pregnancy.

² = Adjusted odds ratio for age, BMI before pregnancy, urinary incontinence during pregnancy and delivery type.

Interpretation of results

Weight gain during 1st trimester of pregnancy was significantly associated with increased risk of urinary incontinence at week 30 of pregnancy. Weight gain between the pre-pregnancy state and 6 months post partum was significantly associated with increased risk of urinary incontinence post partum. Total weight gain during pregnancy and weight gain in 1st and 2nd trimester did not appear to be risk factors for urinary incontinence post partum.

Concluding message

Women not getting back to pre-pregnancy weight by 6 months post partum have increased risk of urinary incontinence. These results correspond well with previous studies indicating that weight is a general risk factor for urinary incontinence. This longitudinal study indicates that weight gained over a short time period can cause urinary incontinence, specifically when related to pregnancy.

References

1. Wesnes SL, Rortveit G, Bo K, Hunskaar S. Urinary incontinence during pregnancy. *Obstet Gynecol* 2007;109(4):922-8
2. Hunskaar S. A systematic review of overweight and obesity as risk factors and targets for clinical intervention for urinary incontinence in women. *Neurourol Urodyn* 2008;27(8):749-57
3. Townsend MK, Danforth KN, Rosner B, Curhan GC, Resnick NM, Grodstein F. Body mass index, weight gain, and incident urinary incontinence in middle-aged women. *Obstet Gynecol* 2007;110(2 Pt 1):346-53

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<i>Is this a clinical trial?</i>	No
<i>What were the subjects in the study?</i>	HUMAN
<i>Was this study approved by an ethics committee?</i>	Yes
<i>Specify Name of Ethics Committee</i>	The Regional Ethics Committees for Medical Research, Health Region II, Norway
<i>Was the Declaration of Helsinki followed?</i>	Yes
<i>Was informed consent obtained from the patients?</i>	Yes