

HOW ARE INCIDENCE AND PREVALENCE INFLUENCED BY PREGNANCY AND CHILDBIRTH? A SYSTEMATIC LITERATURE REVIEW

Hypothesis / aims of study

Urinary incontinence (UI) is a common problem, thus evidence about its prevalence is often sought by clinicians, health researchers, service planners for better treatments and services for those affected. Accurate prevalence data have been proven difficult to establish, because, when the epidemiologic literature for UI is considered, a striking and regrettable factor is the heterogeneity between studies in terms of methodologies, definitions of UI, and populations considered which hinders the determination of much more precise estimates. For these reasons, a systematic review on UI definition and prevalence in Women is almost impossible.

The aim of this study was to perform a systematic review of the published study in order to answer the following research question: How are incidence and prevalence influenced by pregnancy and childbirth?

Study design, materials and methods

A systematic (and when not possible qualitative) review of all European studies that reported outcomes during and after pregnancy in women with initial or final diagnosis of UI. Studies were sought from MEDLINE via PubMed, and manual searches of reference lists from systematic reviews and consensus conferences. Four investigators independently decided on the eligibility of the studies according to recommendations from the Cochrane manual for systematic reviews. An algorithm to define eligibility of the studies was developed.

The investigators reviewed abstracts to exclude all studies in which female UI prevalence and incidence were not clear enough, animal or in vitro experiments, analysis of results taken directly from abstracts, letters, comments, and case reports. The investigators confirmed the eligible target population of European female adults. The studies published in the English, Spanish, French, German, and Italian languages between 2000 and September 2010 were examined to identify studies with eligible outcomes.

Results

We identified 7 studies that investigated the prevalence of UI during pregnancy in Europe. Four studies were conducted in continent primiparous women before pregnancy; two studies evaluated all pregnant women and in one study, carried out in primiparas, the continent status before pregnancy was not mentioned. From a cohort study on 1128 continent nulliparous pregnant women attending the public health service with the aim to estimate the frequency and severity of UI during pregnancy and after delivery. It was found a prevalence rate of UI at the 1st trimester of 8.3% (95% CI 6.6-10), at the 2nd of 31.8% (28.9-34.7) and at the 3rd of 34.8 % (31.7-37.9). The most prevalent type of UI was the stress UI (SUI) (up to 79.2% at the 3rd trimester). At an average of 7 weeks after delivery they observed a UI prevalence rate of 16.3%. At multivariate analysed they found the following risk factors of UI in pregnancy: maternal age >35 years [adjusted hazard ratio (HR) of 2.1; 95% confidence interval (95%CI) 1.0-2.8], initial maternal body mass index (BMI) (adjusted HR 1.3; 95% CI 1.3-2.2), a family history of UI (adjusted HR 1.7; 95% CI 1.3-2.2) (see Appendix D, table 7). In another study, evaluating 396 nulliparous pregnant women "at term" and 6 months after delivery in order to assess the prevalence of SUI during pregnancy and in the post-partum period, it was found a SUI prevalence rate at term of 31.2%. The prevalence rates of SUI and mixed UI (MUI) 6 months after childbirth was of 12.1% and 3% respectively. Results from a prospective longitudinal observational cohort study on all consecutive women attending a Swedish gynaecological department in early pregnancy, with the aim at evaluating the possible relationship of reproductive hormones to SUI with its onset during pregnancy, showed an increasing SUI rate according to the different period of pregnancy (10% at week 12, 23% at week 24 and 26% at week 36%). Thirteen weeks after delivery the prevalence of SUI was 7.2%. Those authors found that the women reporting SUI during pregnancy showed the lowest relaxin levels, suggesting a role of this hormone in maintaining urinary continence during pregnancy. In another prospective cohort study carried out on 344 nulliparous women with 12-18 weeks of gestation and 1 year after childbirth in order to assess the severity of both SUI and overactive bladder (OAB) symptoms, the following UI prevalence rates were found: at 12 weeks of gestation 7.6% of SUI and 6.7% of OABwet; at 36 weeks of gestation 15.4% of SUI and 16.9% of OABwet. One year after delivery the prevalence rate of SUI and OABwet was 10.5% and 14.8% respectively. Evaluating 43279 Norwegian women in pregnancy, a prevalence of any UI before pregnancy was 26.2% and at 30 weeks of gestation was 58.1%. Taking into account only primiparous women (12679) a prevalence rate of any UI at 30 weeks of gestation was 40.2%. Six months after delivery the prevalence rate of any UI was 31%. The following significant risk factors for UI during pregnancy were defined: age more than 35 years [adjusted odd ratio (OR) of 1.4, 95% CI 1.3-1.5], 1 or more deliveries (adjusted OR 2.0, 95%CI 1.9-2.1), initial maternal BMI (adjusted OR 1.7; 95% CI 1.5-1.9). From another longitudinal study on 352 Spanish primiparous women, performed in order to investigate the risk factors involved in SUI occurrence 1 years after the 1st delivery 29.3% of primiparous women showed a SUI during pregnancy "at term". One year after delivery the prevalence of SUI was of 11.4% with an incidence of 4.3%. We identified overall 25 studies investigating the impact of obstetric factors on UI after childbirth: ten cross-sectional studies ; 11 cohort studies ; three case-control studies; a quasi randomised clinical trial (RCT) (Perineal tears and episiotomy did not seem to negatively impact on urinary continence status at 1 and 4 years post partum, respectively. A case-control study between women with and without obstetric anal sphincter injuries (OASIS) showed a significant higher risk of SUI at 10 weeks after delivery in women with OASIS (OR 2.65; 95% CI 1.22-5.74), as well as in women with a second stage labour >50 minutes (median time) (OR 2.32; 95% CI 1.07-5.06). Concerning the instrumental vaginal delivery data are conflicting. Both instrumental and spontaneous vaginal delivery resulted significantly less protective than caesarean section. In a retrospective cohort study, it was found an advantage in performing a caesarean section only for women who had one caesarean section before (OR 0.25; 95% CI 0.07-0.87). We identified 8 RCTs and 1 cohort study and nested RCT that investigated the impact of Pelvic Floor Muscle Training (PFMT) on UI after delivery. None of the studies showed a significant impact of postnatal PFMT in both mid- (9

months) and long-term UI after pregnancy (up to 6 years). Data on antenatal PFMT were conflicting. Two studies showed a preventive role at 3 months after delivery, not confirmed by the others at a longer follow-up.

Interpretation of results

The prevalence rates of UI “at term” pregnancy in Europe ranged from 26% up to 40.2%, with a remission rate 3 months after childbirth up to 86.4%. The prevalence rates of post-partum UI at 3 months after childbirth ranged from 2.2% up to 15%. UI during pregnancy represented a significant risk factor for the persistence of UI after delivery (OR 3.71; 95% CI 1.95-7.06). The major obstetric risk factor was the mode of delivery. The caesarean section seemed to be more protective than vaginal delivery, but this advantage disappeared after the second caesarean delivery (OR 0.47; 95% CI 0.04-5.69). Five RCTs focused on the impact of antenatal PFMT on the improvement of the continence status in women after childbirth. Antenatal PFMT could be helpful in the post-partum UI prevention in primiparous women without UI during pregnancy

Concluding message

The main risk factors for UI during pregnancy in primigravidas are maternal age, increased initial BMI and pre-existent UI. Considering all pregnant women parity represents a further risk factor. The main risk factors for postpartum UI are maternal age, parity, maternal overweight, and UI during pregnancy. Among the many methods proposed to prevent postpartum UI, episiotomy and PFMT were investigated. The results are disappointing or limited. The caesarean section seemed to be followed by less post natal urinary incontinence than vaginal delivery, but this advantage disappeared with time and after the second caesarean section

<i>Specify source of funding or grant</i>	The Executive Agency for Health and Consumers
<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>	No
<i>This study did not require ethics committee approval because</i>	it is a systematic synthesis of the published literature
<i>Was the Declaration of Helsinki followed?</i>	Yes
<i>Was informed consent obtained from the patients?</i>	No