



Urinary Incontinence During Pregnancy and Postpartum Incidence, Severity and Risk Factors in Alzahra and Taleqani Hospitals in Tabriz , Iran, 2011-2012

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Abstract

Objectives: This is a cohort study that investigated the incidence, severity and risk factors of Urinary Incontinence during pregnancy and postpartum in nulliparous women.

Materials and Methods: In this cohort study, 441 nulliparous women were studied. The women were followed up from the beginning of pregnancy until the postpartum period. The prevalence of urinary incontinence was determined among them. Risk factors that could play a significant role were analyzed using questionnaires.

Results: In this study, 441 nulliparous women with an average age of 28.1 ± 3.7 years were studied. The prevalence of urinary incontinence in the third trimester of pregnancy was 39.4% and it was 31% in the postpartum period. Vaginal delivery, maternal weight, and fetal weight (> 4 kg) were the most important risk factors for increasing the incidence rate of urinary incontinence. In this study, age had no role in incontinence. The severity of incontinence in 26.6% of the participants over 5 was based on visual analogue scale (VAS) scoring.

Conclusion: Urinary incontinence is one of the common disorders during pregnancy and postpartum period that can affect quality of women life significantly. Type of delivery and maternal and fetal weights are the most important risk factors for increasing this disorder. Unlike previous studies, age did not play any role in incontinency in this study.

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Introduction:

Urinary incontinence (UI) is one of the significant problems during pregnancy and after delivery. Although this functional disorder is more common with increasing age, it has been seen in young people especially young women (2, 1). It is one of the major public health problems which may affect the quality of life and it can cause psychological problems leading to depression and decreased self-esteem (3). The previous studies indicated an increase of urinary incontinence during pregnancy and its severity could be also different in the patients (4).

Urinary incontinence can be closely related to age, weight, physical activity, smoking and type of delivery. Using tools such as forceps and vacuum during childbirth could be considered as a risk factor (5). Urinary incontinence can be a common problem for young women. Based on the previous studies, one-third of new mothers and 50% of women over 60 are suffering from UI. The studies have shown that urinary incontinence in pregnant women is more common than the other ones; IU percentage was approximately 60 among the pregnant and delivered women whereas it was 31 in the other ones (6).

The question is whether the pregnancy or vaginal delivery is a risk factor for urinary incontinence. Various papers have shown the benefits of having a cesarean section, but this difference was not noticeable until 3 months after delivery. The purpose of this study was to examine the frequency, severity and percentage of urinary incontinence during pregnancy and postpartum period and the risk factors of urinary incontinence in nulliparous women.

Material & Methods:

This cohort study was conducted in Alzahra and Taleqani educational centers of Tabriz University of Medical Sciences; department of Obstetrics and Gynecology in 2012-2013. The sample consisted of 441 women delivered vaginally or by cesarean section. Inclusion criteria for this study included individual's consent to participate in this study, no history of pelvic trauma, anus and rectal surgery, no previous urinary tract and

gastrointestinal tract impairment and on time referring to the maternity clinic for follow-up. In this study, nulliparous women who referred to specialized clinics in Alzahra and Taleqani educational hospitals affiliated with the Tabriz University of Medical Sciences were given necessary information about the study in their first visit and study purpose, which was a comprehensive survey of urinary incontinence, was made clear.

The women having urinary incontinence for any reason before pregnancy (anatomical, neuromuscular and hormonal) were excluded from the study using a designed questionnaire. Only nulliparous women who were healthy before pregnancy participated in this study.

At the end of each trimester of pregnancy (first, second, third) and also three months after delivery, they were examined in terms of urinary incontinence symptoms and related factors such as age, place of birth (urban or rural), education level, initial BMI (Body Mass Index), medical history, including chronic constipation, frequent sneezing and coughing, frequent urinary tract infections, diabetes, depression, history of urinary or fecal incontinence, physical activity (professional athlete, the daily routine, or less than usual), pregnancy problems (e.g. gestational diabetes, infection, high blood pressure), anemia, stimulating for vaginal delivery, cesarean delivery, episiotomy, or lack of it, and infant birth weight. Moreover, they were followed up in case of urinary incontinence prevalence in each trimester and three months postpartum. The Severity of urinary incontinence (less than once a month, once a month, once a week, daily) and its amount were measured (drip, drop, more than a slight loss).

SPSS version 17 was used for data analysis. Quantitative data was shown as mean and standard deviation and qualitative data as frequency and percentage. To compare quantitative data between urinary incontinence and non-urinary incontinence, we used independent T-test (Independent samples). For qualitative data, chi-square test or Fisher's exact test was used. Logistic regression was used to assess risk factors. In

all cases P-value <0.05 was considered significant.

Results:

In this study, 441 nulliparous women completed the study. Their mean age was 28.1 ± 3.7 years and their minimum and maximum ages were 19 and 32 respectively. Body mass Index (BMI), weight and height of the women were 31.5 ± 12.8 , 68.3 ± 12.6 kg, and 163.6 ± 16 cm respectively.

The prevalence rate of postpartum urinary incontinence was in 153 (31%) cases, and the cases were 44 (8/9%), 85 (17/2%), 194 (39/4%) during the first, second and third trimesters of pregnancy respectively.

Demographic data and urinary incontinence history of women have been shown in tables 1 and 2. As it is seen in the table, the statistically significant differences in the frequency of urinary incontinence rates were based on location, education level. Furthermore, there were statistically significant differences in the type of delivery and newborn birth weight among the cases having urinary incontinence. In other words, the incidence of urinary incontinence was higher in cases of vaginal delivery and birth weight greater than 4 kg. The average of urinary incontinence severity based on VAS was 3.3 ± 0.3 among women whose quality of life was affected. Severity of Urinary incontinence on VAS scoring in 131 women (26/6%) with urinary incontinence was over 5 and the rest were under 5. Episodes of urinary incontinence were less than once a month in 133 (27%), at least once per month in 66 (13/4%), weekly in 45 (9/1%), and daily in 7(1/4%) cases. The average age of the women with urinary incontinence was 27.7 ± 3.7 years, and it was 28.3 ± 3 in the absence of it. There was no statistically significant difference in terms of age. The average weight of the women with incontinence was 73.5 ± 13.9 kg and it was 66.8 ± 10.7 kg in the absence of it. P-value <0.05 was considered statistically significant difference.

As it has been shown in Tables 3 and 4, the role of each variable in the incidence of urinary incontinence after childbirth and the postpartum based on the regression model has been shown. birth weight, maternal

weight, and type of delivery had an important role in urinary incontinence whereas other variables did not have any role. In study on the role of various factors in urinary incontinence in women during pregnancy, factors such as location (urban or rural), maternal weight, and birth weight had significant roles; however, maternal age had no effect on the incidence of incontinence.

Discussion:

This study aimed to determine the frequency and severity of UI; furthermore, incontinence onset during pregnancy and early postpartum was able to corroborate some of the major risk factors for incontinence severity. The ideal model for studying the natural history of incontinence in pregnancy is through healthy (more than 90% did not report any complaints), nulliparous women because the pelvic floor remains intact in these women.

Based on the results of our study, the prevalence of urinary incontinence in the third trimester of pregnancy was almost 39% in its highest rate and in the course of postpartum, urinary incontinence was observed in 31% of women. It is similar to the figure of 45% calculated in a prospective study(12) but differs in the postpartum for women who remained healthy during pregnancy (9% compared with 31%)(6,13). Based on the previous reports, the rates of urinary incontinence during and after pregnancy varies from 3% to 38% (6, 5). The conducted studies showed urinary incontinence in 21% to 38% of women during the first six months postpartum which was compatible with our findings (4-8). Studies showed an increase in urinary incontinence in vaginal delivery cases. In our study, there was urinary incontinence in 69% of vaginal deliveries which was an important risk factor for the incidence of urinary incontinence. The previous studies have also noted the effect of vaginal delivery on IU (9-11).

Age, family history, baseline BMI, and excess weight-gaining during pregnancy are associated with a higher risk of incontinence. These results resemble those found in other studies (7,8,18) suggesting that intrinsic

factors may result in occurrence of incontinence throughout gestation and increase the risk after delivery.

A study conducted by Solas *et al.*, on the role of various factors in the incidence of urinary incontinence showed that age, maternal weight, and family history have had significant direct relation with the incidence of urinary incontinence (5). The study of Lageland *et al.*, indicated the important role of age in urinary incontinence; according to studies, in those who aged over 30 years, there has been a dramatic increase. In addition, the type of delivery was one of the important risk factors; a significant increase was observed in the incidence of urinary incontinence after vaginal delivery (6). Unlike some previous studies, our findings did not indicate the effect of maternal age on the incidence of urinary incontinence. Although the study of Solas (5) has emphasized the role of age, it was poor in Lageland study (6) and our study. Age did not play a significant role in the incidence of incontinence.

The greatest risk factor for increasing urinary incontinence during pregnancy and postpartum was related to the mother and newborn weight which was pointed out by the findings of previous studies. One remarkable point of our findings was the important role of birth weight, which could lead to an increase in urinary incontinence if it was over 4 kg. Besides, the type of delivery was important. There has been a significant increase in UI after vaginal delivery while no significant increased UI was observed after episiotomy. (6-10). In our study, the most important risk factors for incontinence in pregnancy were the mother and newborn weight especially in the third trimester and the other interesting finding was the patient's place of living (urban or rural) which had a significant role. In rural communities, urinary incontinence rate was higher than urban communities. In some studies, smoking and physical activity had significant roles in the incidence of urinary incontinence in pregnancy and postpartum which was not compatible with our findings (7-9). Some studies reported there is association between urinary incontinence

and type 2 diabetes mellitus; some factors causing urinary incontinence are related to changes induced by diabetes effect on the body, including microvascular damage, insulin injection, disease duration and urinary bladder dysfunction related to diabetes mellitus (14, 15, 16). Chuang *et al.*, assessed the impact of gestational diabetes mellitus (GDM) on postpartum urinary incontinence; based on reported results, GDM was associated with all type of urinary incontinence (stress, urge and mixed). Moreover, women with GDM also experienced higher proportion of moderate/severe stress urinary incontinence during postpartum prolonged in these women. Our study also confirmed GDM has significant increasing effect on UI (17).

Certain limitations of the study could be related to the design of study. In this study some of the women were lost follow up because of IUFD (Intra Uterous Fetal Death) "9 cases" ,abortion (lost of fetus under 20 weeks of pregnancy)"20 cases" and twin pregnancies" 6 cases. In longitudinal studies; nevertheless, lost cases were not significantly different in presence of incontinence. In this study some of the women A second limitation could be the lack of representativeness of the study population. Alzahra and Taleqani hospitals have a public system with universal coverage and free access to health care for all patients, which coexists with a private health insurance system, for instance, mode of delivery is different in this system from other public hospitals of IRAN and other countries.

Conclusion :

Urinary incontinence is one of the common disorders during pregnancy and postpartum period which can affect quality of women's life significantly. Type of delivery and maternal and fetal weight are the important risk factors for the incidence of this disorder. Unlike previous studies, gestational age played no role in urinary incontinence. In general, the prevalence of urinary incontinence in the third trimester shows the role of pregnancy and related factors in increasing the incontinence. The role of

vaginal delivery in the incidence of incontinence after childbirth is also undeniable.

Conflicts of interest:

Authors declare that there is no any conflict of interest.

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Table1. Demographic data and history of urinary incontinence in women studied with and without urinary incontinence.

Variables	Women with Urinary incontinence1	Women without urinary incontinence2	P-value
Rural resident	(%69.9)107	(%53.5)154	0.001*
Urban resident	(%30.1)46	(%46.5)134	
Elementary education	(%69.9)107	(%39.3)113	0.01*
High School Diploma	(%31.3)48	(%60.7)175	
Cough	(%3.3)5	(%1)3	0.1
Constipation	(%6.5)10	(%3.1)9	0.07
Diabetes	(%8.5)13	(%1)3	0.1
Depression	(%4.6)7	(%6.3)18	0.3
Cigarette	(%33.5)36	(%25)72	0.2
physical activity	(%96.1)147	(%87.5)252	0.1
History of urinary tract infection	(%9.2)14	(%2.8)8	0.4
Gestational Diabetes	(%34.6)53	(%8.7)25	0.01*
Anemia	(%13.7)21	(%19.4)56	0.8
Hypertension	(%42.5)65	(%14.6)42	0.2

* P-value <0.05 was considered significant.

1. Number of women who were affected by urinary incontinency
2. Number of women who were not affected by urinary incontinency

Table 2 Frequency and percentage of urinary incontinence based on delivery findings.

Variables	Women with Urinary incontinence1	Women without urinary incontinence2	P-value
Caesarean section	(%30.1)46	(%50)144	0.001*
Vaginal	(%69.9)107	(%50)144	
Weight over 4000 g	(%47.7)73	(%16/3)47	0.001*
Weight below 4000 g	(%52.3)80	(%83/7)241	
Episiotomy	(%25.4)39	(%74.5)114	0.2

* P-value <0.05 was considered significant.

1. Number of women who were affected by urinary incontinency during the study.
2. Number of women who were not affected by urinary incontinency during the study.

Table 3. the review of the variables involved in the incidence of urinary incontinence after childbirth.

Variable	P value	EXP(B)1	CI(95%)2
Type of delivery	0.001**	0.4	0.2-0.6
Birth weight	0.001**	4.8	3-7.7
Age	0.1	0.9	0.9-1.01
Cigarette	0.7	0.9	0.5-1.4
Physical activity	0.9	0.8	0.7-1.2
Maternal weight	0.03	1.05	1-1.1

**P-value <0.05 was considered significant.

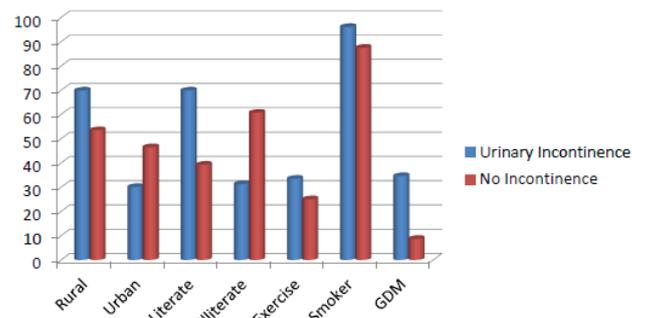
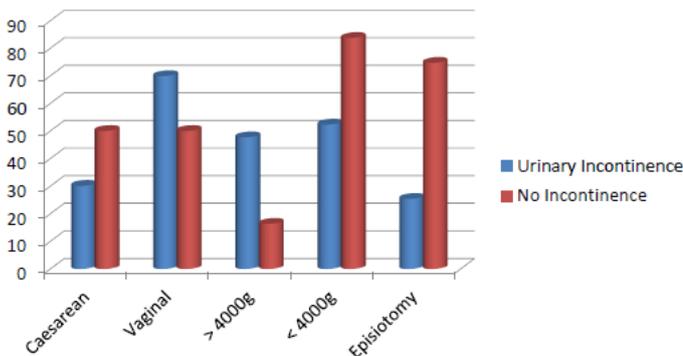
1. Odd's Ratio
2. CI(95%): Confidence Interval in this study is 95%

Table 4. The review of variables involve in the incidence of urinary incontinence during pregnancy.

Variable	P value	EXP(B)1	CI(95%)2
Place of birth	0.02	1.5	1.05-2.38
Birth weight	0.001**	7.4	4.5-12.2
Age	0.5	1.01	0.96-1.07
Cigarette	0.03	1.5	1.02-2.4
Physical activity	0.06	1.7	0.95-3.2
Maternal weight	0.01	1.05	1.03-1.08

**P-value <0.05 was considered significant

1. Odd's Ratio
2. CI(95%): Confidence Interval in this study is 95%



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