Abstract
Aim: The aim of this study is to determine the urinary incontinence (UI) subtype of women who present with complaints of urinary incontinence to our clinic, to identify risk factors related with this type and to determine the effects of sociodemographic features. Material and Method: This retrospective study was approved by Clinical Trials Ethics Committee in Malatya and included 386 patients who presented to Urology Clinic of Malatya Research and Education Hospital. Classification of the UI subtypes was performed using Turkish Version of International Incontinence Questionnaire-Short Form (ICIQ-SF) which was validated by Cetinel et al. Comorbidities and other data of the patients were evaluated by asking the patients. Results: The mean age of the patients was 51.4 years (range: 18-92 years). The mean number of births was 4.1 (range 0-10) and 90.2% of the women were married. The mean BMI was 27.24 kg/m2. Stress urinary incontinence was found in 24 (6.3%) patients, urge type urinary incontinence was found in 94 (24.3%) patients and mixed type urinary incontinence was found in 268 (69.4) patients when the type of incontinence was questioned. From the comorbid diseases, diabetes mellitus was present in 74 patients (19.1%) while hypertension was present in 84 (21.8%) patients. There were statistically significant differences among UI and age and BMI. Discussion: Such diseases as diabetes mellitus, hypertension, lumbar disc hernia, and multiple sclerosis, birth trauma, past urogynecological surgery, age, BMI, and the number of births are risk factors for UI.

Keywords
Sociodemographic Features; Systemic Diseases; Female; Urinary Incontinence
Introduction
Urinary incontinence (UI) is a common social and pathological condition that has many negative impacts on quality of life. The International Continence Society and the International Society for Urogynecology have described UI as "an involuntary social and hygienic condition" [1]. Although the pathophysiology of the disease is still unclear, the pelvic floor muscles and the neuro-structural structures regulating them may be responsible [2,3]. Rates ranging from 38% to 78% were determined in prevalence studies. The great difference between these rates is thought to be related to the variation in the definition of the disease and to the approach of the patients [4-6]. In some studies, urinary incontinence appears to be associated with age, lower education level, menopause, and multiparity [7-9]. Some of the patients with UI were found to have additional diseases such as osteoarthritis, peptic ulcer disease, cardiac disease, obesity, and diabetes mellitus [10-12]. UI causes not only physical but also social and sexual problems in women [13,14]. The aim of this study is to determine the urinary incontinence (UI) subtype of women who presented with complaints of urinary incontinence to our clinic, to identify risk factors related with this type and to determine the effects of sociodemographic features.

Material and Method
This retrospective study was approved by Clinical Trials Ethics Committee in Malatya and included 386 patients who present- ed to Urology Clinic of Malatya Research and Education Hos- pital. This study included patients who present with urinary incontinence at or above 18 years of age. Pregnant women were not included in the study because of the possibility of transient urinary incontinence. Classification of UI types was done using the Turkish version of the International Incontinence Questionnaire-Short Form (ICIQ-SF) [15]. Comorbidities and other data of the patients were evaluated by asking the patients. Age, marital status, number of births, UI type, earlier treatments, urinary incontinence period, the rate of cystometry for diagno- sis, treatment type, parameters such as body mass index (BMI) (< 19.9 kg/m2 underweight, 20 - 24.9 kg/m2, normal weight, 25-29.9 kg/m2 overweight, > 30 kg/m2 obese), accompanying disease history (diabetes mellitus, hypertension, neurological disease (multiple sclerosis (MS), lumbar disc herniation (LDH), cerebrovascular disease), birth trauma and uro-gynecological surgical history were evaluated.

Statistical analysis
The data were analyzed using SPSS version 20.0 (SPSS Inc., Chi- cago, IL) and IBM Modeler Professional 14.2 and for descriptivestatistics number (percentage) and mean ± SD was given. Normality of the distribution was confirmed with Kolmogorov- Smirnov test. One-way ANOVA test was used to compare UI types in numerical variables (BMI, number of births, duration of symptom). Multiple comparisons were made with Tamhane T2 test because of non-homogeneous variances. To compare UI types according to categorical variables (comorbidities such as marital status, diabetes mellitus, hypertension, neurological diseases, birth trauma and history of urogynecological surgery) Pearson’s chi-square test with Bonferroni method was used. In addition, multinomial logistic regression analyzes were used to relate the response variables to the predictors. P < 0.05 was considered to be significant.

Results
Interviews were made with 386 women whose data was full and who can be reached. Possible risk factors such as the mean age of the patients, marital status, number of births, body mass index, medical illness (DM, HT, neurological disease), gyneco- logical surgery history, birth trauma, duration of incontinence before the admission (years), treatment for incontinence before the admission, type of incontinence, and frequency of inconti- nence are presented in Table 1 and Table 2. The mean age was 51.4 years (range: 18-92 years). The mean number of births was 4.1 (range 0-10) and 90.2% of the women were married. The mean BMI was 27.24 kg/m2. Approximately 24.4% of the patients were seeking treatment for these complaints, and they admitted themselves. However, the remaining majority accept- ed it as a natural consequence of aging and had been brought or directed by others. The mean duration of urinary inconti- nence before the application was 22 months. Urinary inconti- nence occurred in 293 (75.9%) women during daytime and in 81 (20.9%) during the whole day (regardless of day and night). When the type of incontinence was questioned, stress urinary incontinence was found in 24 (6.3%) patients, urge type urinary incontinence was found in 94 (24.3%) patients and mixed type urinary incontinence was found in 268 (69.4) patients. From the comorbidity diseases diabetes mellitus was present in 74 patients (19.1%) while hypertension was present in 84 (21.8%) patients. The number of previously treated patients was 287 (74.3%). Eight women with stress urinary incontinence were found to gain continence after surgical treatment. Factors associated with the onset of urinary incontinence were birth trauma (n = 105), urogynecologic surgery (n = 61) and history of lumbar disc herniation (n = 24). Multiple sclerosis (n = 10), coronary artery disease (n = 14), cerebrovascular disease (n = 7), chronic obstructive pulmonary disease (n = 12), migraine (n = 6), and epilepsy (n = 1) were also remarkable. There were statistically significant differences among UI and age and BMI. Significant variables according to the results obtained from multiple logis- tic regression analysis were age, BMI, gynecologic surgery, LDH, and MS (p <0.05; Table 3).

Discussion
Urinary incontinence can be seen in various forms. The most common subtype in women is the stress urinary incontinence. In patients with stress-type incontinence, urinary incontinence may occur during exercise, during intraabdominal pressure-enhancing situations such as coughing, sneezing, laughing, or during any weightlifting [16]. Patients may therefore have to restrict their activities. Urge incontinence is another type of uri- nary incontinence in which urgency and incontinence while hur- ring to toilette occur. It may occur during sleep, while drinking water or impulsive conditions like hearing the sound of water. This condition is also called spastic bladder, overactive blad- der and reflex incontinence [17]. In some patients, these two types of urinary incontinence are seen together. This is called mixed type incontinence. Functional incontinence is defined as the presence of cognitive and physical problems and urinary
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Table 1. Demographic characteristics of the study group.

| Characteristic            | Description | No  | %    |
|---------------------------|-------------|-----|------|
| Age                       | 18-29       | 26  | 4.6  |
|                           | 30-44       | 78  | 20.2 |
|                           | >45         | 282 | 75.2 |
| Martial status            | Married     | 348 | 90.2 |
|                           | Single      | 38  | 9.8  |
| Parity                    | 0           | 24  | 6.3  |
|                           | 1           | 38  | 9.8  |
|                           | 2           | 60  | 15.6 |
|                           | 3           | 64  | 16.5 |
|                           | 4           | 66  | 17.0 |
|                           | >5          | 134 | 34.8 |
| BMI                       | <25         | 58  | 15.6 |
|                           | 26-30       | 304 | 78.8 |
|                           | >30         | 24  | 6.2  |

Table 2. Additional disease story and UI story of the study group.

| Characteristic                          | Description | No  | %    |
|-----------------------------------------|-------------|-----|------|
| History of diabetes mellitus            | Yes         | 74  | 19.1 |
|                                         | No          | 312 | 80.9 |
| History of hypertension                 | Yes         | 84  | 21.8 |
|                                         | No          | 302 | 78.2 |
| History of neurologic disease           | Yes         | 42  | 10.7 |
|                                         | No          | 344 | 89.3 |
| History of abdominal gynecologic surgery| Yes         | 61  | 15.9 |
|                                         | No          | 325 | 84.1 |
| History of birth trauma                 | Yes         | 103 | 26.7 |
|                                         | No          | 283 | 73.3 |
| Urinary leakage time (before presenting)| 1 year      | 92  | 23.9 |
|                                         | >1 year     | 294 | 76.1 |
| Any treatment for UI before presenting   | Yes         | 287 | 74.3 |
|                                         | No          | 99  | 25.7 |
| Type of UI                              | Stress UI   | 24  | 6.3  |
|                                         | Urgency UI  | 94  | 24.3 |
|                                         | Mixt UI     | 268 | 69.4 |
| UI time                                 | All day     | 81  | 20.9 |
|                                         | Only daylight| 293| 75.9 |
|                                         | Only night  | 12  | 3.2  |

Table 3. The results of multiple logistic regression analyses of the potential risk factors of UI.

| Variable                  | Estimate  | SE     | p value | OR         | 95 % CI for OR |
|---------------------------|-----------|--------|---------|------------|----------------|
| Age                       | 0.014     | 0.007  | 0.040   | 1.023      | 1.001-1.043    |
| BMI                       | 0.514     | 0.079  | <0.001  | 1.678      | 1.421-1.984    |
| Gynecological surgery     | 1.211     | 0.386  | 0.002   | 3.781      | 1.547-11.135   |
| LDH                       | 1.682     | 0.487  | 0.003   | 5.648      | 1.808-17.871   |
| MS                        | 1.892     | 0.672  | 0.010   | 7.121      | 1.521-32.846   |
| Marital status            | 0.689     | 0.279  | 0.050   | 1.425      | 1.261-1.624    |
| Diabetes mellitus         | 0.512     | 0.318  | 0.75    | 1.674      | 0.919-3.142    |

A detailed history, urinary diary, and complete physical examination determine the type of urinary incontinence, thus it will help to diagnose the patient and to regulate the treatment. It is obvious that cultural and educational level in our region is worse than in the west. For this reason, the vast majority of the patients (75.6%) were not aware of the disease, whether it was treated or not, and were therefore directed to the hospital by others. In several previous studies the percentage of patients who seek treatment themselves was lower than in our study [19,20]. Cetin et al. reported this rate as 12% [21]. Some of the patients, especially those in the elderly population, seem to accept this as a natural process of aging and consider that this is normal. This is closely related to the culture of the society.

Previous studies have reported that stress urinary incontinence was the most common subtype of urinary incontinence [22,23]. In our study, the most common urinary incontinence subtype was the mixed type (69.4%) followed by urge incontinence (24.3%) and stress incontinence (6.3%).

Prevalence of urinary incontinence was found to be less than 10% in previous studies. Urinary incontinence is more common in females than in males. Prevalence increases with age [24-26]. In our study, it was seen that the majority of all patients (75.2%) were at or above forty-five years of age. Only 4.6% of women were under thirty years of age. In the young age group, more urge incontinence was found, and as the age increases, stress type incontinence and mixed type replaced it. When all age groups were evaluated, the least prevalent incontinence type was found to be stress type incontinence. However, the majority of the patients with stress incontinence were found to be 45 years of age or older. The most common type of incontinence was found to be mixed type incontinence in all groups. When the literature is examined, the prevalence of stress incontinence in the elderly population was found to be close to 60%, whereas in our study this rate was found to be low compared to these studies [26,27].

In our study, the statistically significant difference was found between the UI types and the mean age. The mean age of the patients in the stress UI group was significantly lower than the other two types of UI. Although the majority of the patients included in the study were married, no significant association was found between the UI and the marital status. Studies have shown that the increase in BMI increases the bladder pressure, thus the intra-abdominal pressure, which in turn increases urethral mobility and adversely, affects UI. An adverse effect of increased BMI is especially prominent in stress type UI [11,28,29]. In our study, the mean BMI of the patients was in the overweight range (304 patients, 78.8%). In accordance with the literature, BMI was higher in the stress incontinence subtype than the other UI subtypes. Many previous studies showed that incidence of urinary incontinence increases as the number of births increases. The frequency of UI was demonstrated to be higher in women who delivered 4 or more when compared to women who have never delivered. In another study, UI incidence was higher in women with 1 child than in women who have never delivered [30-32]. In our study, the mean number of births...
of the patients was 3.54. In addition, the number of births and the frequency of UI was found to be proportional. Patients with stress UI had a lower number of births than other UI types. No significant difference could be found between UI types and the mean number of births (p=0.3).

The association between hypertension and UI has been reported in many studies [33]. When the relationship between systemic diseases and UI was evaluated, hypertension was found in 21.8% of patients. The most common systemic disease was hypertension. Hypertension was significantly more common in urge and mixed UI types (p = 0.02). This can be attributed to the fact that patients with urge and mixed types UI were mostly among the elderly population.

Diabetes mellitus and many neurological diseases lead to impairment of urinary retention mechanisms by various factors. In addition, these diseases may cause impairment in detrusor activity [7,10,34]. In our study, diabetes mellitus was detected in 74 patients (19.1%) and neurological diseases (multiple sclerosis, cerebrovascular disease) in 42 patients (10.7%). Patients diagnosed with diabetes mellitus and neurological disease were more likely to have urge and mixed type UI. There was no statistically significant difference between UI types.

The literature examination showed that many risk factors were found to be associated with UI [5,7,35]. In our study, birth trauma (103 cases; 26.7%), urogynecologic surgery (61 cases; 15.9%), and lumbar disc hernia were the other common comorbid diseases associated with UI. Although mixed type urinary incontinence was more frequent in those with these comorbidities, no significant difference was found between the other UI types. A small proportion of our patients had accompanying systemic disease.

Epidemiological studies have shown that menopausal status, multiple birth traumas, and obesity were significantly related with UI subtypes [5]. Age and BMI were statistically significant variables in comparison of risk factors and UI types (p <0.05). In the present study, there are two limiting factors. First is its retrospective nature and second is a lack of a control group for comparison since it was not a prevalence study.

Conclusion
This study gives information about the factors that may be a risk factors for UI in women. In addition to diseases such as diabetes mellitus, hypertension, lumbar disc hernia, and multiple sclerosis, birth trauma, past urogynecological surgery, age, BMI, and number of births are risk factors for UI. Since the majority of the patients consider the UI as a natural consequence of aging, they often do not seek a medical help for this. Thus, the majority of the patients are brought to the clinic by a relative. In developing countries, patients should be informed in details about the UI and directed to the urologist for treatment. We also believe that more extensive prevalence studies should be done in this field to obtain more precise data.

Scientific Responsibility Statement
The authors declare that they are responsible for the article’s scientific content including study design, data collection, analysis and interpretation, writing, of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and human rights statement
All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

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